Title
The Institution of Infrastructure and the Development of Port-Regions

Author
Hall, Peter V.

Publication Date
2002-09-01

The Institution of Infrastructure and the Development of Port-Regions

by

Peter Voss Hall

B. Soc. Sc Honors (University of Cape Town) 1989
M. Sc (University of London, London School of Economics and Politics) 1995

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

in

City and Regional Planning

in the

GRADUATE DIVISION

of the

UNIVERSITY OF CALIFORNIA AT BERKELEY

Committee in charge:

Professor AnnaLee Saxenian, Chair
Professor Elizabeth Deakin
Professor Michael Teitz
Professor Michael Reich

Fall 2002

The dissertation of Peter Voss Hall is approved:

Chair Date

Date

Date

Date

University of California, Berkeley

Fall 2002

The Institution of Infrastructure and the Development of Port-Regions

by

Peter Voss Hall

Abstract

The Institution of Infrastructure and the Development of Port-Regions

by

Peter Voss Hall

Doctor of Philosophy in City and Regional Planning

University of California, Berkeley

Professor AnnaLee Saxenian, Chair

This dissertation asks what role local public agencies might play in regional economic development through the market-shaping institutions they create and sustain. Recent economic geography literature has sought to account for patterns of regional development in terms of institutional differences across space. Research has sought to identify and understand these institutions, defined as taken for granted formal and informal rules, practices, norms and patterns of behavior. However, the current literature is vague about the role of public policy, and often ignores extra-regional economic forces.

This dissertation confronts these problems directly by examining the institutionalized relationships between one type of local public agency, port authorities, and one global industry, automobile manufacturers. The evidence presented in this dissertation consists of case studies of two public port authorities (Baltimore and Long Beach) and various automobile importers (Toyota, Honda, Mercedes and Volkswagen), supported by documentary and economic data. The research strategy involves tracing the consequences for the geography of automobile import activity of institutional change in public ports.

I argue that the economic geography of automobile import and distribution activities can be systematically related to changes in the planning, leasing, pricing, and management policies of US public port authorities. Firms using such public infrastructure seek a relational fix, or an appropriate set of institutionalized relationships, that allows them to overcome the uncertainties associated with investment and other economic actions. How port authorities go about providing infrastructure – the planning policies they promote, the financing mechanisms they employ, the contracts they enter into, the labor relations they sustain, the organizations they create – these institutions all support particular relational fixes and devalue others. Changes in these institutions arising from the process of containerization have changed the actual and potential relationships between infrastructure providers and users. In turn, this influenced both the patterns of port usage and infrastructure investment decisions.

The findings indicate that local public agencies are able to influence regional economic development outcomes through attention to the institutions governing the relationships between multinational firms and other economic actors. A central challenge for local public agencies is to achieve institutional compatibility with a diversity of economic actors, in a way that is both responsive to changes in industry organization and accountable to local communities. For planners in particular, this implies paying closer attention to the way in which institutions influence actual and potential public-private relationships.

Table of Contents

List of Figures

List of Tables

Acknowledgements

Growing up in South Africa, it was easy to imagine that identifying the solution to the social and economic inequities around us involved little more than simply identifying the source of the problem. I think we were both right and wrong in this belief. While the ending of Apartheid has been so uplifting and liberating, we are also learning that the Planning that brought about so much suffering to South Africans cannot easily undo its own damage. Bold national industrial policies or urban development strategies cannot replace local, incremental, mundane and humble steps. In Berkeley I found a similar realization unfolding in the academy; the big frameworks and concepts that have been used to organize the world are being tempered with attention to context, practice, and uncertainty. This dissertation represents my ongoing attempt to understand these changes, and to find a place within them for the translation of knowledge into progressive action.

There are so many people to thank for helping me with this:

My dissertation chair and constant source of encouragement, Anno Saxenian, exposed me to a new world of literature – starting with *The TVA and Grassroots* – and then set me free to follow where it led me. Betty Deakin encouraged me to think beyond South African exceptionalism, and supported me throughout with advice and resources. Mike Teitz was always ready to discuss ideas over lunch, and help me to situate my work in the wider literature on planning and institutions. And Michael Reich, my collaborator in several studies, has helped me to understand the connections between this dissertation and action to improve the lives of working people.

Other Berkeley Faculty were supportive at key moments with feedback, disagreement, suggested reading and more, especially Karen Christensen, Manuel Castells, Robert Cervero, Fred Collignon, David Dowall, Judith Innes, and Marty Wachs. Thank you also for terrific support at DCRP from Kaye Bock, Malla Hadley, Denise Harris, Stefan Tomic, Andres Alvarez, John Banks and Nancy Keita, and at IURD from Carey Pelton, Mary Altez and Barbara Hadenfeldt.

Fellow students, now friends and colleagues in the PhD program provided constant feedback and critique, especially over the multiple dinners of the two writing groups: Gary Fields - and Amy, Larissa Muller - and Doug, Matt Zook – and Eva, Isabelle Fouconnier, Todd Goldman and Asha Weinstein. And the whole crew who made this such a fun and intellectually stimulating process – Annette, Balaji, Blanca, Bruce, Cecilia, Chico, Chris, Chris, Elsie, Gerald, Howard, Jan, Jennifer, Jonathon, JT, Karen, Karen, Larry, Mary, Matt, Mike, Mike, Mike, Miriam, Neema, Ness, Peter, Pitch, Rana, Stephen, Yasuyuki….

During my fieldwork I could count on the support of wonderful new friends with accommodation, contacts and intellectual discussion. In Los Angeles, Tom O'Brien, Kathy Kolnick, Jan McKay and Leo Langle, and especially Edna Bonacich for her close reading of several chapters and her ongoing encouragement. In Baltimore, Erica Schoenberger, Rebecca Freeman and Bob Barron. And in New York, Marc Hochstein.

While writing the dissertation I had an office, support and a stimulating parallel research program at the Institute of Industrial Relations. Thanks to all the colleagues, office-mates, squash-partners and friends including Chris Neidt, Ken Jacobs, Peter Olney, Carol Zabin, Tony Chen, Stuart Tannock, Martijn van Velzen, Sally Kwak and Gabriel Demombynes.

This dissertation would not have been possible without financial support from the Department of City and Regional Planning Block Grant, a National Science Foundation Doctoral Dissertation Award, a University of California Transportation Center Dissertation Award, and a University of California Chancellors Dissertation Award.

I have had the most wonderful teachers at school, as an undergraduate at the University of Cape Town and in the URPS program at the London School of Economics. In my working life I have learnt a great deal from many colleagues, especially Pieter Kok and Tony Emmett at the HSRC, and Glen Robbins and Viv McMenamin at the eThekwini / Durban Metropolitan Council.

Many friends encouraged this project in person and on line; thanks to all the young progs, survivors of snor city, the pink palace and Shell House, the Bay Planning and Development Cyclists, members of the UC Alumni Chorus, relatives and housemates.

Last and first, thank you to my family: mom and dad, Susan and Mark, Kim and Morgan. And thank you Pam, for things that are beyond counting.

"Generally speaking, we don't talk about a decision appearing to us, people jealously guard both their identity, however vague it might be, and their authority, what little they may have, and prefer to give the impression that they reflected deeply before taking the final step, that they pondered the pros and cons, that they weighed the possibilities and the alternatives, and that after intense mental effort, they finally made a decision. It has to be said that things never happen like that.....Strictly speaking, we do not make decisions, decisions make us." Jose Saramago (1999; 28-29)

Chapter 1

Introduction

Every day, thousands of new automobiles and light trucks are driven off and onto ships at seaports across the globe on their way to remote market locations. Seaports are taking on particular significance as the future success of automobile manufacturers is shifting from “excellence at the point of production – now more or less assumed – toward excellence in governing spatially dispersed networks of plants, affiliates and suppliers” (Sturgeon and Florida 2000; 1). And however salient these networks appear to be today, automobile manufacturers have for many years faced a range of strategic choices about the way in which they manage their logistics chains, and the relationships they seek with various public and private actors.

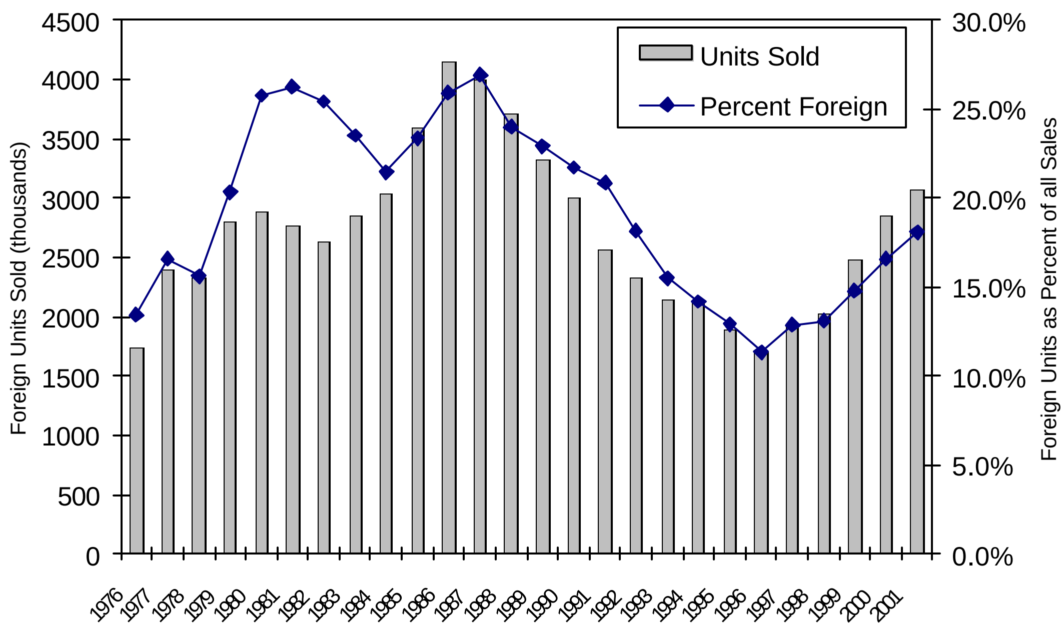
The empirical material for this dissertation thus concerns the somewhat specialized activity of the handling of such automobile imports in the sea-ports of the United States. Within this narrow logistical function, there is considerable variation. For some automobile firms, port operations are important nodes in their overall distribution system, while for others, ports are simply points of entry to be passed through as rapidly as possible. For some port authorities, automobile accounts are highly prized, while for others they are a distraction from the ‘real’ business of modern ports, which is the handling of containers.

Not only are the variations important, over the last twenty years there have been profound changes both in the port business and in the volume and mix of automobile shipments. As Port Authorities have confronted the container revolution, they have sought to redefine their relationships with the cities that host them, as well as with the users of their facilities. Leasing, pricing, financial and planning policies have been changed, as have organizational structures, labor relations and infrastructure spending priorities.

Automobile importers too have faced an equally profound set of changes. In response to threats of trade sanctions, East Asian and European automobile firms have opened transplant assembly plants in various North American locations. This has reduced the overall volume of imports dramatically – from over 4 million in 1986 to a low of 1.7 million automobiles and light trucks in 1996 (see Figure 1.1). Automobile importers have rationalized their patterns of port usage, with important consequences for livelihoods and localities.

The story of variation and change to be reported here thus has a wider relevance in the study of regional economic development, and provides an opportunity to reflect on the role of sub-national institutional differences in regional economic development outcomes. What accounts for the variations and changes in the patterns of port usage by automobile importers? Clearly many factors are implicated here, but from a regional economic planning perspective, the factors that are amenable to policy intervention are of most interest. In what follows, I will argue that sub-national institutional differences between port authorities account, in part, for the patterns of port usage by automobile importers. In more general terms it is the argument of this dissertation that local public authorities have agency in the establishment and sustaining of the institutions of economic governance, and through this agency exercise some influence in the regional development process.[1]

Figure 1.1 Sales of Foreign Automobiles and Light Trucks, USA 1976-2001



Source: Bureau of Economic Analysis, Department of Commerce.

---

[1] In the interests of clarity, I have adopted the following definitions of the key concepts used in this study:

(a) **Institutions** "consist of cognitive, normative, and regulative structures and activities that provide stability and meaning to social behavior. Institutions are transported by various carriers – cultures, structures, and routines – and they operate at multiple levels of jurisdiction" (Scott 1995: 33). The institutions that are central to this study are the norms, policies and practices governing economic activities in US seaports.

(b) **Organizations** are "collectivities oriented to the pursuit of relatively specific goals and exhibiting highly formalized social structures". The "participants are pursuing multiple interests, both disparate and common", so forming a shifting coalition that is dependent on continuing exchanges with, and is constituted by, the environment in which it operates (Scott 1998: 26-29). The organizations that are central to this study are public (port) authorities and firms (automobile importers).

(c) **Agency** (or action) refers to "a continuous flow of conduct" which involves a "stream of actual or contemplated causal interventions in the ongoing process of events-in-the-world" (Giddens 1979: 55). Agency does not imply unconstrained voluntarism, but it is "a necessary feature of action that, at any point in time, the agent could have acted otherwise" (Giddens 1979: 56).

Life after Fordism

Why is this an important finding? The outlook for the advanced economies of North America and Western Europe in the 1970s and early 1980s was bleak. The automobile, long the symbol of American post-war economic power, came to represent everything that was going wrong. One of the nation's largest automobile conglomerates, Chrysler, had to be bailed out by government assistance. Several large automobile plants were closed, with devastating effects on lives and localities. If an enemy could be identified, it often took the form of the foreign, particularly Japanese, automobile import.

If the automobile was at the center of the crisis as experienced, it also assumed a prominent place in the resultant pessimistic theorizing about economic development. By the early 1980s, the accumulation of changes in economy, society, technology and politics had become so great that social commentators were casting around for new ways to describe what had passed, and what was coming. The automobile, recast in the language of the French regulation school, came to describe what was passing. The concept of Fordism provided a powerful way of understanding the connections between changes in the production sphere and changes in the structure of demand. Under Fordism, cost-minimizing and inflexible production systems had been sustained by, and had in turn sustained, stable patterns of demand.

So, Fordism, and its fellow-travelers, the welfare state, mass-production, industrial capitalism, Keynesian macroeconomic management… were giving way to something new. But what was that something? Jargon abounded … post-fordism, neo-schumpetarian workfarism, flexible accumulation, informational capitalism, monetarism… yet the 'new' remained surprisingly elusive and contradictory, and for many, deeply troubling.

No more clearly was this theoretical pessimism illustrated than in the debates about the concept of globalization. A crisis of the welfare state had been apparent for some time (O'Connor 1973), and the sense that forces 'out there' were determining the fortunes of places and people was palpable. Disciplined by global financial markets, the nation-state, that traditional defender of civic rights, was said to be 'hollowed out' by a series of enthusiastically implemented policy innovations: deregulation, decentralization and privatization (see, Rhodes 1994). For many Anglo-American planners, these were the darkest days of policy pessimism, as the will and ability of the nation-state to intervene was seen to retreat.

For a while it appeared that surprising empirical inconsistencies in the developing world would provide a more positive model for public policy. The earliest analysts of the manufacturing job losses in the advanced economies predicted a continued technological imbalance between 'north' and 'south'. For Frobel (1978), Massey (1979 and 1984) and others, capital's search for new locations within which to exploit labor was driving a new global spatial division of labor, and a re-cementing of regional inequalities. However, at the same time, the experience of various Asian countries was demonstrating that the opposite might just as easily be true. Some theorists took this as a hopeful sign for industrial policy (see Amsden 1989; Johnson 1982).

Automobile imports from Asia could now be recast not as signs of low-road competition, but rather as symbols of the productivity gains flowing from an alternative model of 'lean' manufacturing production (Womack et al 1990). The resulting literature also alerted us to the importance of embeddedness, or the presence of the appropriate connections between state and private actors that promote the identification, creation and exploitation of development opportunities (Evans 1995). However events in Japan and in many of the "Asian tigers" during the 1990s have dampened much of the enthusiasm for national industrial policy.

In any event, the macro-economic picture in North America began improving from the early-90s, led by another set of empirical inconsistencies that have provided fodder for a more enduring approach to understanding the uneven geography of capitalism. Since the early 1980s, scholars had been writing about the surprising success of semi-peripheral locations closer to 'home' such as Silicon Valley (Saxenian 1994) and the third Italy (Piore and Sabel 1984). Tied to a bigger argument about the transformation of the Fordist industrial economy, a new explanation for regional growth differentials was offered. The new global economy required, indeed demanded, regional industrial systems that could promote continual productivity gains, and foster learning and the recombination of ideas (Storper 1997). A related literature described for us how local inflexibility contributed to decline (Morgan 1997).

In its celebration of local difference, the initial formulations of this new pathway to economic salvation were rightly criticized for ignoring national regulatory frameworks and global forces (Liepitz 1993). The ensuing debate saw a more measured regionalism. Subsequently the attention of regional development scholars has become firmly focused on the articulation of the local and global forces that inform differential development trajectories (Cox 1997; Gertler 2001). The movement of commodities, ideas, investments, and people is now viewed as being conditioned both by the particularities of place as well as the changes in the technology that facilitate these flows. We now understand, for example, that transplant production in the US by transnational Japanese automobile manufacturers entails a complex process of localization (Mair 1994). In this new geography, cities and regions occupy a privileged place (Taylor 2000; Storper 1997).

Of course, the recognition of the role of regional differences in the global economy does not imply a ringing endorsement of the new order. Scott (1998), for example, accepts that a diffuse global order characterized by inter-relations between far-flung regional economies, rather than nation-states, is emerging. He notes however that this

> "raises the burning question of how, in a prospective global mosaic of regional economies, individual regions can maximize their competitive advantages through intra-regional policy efforts while simultaneously working together collaboratively to create an effective world-wide inter-regional division of labor with appropriate built-in mechanisms of mutual aid, and especially some modicum of collective assistance for failing and backward regions" (161).

Despite the warm reception enjoyed by the new paradigm of governance (see Stoker 1998), many are profoundly pessimistic about the possibilities for public policy at the local level (Jessop 1995). For those who seek a return to the stability of the Fordist era, the redistributive incapacity of the local state is particularly worrying. For those emphasizing the power of multinational corporations, global – or at least supra-national regional – government makes more sense than fragmented, squabbling, local control (Sassen 1997). For those emphasizing the importance of local regimes in directing the activities of the local state, effective local public policy is viewed as being limited to reinforcing the existing development trajectory. For those emphasizing democratic accountability, the insulation of local special purpose government from political influence is a source of concern.

These concerns all have validity; however the fact remains that the relative importance of local and regional economic interventions has certainly been increasing since the early 1980s (Eisinger 1988; Teitz 1994). If we accept Peter Evans' suggestion that "variation in (development) involvement depends on variations in states themselves" (1995: 11), then variations in the capacities of local public agencies take on a heightened significance. Or perhaps they were always important, but an “embedded statism” (Taylor 2000) or “methodological nationalism” (Peck 1996) simply blinded us to this possibility? In any event, to the extent that local public agencies reflect wider societal goals and can actually achieve them, they may represent sites for a less fragmented public policy.

This brief review of recent regional development literature has highlighted three important and connected ideas. First, we now live in a globalized economy that feels less stable and certain than the fordist economy that has passed. Second, the internal institutional dynamics of local and regional economies have gained salience as a basis for growth in this new economy. Third, sub-national public agencies may represent an increasingly important site for the governance of economic development processes. These circumstances define the political significance of this dissertation, and its challenge. What is the space for public policy and intervention at the local level in the current era? Do we have any reasons for optimism?

The argument summarized

This dissertation takes the view that institutions are important because they structure relationships and information exchanges, which in turn guide economic actions. In the business of shipping automobiles, relationships may be fleeting and anonymous transactions, or they may be enduring, historical and specific to the parties involved. Both firms and public agencies work to build these relationships, and they commit resources based on them – from tangible physical investments to operating systems to identities. Echoing Harvey (1982), but with an emphasis on relationships rather than fixed capital, I argue that multi-national corporations require a firm-specific "relational fix" in order to make investments. The nature of this 'fix' has important consequences for economic development outcomes. Local public agencies, and indeed other agents of regional governance, have a partial ability to influence the form of these relational fixes. The answers to a linked pair of theoretical and empirical questions led me to this conclusion.

First, in general terms, what role do local public agencies play in regional development? I argue that in providing infrastructural services, local public agencies create and sustain sets of relationships that mediate decision-making by firms. The provision of infrastructure may thus be viewed as act of institutional (re)building.[2] Once in place, these institutions simultaneously influence future decisions about investment in and usage of public infrastructure, as well as the organization of production and distribution activities. This approach builds on a particular theoretical approach to understanding how economic decisions are taken.

Drawing on the debate over structure and agency, I emphasize the deliberative and strategic nature of decision-making processes in both firms and public agencies. In this approach, institutionalized relationships, and the information they provide and privilege, take on a special significance, since this is what guides action. By using the term 'institutionalized relationships', I seek to convey the idea that relationships between actors (firms, ports, carriers and so on) are structured by the institutions (from informal norms to formal rules) that set the boundaries of how, when, where and in what ways the parties may interact and share information.

In specific terms, I examine the role seaports play in regional development. Ports stimulate economic activity through the movement of cargo. Of course variations in the origin and destination of freight, value, transport mode, and so on, have different consequences for a local economy. However, the theoretical perspective advanced here raises a different kind of empirical question; how do firms and agencies deal with the

[2] It is useful to re-state the distinction between institutions and organizations again at this point. Chapter 6 contains a case study of a port authority that has a series of formal mandates and informal norms that lead officials to interact more closely with shippers than carriers. These institutions do have an organizational manifestation. For instance, the marketing department of this organization is well resourced and is

uncertainties of long-term infrastructure investments? I show how port authorities influence the relationships between the economic actors, relationships that allow capital, human and organizational investments to be made in an uncertain world. How ports go about providing infrastructure services – the planning policies they promote, the financing mechanisms employed, the details of the contracts they enter into, the labor relations they sustain – these all support certain relationships and not others.

The second question addressed in this dissertation is oriented towards practice: just because relationships, and the institutions that structure them, are important does not mean that public policy can do anything about them. Institutions are shaped in important ways by technological, market and political forces. However, in what follows I take a more optimistic view of public policy, arguing that institutional choices, although circumscribed, do exist within local public agencies. What then are the characteristics of institutions that are more likely to enhance or promote innovation, the accessing of new markets and productivity gains? In other words, can local public agencies consciously stimulate economic development?

I show that as port authorities confronted the container revolution, they engaged in rounds of infrastructure spending, cost-based competition and institutional tinkering as they sought to attract cargo. Of most interest here are the conscious and deliberate changes by the port authorities to the institutions governing their relationships with private firms, and the intended and unintended consequences of these institutional

---

structured to ensure ongoing contact with shippers in inland and overseas locations. The role of institutions in organizational cohesion, structure and action has become increasingly recognized (see Scott 1995).

experiments. These formal institutional changes, enacted by public officials and essentially exogenous from the perspective of the individual importer of non-containerized automobiles, are implicated in the changing distribution systems of various automobile importers. Some Ports have been able to accommodate a variety of automobile importers, while others have implemented changes that selectively displaced some port users.

Hence, a central concept I use to argue that local public agencies can indeed play a deliberate role in economic development is that of institutional compatibility. For public agencies, the challenge is to achieve compatibility with several firms; thus 'better' institutions are heterogeneous and solve collective action problems. Local public agencies are more likely to sustain economic activity, especially the dynamic and disruptive processes of innovation and technological change, if institutions support information-sharing. These principles imply that ports should consciously seek institutional arrangements that promote information-sharing with shippers and carriers of a diversity of commodities, catering to both big and small shippers, attracting value-adding activities associated commodity flows, and being responsive to changes in shipping technology and industry organization. However, it bears repeating that Port Authorities – and other local public agencies – are limited in a variety of ways and my research shows that these are not easy tasks.

Studying variation and change in regional institutions: why seaports, why automobiles?

I have chosen to explore the role of institutional differences in economic development outcomes through an examination of the relationships between one particular type of infrastructure-providing local public authority in the spatial development trajectory of a highly globalized industry. I examine the relationships between various US seaports and the automobile industry from the early 1980s to the late 1990s. Why seaports and why automobiles? This is in part for methodological reasons, and in part because both seaports and automobiles are intrinsically interesting and important arenas of economic activity. Apart from studies of containerization[3], seaports in general have been under-examined in recent regional development literature, while the voluminous writings on the automobile sector have focused almost exclusively on production and ignored distribution. In this section I address only the methodological concerns.

Relating an inter-regional economic outcome to institutional variations associated with public agencies presents a classic regional development methodological choice between a regional and an industrial/sectoral focus, complicated by the elusiveness of the mediating institutional variable. In order to address the methodological challenges, I have adopted a research design that is simultaneously sectoral, inter-regional, and historical. I rely most

[3] It is worth remembering that there is a lot more to the shipping business than containers, and that only a few ports are likely to secure container hub port status. A 1999 report estimated that the marine transportation system moves more than 2 billion tons of freight and adds more than $742bn to GDP (US DOT 1999). The entire system consists of over 1000 harbor channels, 25,000 miles of inland, intracoastal and coastal waterways, 300 ports, and 3,700 terminals. These ports and related facilities represent important economic development engines for local economies, and can offer niche development opportunities.

heavily on qualitative and documentary research in various case studies, but seek to contextualize this evidence by employing various descriptive statistics and secondary sources.[4]

Institutions, by definition, avoid easy detection and study. Institutions do not do anything themselves – they are not people or organizations with interests and agency. So when and how do institutions reveal themselves? One way institutions reveal themselves is when they influence something else – such as a decision. However, to establish causality through studying effects (decisions) we face several problems. Institutions mediate action, rather than being an autonomous source of action. Hence institutional effects are non-deterministic; the possibility always exists that human agency will intervene to generate an unpredictable outcome.

In the language of social research methodology, we might say that it is thus very difficult to account for covariation in institutional research – to account for the other factors that might have influenced the observed effect. The standard extensive research methods – correlation analysis of sufficient observations to control for external variation or congruence testing in case study research (Sayer 1992; Bennett and George 1997) - face particular challenges in this regard. Again, this has something to do with the nature of institutions.

[4] Data collection for this project consisted of several research methods. I collected descriptive statistics on commodity flows, secondary documents, and conducted telephone interviews with a reference of 21 US public Port Authorities. I was able to visit 12 of these over the course of the research. I did in-depth interview and documentary based case studies of two ports – Long Beach and Baltimore. I collected descriptive statistics on imports and sales, and secondary documents on all the major importers of automobiles into the US. I visited several facilities and conducted interviews with officials in four firms (Toyota, Honda, VW and Mercedes). For full details on data sources and interview lists, see Appendix B.

Many authors have commented on the question of 'institutional fit' – the way in which a set of distinct institutions appear to support one another to create an integrated whole (see Berger and Dore 1996). For example, Saxenian (1994) shows how particular innovation systems are supported by firm boundaries and local labor market norms, while Brown et al (1997) show how training systems in the US and Japan are supported by recruitment, tenure, wage setting and pension arrangements.

This suggests a research design of comparing clusters or sets of institutions rather than specific isolated institutions. However this approach makes it very difficult to trace causality to a particular institution, which presents particular problems for the formulation public policy. For cross-sectional correlation studies, this implies a massive data collection effort, doubly difficult when one is not quite sure in advance which institutions are important and why[5]. For this reason Douglass North has argued that a comparative case study approach is particularly appropriate for empirical study of institutions (see Alston, Eggertsson and North 1996). While this certainly limits the ability to generalize, it may be regarded as an appropriate trade-off, especially when the questions addressed by the research are exploratory.

However, a case study approach of seeking institutional effects necessitates finding comparative cases with a remarkable, indeed uncanny, degree of symmetry. The danger

[5] I suspect that this is part of the reason why decades of empirical research has been unable to confirm or refute Tiebout's (1956) hypothesis about the relationship between local government structure and the efficiency of urban expenditure (see Dowding, John and Biggs 1994). The approach to institutions is simply too narrow.

here is that since institutions tend to come in mutually-reinforcing ensembles, once we have understood how the different institutional elements combine, we have very little way of understanding the separate contribution of each element. Again, this is not very useful in the reformist, pragmatic and incrementalist world of the planner.

Another way in which institutions reveal themselves is when they change. However since institutions are by definition durable they do not change very often, nor do they change very rapidly. Examples of institutional change are thus few and far between, and since institutions change slowly, it is very difficult to untangle cause and effect. Finally, an historical correlation analysis of institutions is extremely difficult; if the data constraints on meaningful cross-sectional correlation analysis of institutions are severe, just imagine how much more severe are they in a time series analysis.

With the options of cross-sectional and historical correlation analysis excluded, I have focused on an historical case study of institutional change, using seaports as a field of study. The last 20 years of port history have seen particularly rapid institutional change, and the techno-economic processes of containerization and transplant production provide something of a 'natural experiment' around which a comparative historical research strategy can be designed.

Seaports are distinct organizations providing infrastructure and transportation services. Ports are organized in a variety of ways in the United States; most fall under the jurisdiction of a local (city-level) authority, although some are entirely private, and some fall under state direction. Each port offers different infrastructural attributes, each has a different history, and each has evolved in relationship to the local and regional economy in different ways.

Over the last fifty years, waterfronts across the world have been fundamentally transformed by the container and intermodal revolution. I divide this history into two related but distinct phases. Until the early 1980s, containerization proceeded primarily as a process of technological change. With containers came the re-organization of the shipping industry, larger ships that required deeper channels, longer berths, bigger cranes, more and re-configured terminal space, and improved surface transportation connections (Chilcote, 1988). Port authorities that anticipated this process sooner, and were able to marshal the political coalitions required to make the massive investments involved were more likely to capture this new growth dynamic (see Boschken, 1988). In this phase, institutional change arguably followed rather than led the restructuring.

The second phase began with transportation deregulation, first in the surface transport sectors and then in shipping. In particular, the 1984 Shipping Act allowed carriers to offer service contracts and all-inclusive pricing, thus stimulating the growth of intermodal transportation (Shashikumar and Schatz, 2000). Carriers thus had a choice about which markets to serve directly from a local seaport, and which to serve from a remote seaport and by overland transport. Hence, ports could no longer assume that they would serve a given "captured" hinterland (Slack, 1993). This intensified the competition between seaports for the discretionary cargo that constitutes an ever-larger proportion of all ocean-borne cargo.

It is this second phase of containerization – and the legislative change that marks it – that provides the institutional change around which the research strategy has been designed. In other words, the changing relationships between ports and firms since 1980 provides an important opportunity to study the role of institutions in economic development. Having settled on seaports as a research arena of institutional change associated with a local public agencies, the methodological challenge then returns to the more standard regional development research question of whether to compare more than one region or more than one sector.

An inter-regional approach (comparing regions) faces the challenge of controlling for variations in economic structure, and the myriad of other external factors that influence regional development outcomes. This is because the regional comparison approach runs the risk of attributing to port-related institutional differences what are in fact differences in regional economic structure. This is particularly problematic since following structural economic shifts (principally the rise of the service and high-tech sectors) and the increasing use of other transport modes (i.e., air and land), sea-ports today are the dominant mode of transport for only a few industries.

An intra-regional approach of comparing two or more sectors within the same region faces similar challenges. To disentangle the effects of institutions associated with seaports across a whole series of transportation and infrastructure services within one region would be near impossible except in exceptional cases (for example, in un-diversified resource-based regional economies).

A sectoral approach attempts to control for many variations in industry-wide factors (such as technological change, market conditions and ownership patterns) and compares how one (or more) sector manifests differently across space. This should provide a research design that illuminates the way in which specific local / regional institutional differences account for differential growth patterns. A further advantage of this approach is that the definition of the region is not pre-determined, but rather emerges from empirical study of how the port connects production and consumption locations in more or less beneficial ways. It must be recognized that an exclusively sectoral approach might under-estimate intra-regional spillover effects across sectors. For example, it is very likely that the opening of a new trade route for one sector will impact other sectors in the same region.

To address these dilemmas, I have opted for an inter-regional approach that controls for sectoral / industrial variations by working within one narrowly defined sector, and indeed where possible, within particular firms[6]. The import and, increasingly, export activities of multinational automobile firms generate considerable commodity flows through US ports, but the geography of these flows is differential and selective. Over the last twenty

[6] Vickerman (1999) makes a conceptually similar point about the problems of studying accessibility in regional economies. He argues that concept of accessibility has been studied in terms of regions and sectors rather than actors. This leads to spatial aggregation bias, the assumption that the node in the transportation network represents the region, and sectoral aggregation bias, the assumption that all actors place the same

years there have been considerable fluctuations in this trade as a result of economic contraction and expansion, the rise of transplant production in the US, and changes in the organization of the automobile industry. The automobile sector, specifically the activity of distributing new vehicle imports, thus provides a very useful sectoral focus. Two features of this activity bear further elaboration.

First, the overwhelming bulk of automobile imports are not carried in containers. While this does not eliminate the problem of establishing causality entirely, it does allow me to regard the institutional changes resulting from containerization as to some extent exogenous to the logistics of automobile shipment. This assertion is more easily defended in the case study of a highly successful container port, Long Beach. It is simply not tenable to claim that any automobile firm has been able to direct the course of institutional change here. The situation is more complex in the case study of a failed container port, Baltimore. Here I rely heavily on a methodology of 'process tracing'[7] to establish that the relatively minor institutional changes enacted by the Port Authority were substantially independent of the automobile trade, since they were driven primarily by the desire to secure container traffic.

---

value on spatial and temporal distances. These arguments suggest that an actor-specific approach is required.

[7] Process tracing is a research methodology for identifying and testing causal mechanisms, where causal mechanisms are understood as the processes and mediating variables through which explanatory variables produce causal effects (see Bennett and George, 1997). It has been proposed as an alternative method to establishing causality through a correlation approach, such as the econometric approach that seeks to identify causality through 'controlled' variation. Sayer (1992) draws a similar distinction between extensive and intensive research methodologies. The case study method is particularly well suited to process tracing, since data collected through case study research may illuminate the multiple causal paths through which a single outcome may result. For example, I have used a methodology of process tracing to establish that institutional changes in the Port of Baltimore reflected deliberative processes within the port authority.

Second, the automobile industry is regarded as one of the most global (Sturgeon and Florida, 2000), and as already noted, it has occupied a central place in the theorizing about the current era. This fact provides an opportunity to reflect on one of the key criticisms of recent institutional work in regional development – that it ignores the wider forces influencing localities. I have thus been able to explore the question of whether and how global firms are influenced by the spaces they inhabit.

In summary then, the methodological challenges facing this study have been considerable and complex. In order to correctly assign mediating causality to institutions, I have sought an example of institutional change rather than relying exclusively on a cross-sectional analysis. The institutional changes in seaports resulting from containerization provide such an example of change. I have chosen to compare regions rather than sectors, primarily because the activity of shipping new automobiles is to some degree independent of containerization. This sectoral focus reduces various external sources of variation, and reduces (but does not eliminate) the problem of institutional endogeneity. Finally, my methods of data collection have been primarily qualitative since this is an exploratory and theory-building study.

Outline of chapters

The proposition that I am exploring suggests that some of the variations and change in the geographic distribution of commodity flows and attendant economic activity can be related to variations and change in the institutional ensembles associated with local public agencies. My empirical evidence demonstrates the following: (1) that there are institutional differences between ports, and that these institutions have changed in the last 20 years; (2) that the various automobile importers use different strategies to distribute automobiles and that these result in different patterns of port usage; (3) that different firm strategies are more or less compatible with particular institutions, and hence influence which ports are used by which firms; and (4) that as institutions in the ports have changed, firms have changed their strategies to accommodate these changes. The net result of this process has been a series of changes in the economic geography of automobile distribution that can be systematically related to differences and changes in the institutions enacted by port authorities.

Part I deals with the relationship between ports and regional development. In the second and third chapters I introduce the reader to ports and the automobile shipment business. The second chapter is structured around a critical review of three approaches to understanding the economic development role of ports. The three approaches all stress the centrality of commodity flows in understanding the economic development impact of ports. Ports may be understood in terms of the cargo they handle which in turn has various impacts in the hinterland, as infrastructure systems that provide location advantages, or as nodes in a network that connects to trade systems. I argue that these views all share the weakness of treating ports and other infrastructure systems as exogenous to the process of regional development. They also seek to provide aggregated accounts of the economic development role of ports, hence ignoring the specific characteristics of the firms and Port Authorities involved. These shortcomings have the effect of downplaying the possibility for agency on the part of infrastructure providers, precisely what my approach seeks to address.

In the third chapter, I describe the process of *mutual specialization*, whereby particular firms are concentrating their imports in specific ports, and ports are specializing in handling imports of specific firms. To explain this process and understand its development consequences we need to conduct a firm- and authority-specific analysis in which Ports are understood as a set of institutions – that is, as systems of rules, norms and patterns of behavior - that structure the relationships between actors. I draw on literature on the developmental state and the role of institutions in regional development that highlights the importance of institutionalized relationships – what I call the *relational fix* - in promoting the information exchanges that are so important to economic development outcomes.

In chapter four I take a closer look at specific aspects of the business of shipping automobiles to show the variation, changes and consequences of the way in which the relational fix is constructed. I do this by tracing the intermediary processes and actors – the shipping lines, stevedores and unions, processing firms and landside distributors – that are involved in the trade. The key point here is that there is considerable room for variation in the way in which the relationship between a port authority and automobile manufacturer may be constructed. I show that under certain conditions, specifically when automobile firms are more involved in arranging ocean carriage and vehicle processing, under the decentralized labor relations system in east coast ports and in ports where automobile imports predominate, and when rail is the predominant mode choice, the automobile importer is more likely to have direct relationships with the port authority.

Part II presents the port- and firm-specific case study material. In the fifth and sixth chapters I present case studies of two ports to show what role the Port Authority has in structuring the relationships described in chapter three. I trace how the two ports have enacted and experienced the institutional changes associated with containerization in very different ways. In the case of Long Beach (California), I show how containerization changed various institutions within the port. When faced with a choice between two automobile processing firms, the port opted for the firm whose business model was most compatible with the emerging institutions. In the case of Baltimore (Maryland), I trace how this Port was able to maintain institutional compatibility with a variety of automobile firms, despite the fact that it took several years for the Port to formally decide to specialize in the automobile trade.

In the seventh chapter I look towards the consequences of institutional variation and change, through an examination of the geography of automobile shipment. I argue that multi-national firms face critical choices about whether to emphasize localization or globalization in usage of ports. The manner in which these choices are resolved depends on a variety of factors, especially the historical trajectory of the firm. Thus, there are important and changing variations in the stance of the different firms towards seaports. I then show how these strategic choices have in turn been influenced changes in the ports themselves.

In the final chapter I return to the dynamic role of local public agencies in the process of regional development. Having argued that commodity flows reflect the intersection of port policies and firm strategies, this chapter attempts to generalize from the case studies to theory and public policy. The very real limitations on the ability of port policy to change institutionalized roles must also be recognized. Public policy needs to explicitly account for the possibility of "low road" or pure price competition; for too many local public agencies, public subsidies represent an easy alternative to hard thinking about institutional reform. The dissertation concludes with a consideration of the prospects for institutional design in regional development planning.

PART I

PORTS AND REGIONAL DEVELOPMENT

Chapter 2

Three approaches to the role of ports in regional development: ports as cargo, ports as infrastructure and ports as trade nodes

Introduction

The Charters of most public ports in the United States require these public agencies to act in the interests of the residents of an interior hinterland, typically defined by a political jurisdiction. How are they to do this? Since commercial ports are points of transshipment between ocean and land-based transportation modes, it is through the movement of cargo that ports exert influence on regional economies. In general, it is assumed that the more the cargo throughput, the better. For example, the Maryland Port Authority Title states that the "purpose of this title is to increase the waterborne commerce of the ports in this State and, by doing so, benefit the people of this State" (Maryland 2000). In other words, cargo throughput is often regarded as *the* measure of port success[1].

Hence, when Port Authorities are asked to justify their value to the political jurisdictions that host them, they invariably turn to impact studies that translate cargo throughput into economic benefits. Public agencies, especially Port Authorities, have actively developed a variety of techniques to measure the economic benefits of port activity in order to demonstrate the value of their contribution to local and regional economies and to justify public investments (Luberoff and Walder 2000). Table 2.1 presents a sampling of the impacts claimed by various US public port authorities. All claim that jobs, taxes, and income flow from port activity.

These impact studies, and other approaches I will discuss below, provide some answers to the question *how do ports contribute to the economic development of a region?* I argue in this chapter, that while this is an interesting and important analytical question, it is not a sufficient question to be asking from a planning perspective. If planners are concerned about the translation of knowledge into action (Friedman 1987), then we need to ask both *how do* and *how might* a public port contribute to the economic development of a region? The re-phrasing of the question allows us to explore the possibilities for conscious action on the part of port managers and planners.

The answer to these much-debated and politically loaded questions – both how do and how might – depends on the way in which one thinks about a 'port', and how one understands the process of regional economic development. These are not academic debating points that port managers and other transportation policy makers can join or avoid at their leisure. Hard choices about the investment of public and private resources, and the distribution of costs and benefits, depend upon the answers.

[1] This situation is not really any different for private port and terminal operators. Since ports derive revenues from cargo handling, in a business characterized by high fixed costs and excess capacity, cargo maximization is the equivalent of profit maximization.

Table 2.1:US Public Ports - What Economic Impacts Do They Claim?

New York/New Jersey	In 1994, maritime trade activity directly accounted for approximately 92,000 jobs in the New York / New Jersey Metropolitan area .. indirect and induced employment … accounted for an additional 74,000
Long Beach, California	Trade through the port generates… One in 30 regional jobs in LA Metro One in 11 local jobs in Long Beach
Los Angeles, California	$1.4bn in tax revenue 259,000 jobs in Southern California $8.4bn in income in Southern California
Charleston, S Carolina	"The positive economic impact of the Ports Authority radiates from the coast into every county of the State. Of the State's 50 largest manufacturing employers, all but three ship good through the Port"
Miami, Florida	In fiscal 1999, the Port of Miami's estimated impact on the community was $8.7 billion and 45,000 jobs
Seattle, Washington	"The Port of Seattle plays a crucial role as an economic catalyst to the Puget Sound region, creating high-paying jobs that otherwise would not exist"
Tacoma, Washington	22,000 jobs within Pierce County and over 67,000 jobs state-wide were related to Port activities
Oakland, California	$88.8m in state and local taxes $400m in customs collections $8.7m transferred to the City of Oakland in 1996
Savannah (with Brunswick), Georgia	$23bn in revenue, $1.8bn in income, $585m in state and local taxes and state-wide employment of 80,100
Portland, Oregon	60,000 jobs in Oregon are influenced by the Port $400m in payrolls 750 Oregon businesses use Portland port
Houston, Texas	"…provides nearly 205,000 jobs and generates $7.7 billion to the economy"
Jacksonville, Florida	"Jaxport and related aviation and maritime businesses contribute over $2.2bn to the local economy … over 35,000 jobs to the local economy"
Hampton Roads, VA	"Virginia Ports … trade with more than 100 nations and account for an estimated 116,000 jobs throughout Virginia"
Baltimore, Maryland	"The Port of Baltimore is a significant economic engine for the entire region, generating $1.4 billion in revenue annually and employing nearly 126,700 Marylanders in maritime-related jobs."
Brunswick (with Savannah), Georgia	$23bn in revenue, $1.8bn in income, $585m in state and local taxes and state-wide employment of 80,100
Wilmington, Delaware	4,800 direct, induced and indirect jobs, $185,056 personal income
Hueneme, California	"Port related activity generates over $300m into our economy each year, at no cost to the taxpayer"
San Diego, California	102,00 jobs and $7.2bn annually in economic activity for the San Diego region – or 6.6% of total civilian output
Boston, Mass	"The Port generates jobs for more than 7,000 people employed as terminal operators, stevedores, truckers, brokers and longshoremen"

Source: Port planning documents and web sites. Impact statements for the Ports of Philadelphia and Benicia were not available.

In this chapter I will critically review three approaches to understanding the economic impacts of ports on their hinterlands[2]. My critique of the three approaches is concerned less with the answers they provide, and more with the questions they ask. I argue that each attempts to separate the analysis of the use of infrastructure from the analysis of the provision thereof. One consequence of this separation is that the approaches tend to approach the port-economy in generalized terms, avoiding examining specific firms, projects and relationships. In other words, I will suggest that the views discussed here do not address key planning questions about the ways in which decisions to provide and use infrastructure actually get taken. How do port managers know which transportation infrastructure to provide, and how do firms decide which transportation services to demand? What communication takes place between the providers and users, and does the form and content of this communication matter?

In later chapters I will argue that the answer to these questions depends in part on the nature of the institutionalized relationships between the public authority and private firms. By avoiding questions of this type, the three approaches critiqued here effectively limit *a priori* the possibility for identifying agency on the part of public infrastructure providers. My goal here is not dismiss the alternative approaches, since they each have strengths in their own terms. Port impact studies in particular are widely used to provide information about the performance, importance and hinterland reach of port activity. The

[2] Although the literature on working ports and economic development has been somewhat narrow in focus, others writing about transportation and infrastructure have taken a broader approach. For example, Helling (1997) identifies six ways in which transportation policy and investment may promote economic development. These are by (1) increasing the productivity of private firms, (2) increasing the efficiency of transportation itself, (3) fostering innovation, (4) improving the quality of life, (5) affecting perceptions, and (6) changing land use and spatial patterns.

approaches inform policy-making, investment and other decisions. It is precisely because they are used so widely that they deserve to be taken seriously.

The format for my discussion of each of the approaches is as follows. I will describe the key elements of each approach and review how it has been deployed in port planning studies and the academic literature. I will explore two implicit assumptions embodied in each approach. First, I ask how the approach views a port and hence which aspects of the port business are regarded as most important. Second, I ask what assumptions about the process of economic development are implicit in the approach. In the final part of the chapter I compare the predictions of each approach to empirical evidence on the relationship between cargo handling and employment growth in the hinterlands of a reference group of twenty-one US ports (see Figure 2.1). This group represents almost all the important container and automobile handling ports in the US today[3]. I find mixed support for each of the approaches, without any resolution of the 'how might' question.

The chapter has a secondary goal, and that is to introduce the reader to some recent trends in the port industry, using commonly accepted terms and jargon. More formal definitions of these terms are contained in the glossary of port terms (see Appendix C).

[3] The 21 reference ports include the two case study ports, Long Beach and Baltimore, and New York, Los Angeles, Charleston, Savannah, Miami, Oakland, Tacoma, Seattle, Houston, Jacksonville, Portland, Hampton Roads, Boston, Philadelphia, Wilmington DE, Brunswick, San Diego, Port Hueneme and Benicia. These ports have had mixed fortunes in the period 1980 to 2000, but unlike ports such as San Francisco, they have all remained active cargo-handling (or "working") ports. The 21 ports contain all of the top 10 container ports in the US, and 15 of the top 20. The only port with a major automobile account not included is Vancouver, WA. Representation of major bulk ports is incomplete, with oil, coal and grain ports such as New Orleans, Baton Rouge, Corpus Christi and Valdez excluded.

Ports as cargo and the economics of impact

The impact approach understands a port first and foremost in terms of the cargo that moves across its wharves. As cargo is handled, jobs and incomes are created. Since these jobs and incomes result from trade activities, they may be considered as ‘basic’ (North 1955). The incomes earned in these activities are hence multiplied through the regional economy to generate service-related activities in the region. Ports are thus themselves major economic enterprises with impacts that are felt throughout the regional economy. Before discussing how cargo translates into economic activity in detail, it is worth reviewing the various ways in which cargo can be used to describe a port.

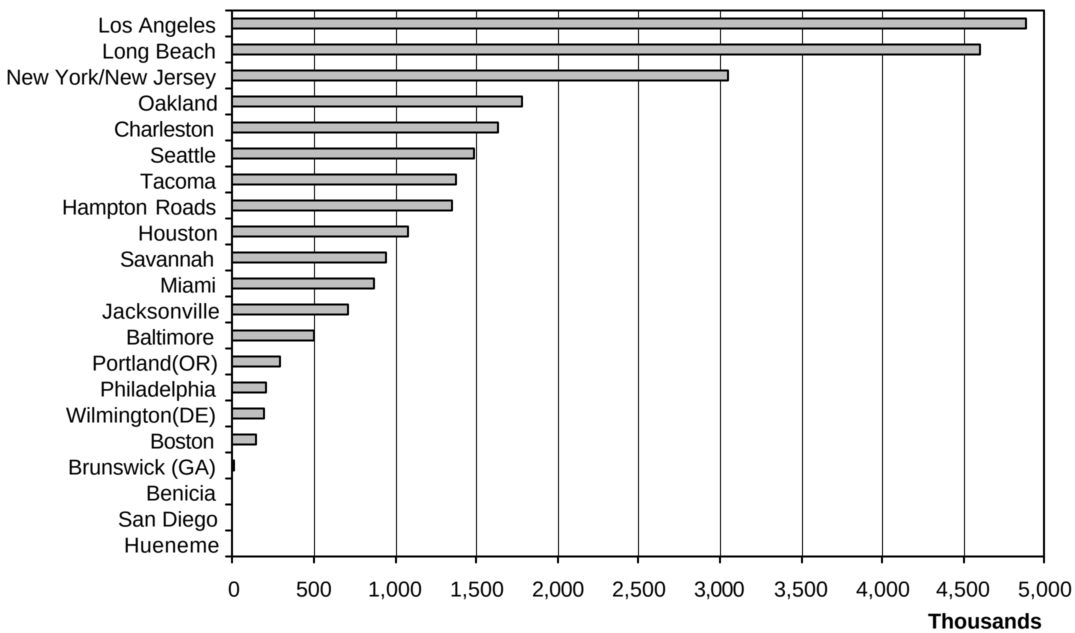
Cargo-based descriptions of Ports

The simplest cargo-based method of describing a port is to measure the tonnage of cargo that crosses the wharves. Campbell (1993) identifies six dimensions of cargo that are particularly relevant to understanding the relationships between ports and regional economic development:

1. Quantity: by weight, value or unit. Cargo weight is the most widely available measure for port activity levels, but value has more salience in understanding the impact of maritime activity in the regional economy[4]. Unit measures have long been used for comparable cargoes such as automobiles. The unit measure has also

gained popularity with containerization, even though all container cargoes are not equal. Containers generally come in two sizes - twenty and forty-feet – and activity is measured by the number handled, hence the Twenty-Foot Equivalent Unit or TEU. The TEU measure is similar to weight in that it measures port activity rather than wider economic impact. Figure 2.2 presents 1999 TEU statistics for the 21 reference ports.

Figure 2.2 Containers (TEUs) handled by Reference Ports, 2000



Source: Association of American Port Authorities.
Includes all containers, imports and exports, foreign and domestic, and loaded and empty. TEU or twenty-foot equivalent unit is a standard measure of containerized cargo.

2. Cargo form: commodity form affects the mode of shipment, investments in plant, equipment and infrastructure, and the number of type of jobs generated in handling activities. Various cargo categories are identified and reported

---

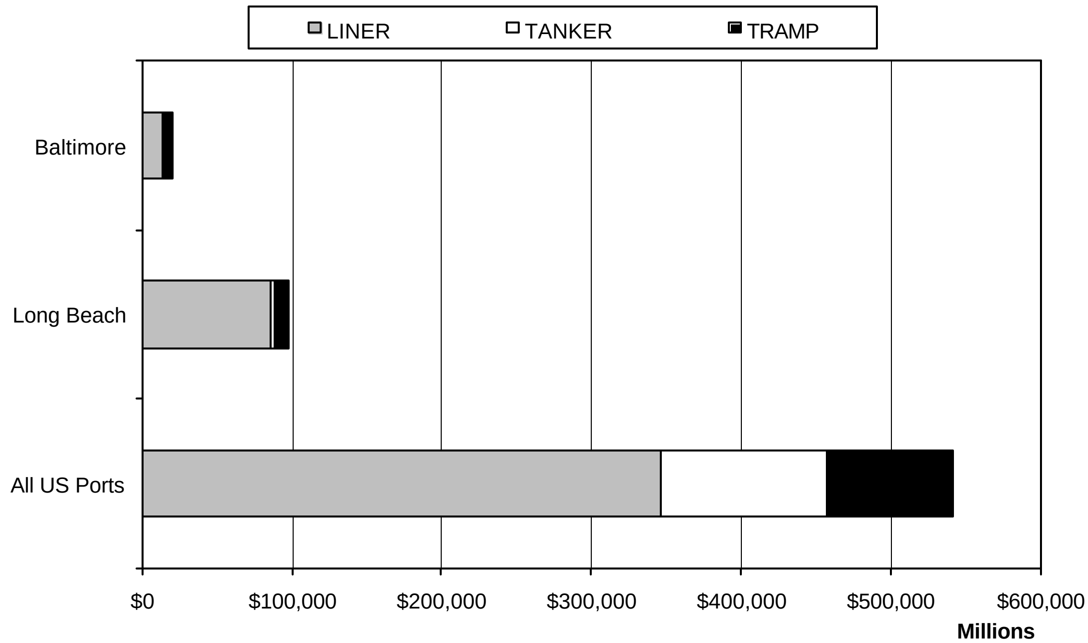
[4] Campbell (1993) notes that the "traditional preference for cargo-weight statistics may reflect an orientation toward concern with port use capacity rather than concern with port-city economic relationships" (225).

statistically. Traditionally, cargo statistics have been differentiated by handling technology, namely as (1) liquid bulk, (2) dry bulk, (3) breakbulk, (4) ro-ro, or (5) containerized cargo (for full descriptions of these terms see footnote [5] below). More recently, cargoes have been classified by mode of ocean carriage rather than form, or by what might be called a 'traffic-based' system. Figure 2.3 compares the case study ports of Baltimore and Long Beach in terms of the Maritime Administration's traffic-based classification scheme. Liner traffic refers to regularly scheduled shipping, which includes most containerized and breakbulk cargo. Tanker traffic incorporates most liquid bulk cargo. Tramp traffic refers to unscheduled shipping, which includes most dry bulk cargo. Ro-ro cargoes are carried in both liner and tramp traffic.

3. End Use: in thinking about the economic effects of cargoes, it is useful to consider the end use of the cargo. Imported cargoes may form inputs to production processes, they may be substitutes for local production, or they may meet unfulfilled demand for goods.

[5] Bulk cargoes are those that are not packaged before being placed in the ship's hold. The liquid bulk category may be broken down into petroleum and other liquids (i.e. chemicals, edible oils, etc). The dry bulk category may be divided into coal, ores and other bulks (i.e. grains, dry fertilizer, etc). Breakbulk cargo is sometimes divided into general (undifferentiated cargo in bags, boxes and palletized) and neo-bulk (differentiated cargoes such as steel, paper, granite) cargo categories. Neo-bulks are identified separately because they are associated with specific handling requirements. The ro-ro category includes automobiles and other wheeled cargoes that can be 'rolled-on and rolled-off' a ship. Finally, some ports report on 'project cargo'. This refers to large items of machinery and equipment, which may be lifted-on/off or rolled-on/off.

Figure 2.3 Traffic-based classification of value of 2000 cargo handled by Baltimore, Long Beach and All US Ports



Source: MARAD Port Statistics.

4. Direction: while the direction of movement of cargo is of less concern for port authorities, it has huge significance for the local and regional economy. Increasing exports are generally always taken as a positive economic indicator, but increasing imports may either reflect substitution of local production, or increased demands for intermediary inputs and final demand.[6]

5. Substitutability: the marginal impact of port activity in the regional economy is related to the next best alternative means of transport. Only employment resulting from processing of an imported intermediary good, for which there is no domestic substitute and for which alternative transport means are prohibitively expensive,

[6] For instance, at the Port of Oakland the number of outbound containers far exceeds the number of inbound ones unlike the large southern California ports of Los Angeles and Long Beach. In part this reflects ship rotations with trans-Pacific ships calling last at Oakland (see Esteban, Malchow, and Kanafani 2000), but also the prevalence of agricultural exports from northern California.

is fully attributable to a port. The inability to differentiate between degrees of substitutability is one of the key weaknesses of the impact approach to studying ports and economic development.

6. Origin and Destination: ports influence economic activity within their hinterlands, and thus cargo origin and destination is of importance. As ports serve ever-larger hinterlands, the local/regional industrial and consumer benefits of increased port activity do not increase proportionately with increased cargo levels.

A cargo-based classification of US Ports

Cargo-based understandings of ports provide a rich means by which to understand the port-economy relationship. A commodity-based classification of the twenty-one reference ports has been generated using a combination of cargo type and quantity measures (see Table 2.2, below). This classification system will be used later in this chapter, and in subsequent chapters, to provide structure for the analysis.

There are three *hub ports* in the United States today; Los Angeles, Long Beach and New York. These ports are among the largest container ports in the world, but they have also maintained a strong presence in other commodity groupings. Thus, these ports handle a diverse set of commodities. We might expect such ports to experience (and cause) land use, surface transportation and other pressures as a result of the sheer scale of cargo movement.

Only a few ports have been able to achieve hub status; for ports with smaller but nevertheless significant numbers of containers, there are two classes. *Container ports* ship large numbers of containers, but do not maintain a strong presence in a range of other commodity groupings. While these ports do not move large amounts of commodities with specific handling requirements, they have only a moderate degree of commodity specialization. This is because of the wide array of products carried in containers. We might expect such ports to be particularly vulnerable to shifts in the container shipping business.

Diversified ports have significant presence in containers as well as a range of other commodity groupings requiring alternative commodity handling technologies such as ro-ro and bulk cargo. We might expect such ports to experience some of the pressures facing hub ports, without the advantages of scale and scope enjoyed by hub ports.

Niche ports form a fourth category. These ports are highly specialized in a small number of commodities, and typically they move small numbers of containers. Due to the way in which the reference group was selected, many of the ports included here move large numbers of automobiles. However niche ports do also specialize in fruit, lumber, grains and other cargoes with particular handling requirements. We would expect such ports to be vulnerable to market shifts in their particular commodities. Another type of niche port that could be identified using the methods employed here is the *bulk port*. These ports are often linked to specific mineral extraction or processing activities. The reference ports selected for this study did not include such ports.

Table 2.2 Commodity-based Classification of US Ports (1999)

Class	Ports	Characteristics (annual throughput)			
		Containers	Automobiles	Dry Bulk	Specialization
Hub	Los Angeles, Long Beach, New York	More than 2m TEU*	Over 200,000 units	Average 6,000t	Low
Container	Oakland, Miami, Charleston, Seattle, Tacoma, Savannah	Average approx. 1,000,000 TEU	Between 0-100,000 units	Average 4,000t	Moderate
Diversified	Baltimore, Hampton Roads, Houston, Portland (OR), Jacksonville	Average approx. 500,000 TEU	Average 200,000 units	Average 15,000t	Moderate
Niche Ports	Hueneme, San Diego, Brunswick (GA), Wilmington (DE), Boston, Philadelphia	Between 0-200,000 TEU	Average 100,000 units	Less than 1,500t	High
	Benicia				

* TEU or "twenty-foot equivalent unit" is a standard unit for measuring container throughput.

Source: Author's cluster analysis of container and automobile data from the American Association of Port Authorities and commodity tonnage data from the US Army Corp of Engineers. Clustering Methodology: agglomerative hierarchical, block (Manhattan distance), Ward's clustering method, using standardized scores. Variables considered: total containers units, automobile units, bulk tons, percent of weight in containers and specialization index). Benicia was not included in formal analysis due to missing data.

The economics of cargo impact

What does the type, amount and range of cargo handled tell us about the regional economic development role of a port? The widely used 'impact approach' answers this question by measuring the jobs and other economic impacts that are generated by the handling and usage of cargo. Various schemes are used to organize such analyses.

Campbell (1993) introduces a useful distinction between three forms of port employment resulting from cargo throughput; direct port employment, port-related employment and port-dependent employment. Direct port employment includes jobs involved in handling and moving cargo at the port site. Port-related employment encompasses businesses that sell services to ports and shippers. These two categories of employment are relatively easily measured and are covered by the employment categories shown in Table 2.3 below.

Table 2.3 Direct and Port-related Employment resulting from Cargo Throughput

Vessel-related Activities		Cargo-related activities	
Marine Services	Pilotage Tugs Dredging services Port construction Berthing services Lighthouses	Cargo Services	Cargo infrastructure Bulk appliances Breakbulk cargo handling Container terminal Container cartage Pipeline services
Offshore Services	Towage Launch/helicopter services Offshore bunkering	Stevedoring	Shipboard cargo handling Specialized equipment Securing and lashing
Bunkering Services	Pipeline and barge Bunker brokers	Ships Agency	Freight canvassing Freight services
Ships Agency	Port husbandry Crew support Security	Clearing and Forwarding Agents	Documentation Customs clearances Financial services
Ships Chandler	Deck and engine spares Victualling	Local, State and Federal Departments and Agencies	INS Customs Port Authority
Ship repairers	Dry-dock repairs Afloat repairs Painting and cleaning Diving services Marine surveyors Classification societies	Terminal Operators	Bulk Neo-bulk Combi-terminals Liquid-bulk handling Petroleum products Containers
Ship owners and operators	Owners and representatives Charter brokers Shipbrokers	Landside distribution	Railways Road haulage Warehousing
Legal and Insurance	P&I Owners Maritime lawyers	Container services	Construction / repair Container stuffing

Source: Adapted from Jones (1997).

The third type of employment, port-dependent employment, is harder to measure. In theoretical terms, this is the amount of employment in firms using port import and/or export services that would be lost to the region if the port were to close. Measuring this last category is of increasing importance to public port authorities, since direct employment in cargo handling has declined following containerization.

Campbell's analysis of the Oakland and San Francisco ports confirms a story that is by now well known in most formerly break-bulk ports. The Port of San Francisco has largely been converted to tourism land uses, while the Port of Oakland is now a relatively successful container port. However, while break-bulk ports used to confer considerable direct employment benefits on their immediate locality, with containerization and other transportation changes, the direct local employment benefits of ports have declined substantially. Campbell also shows that port-related employment remained concentrated in the San Francisco downtown where propinquity to the finance, legal and business service industries outweighed the benefits of re-locating to Oakland. At the same time the trading hinterlands of ports, the potential locations of port-dependent employment, have increased substantially. Hence, Campbell's (1993) conclusions that while the benefits of ports have become more dispersed, the costs (of employment opportunity loss and potential land uses forgone) have become increasingly locally concentrated.

The spatial extent of the impact is not the only variable. Different cargoes have different propensities to generate economic activity. For example, preparing boxed fruit for shipment on wooden pallets requires large labor inputs. Thus a ton of such traditional breakbulk cargo results in greater direct employment benefits than, say, a ton of crude oil or some other bulk commodity. Since ports often have very different cargo profiles, how are we to compare them?

One simple way of adjusting commodity data has been proposed by Charlier (1996)[7]. This is involves deflating tons of containerized, ro-ro and bulk cargo to generate break-bulk equivalent tons. In other words, Charlier's adjustment method takes account of the fact that conventional breakbulk requires more labor and cargo-handling inputs than containerized, ro-ro, dry-bulk and liquid-bulk cargoes. Of course, finding a deflation factor is tricky, since labor input ratios for a given commodity do differ from port to port for a variety of reasons. However, port impact studies prepared by consultants do often identify jobs per ton for the major commodity types.

The Martin and Associates (1995) report for the Port of Oakland provides an example of the standard methodology used by the port impact consulting industry to quantify the impact of port activities[8]. The method involves a survey of employers associated with the

---

[7] I have used this shorthand method to adjust cargo statistics into 'adjusted tons' when calculating specialization indices and shift-share statistics (see Appendices A and B).

[8] It is worth noting that the Maritime Administration (MARAD) of the Department of Transportation makes an interactive microcomputer model available for estimating port economic impacts. The Port Economic Impact Kit (Portkit) uses a 30-sector input/output model to generate measures of sales tax revenue, employment, personal income, and state and local tax impacts. Region-specific data required to use Portkit includes personal income, earnings and employment by SIC, local and state taxes, the percentage of state residents working for companies located within the study area, port user employment, port industry revenue, port capital spending and cargo volumes. The problem of defining the port impact hinterlands is neatly demonstrated by what happened when PortKit was distributed to over 60 public port authorities. Port authorities were asked to specify a local impact hinterland – essentially a collection of counties. Apparently many port authorities wanted to specify multiple hinterlands. The consultant who developed PortKit noted that some port managers had argued that the narrow concentration on direct, on-site employment distorted the relative impact of non-containerized cargoes as compared to containers in the wider regional economy

port, and estimations using an economic base / multiplier model (typically estimated through an input-output matrix). Multiplier effects may be reported in terms of income or employment.

As maritime activity results in business revenue, firms are able to directly employ, retain earnings, pay taxes and purchase goods and services. These directly involved firms include surface transportation firms (i.e. rail and trucking), maritime service firms (i.e. shipping lines, their local agents, clearing and forwarding agents), the port authority itself, and banking, insurance, legal and other service sector firms (see Table 2.3 above). By purchasing goods and services, the firms directly involved in cargo movement create indirect jobs. By directly employing, they create personal income, which results in re-spending multipliers, and hence induced jobs and the payment of taxes by individuals. This approach provides a useful way of measuring the short-term impacts of changes in port activity levels; however such models generally assume static input-output relationships, fixed technology and industrial organization.

The Martin and Associates (1995) report also includes an unsatisfactory attempt to estimate port dependent jobs. These are the jobs that result from the production of cargoes that are exported, or the utilization of imported cargoes as intermediary inputs. This is estimated by multiplying the estimated value of cargo exported and imported, by an estimate of the jobs per dollar of goods produced for export or deployed as an intermediary input. Even though these jobs are estimated only for the immediate

---

(Pers Comm, Anne Strauss-Wieder). The point being argued by these port managers was that the shipment of containers generates more jobs in aggregate, even if these jobs are more spatially dispersed (see also, hinterland (what is sometimes described as the captive hinterland) of the port, the measure is highly imprecise. The consultants concede that “these firms are only users of the Port and not dependent upon the Port, since they typically use multiple ports for maritime transportation” (Martin and Associates 1995; III-13). In other words, if the port was not there, many of these jobs might still be created using other ports or indeed other transportation modes.

A more sophisticated impact model was developed by Heikkila, Gordon and Richardson (1992) to estimate the impacts of the Port of Los Angeles / Port of Long Beach 2020 Plan. Their input-output model estimated the income impacts on 494 economic sectors resulting from exogenous changes in cargo handling. Changes in income are traced through an occupation-industry matrix that allows estimation of employment impacts across 93 occupational groupings with potential expansion to a full social accounting matrix framework. These impacts are then spatially allocated to 65 geographic zones in the greater Los Angeles region using a methodology that takes account of intra-metropolitan travel patterns. However, due to data limitations, the spatial allocations could only be applied to 12 economic sectors plus an aggregate household sector.

The model produces estimates of direct and induced income and employment impacts, in much the same way as that produced by the less disaggregated Martin and Associates methodology. Similar criticisms apply; the model has no mechanism for endogenizing increases in cargo volumes, or for geographic shifts in economic activity. As the authors

Gripaios and Gripaios 1995).

note, “this limitation is particularly telling for long run forecasts where it is reasonable to expect the spatial-economic structure of the region to evolve” (Heikkila et al 1992: 20).

In summary then, there is considerable controversy over the merits of port impact studies, especially as regards the question of estimating port-dependent jobs. The key problem here is the question of estimating the substitution effect – how many jobs would disappear if the port did not exist (for more on this issue, see Erie 1996). Impact studies have also been criticized on other methodological grounds, especially since input-output models typically assume fixed technology and industrial structure (see Waters 1977; and response from Chang 1978). This makes such estimation techniques unreliable in the long run, particularly in areas of port activity that are subject to rapid fluctuations. However, to some extent these methodological problems can be legitimately addressed by additional data, by scenario exercises, by incorporating spatial modeling components, and by reporting conscientiously on the inherent limitations.

One potential solution has been proposed by Oster, Rubin and Strong (1997), who argue for an econometric approach to estimating employment multipliers. They estimate total employment multipliers from transport employment that are higher than those derived from the RIMS II input-output tables[9]. They argue that this is because the econometric approach overcomes the problem of structural economic change. However, their simple linear regression makes no adjustment for endogeneity bias. In other words, they make no

[9] RIMS II is a widely used input-output model developed by the US Department of Commerce’s Bureau of Economic Affairs, and made available since 1992.

adjustment for the fact that total employment growth could also be causing growth in transport employment, and hence their optimistic results may be somewhat inflated.

A category of port policy question where impact studies have proved particularly useful is in assessing the short-term costs and benefits of cargo incentive schemes. Cargo incentive schemes have become a popular way of increasing cargo throughput in many ports. In exchange for some guaranteed increase in ship calls and/or cargo throughput, Port Authorities have offered carriers reduced terminal and other handling charges. In these cases, port impact studies provide a useful way of comparing the increased employment, income and tax benefits of more cargo against the cost of decreased port revenues. However, the method works for this type of policy question precisely because the change in cargo volume is the known in advance.

This points us towards the fundamental shortcoming of the economics of impact approach in the planning context. Port impact studies can provide us with some indication as to the likely impact of changes in cargo volumes on employment, income and taxes. What they cannot tell us why or how changes in cargo volumes occur in the first place. In other words, changes in cargo volumes are regarded as exogenous. Thus, the underlying theoretical claim that port impact studies are implicitly making about the linkage between port activity and economic development is highly circumscribed. It is that regional development is the product only of importing and exporting behavior. As Tiebout (1956) showed in his now famous debate with North (1955), this view of economic development is highly limited.

In other words, more fundamental questions about what attracts cargo to particular ports, and what role ports play in the production/distribution system associated with that cargo, are avoided in this approach. Impact studies can tell a port manager how many jobs will be created through a given level and type of cargo throughput, but cannot tell the port manager how they might achieve that level and type of cargo throughput.

Ports as infrastructure and the economics of locational advantage

The second approach to the role of ports in regional economic development focuses our attention on the advantages of the infrastructure services that ports provide to firms. The view of economic development implicit in this approach is one of independent agents (firms) seeking to maximize their own net benefit (profit). Ports within this approach are understood in terms of the services they provide. Physical infrastructure, and particularly its efficient utilization, is a central concern of this approach.

Infrastructure-based descriptions of ports

A port may be understood in terms of its function which is to ensure the transfer of goods from inland transport to maritime transport modes, and vice versa. Several steps or processes are involved in this function[10], each requiring a series of infrastructure

[10] Van de Voorde (1995) builds on work by Jansson and Shneerson to identify the following processes involved in fulfilling this function: the approach of the ship to mooring, the unloading of the cargo, transportation of cargo from quay to transit storage, transit storage, transportation of cargo from transit

attributes to be fulfilled efficiently. Hence, it is possible to think of a port as a cluster of infrastructure attributes from which a series of regional economic development benefits flow.

Probably the most widely recognized infrastructural attribute of a port is the size of ship that can visit – in terms of draft (depth of channel), breadth (width of channel) or displacement (gross registered or deadweight tonnage). This factor has gained salience with increasing container and bulk ship sizes, and with increasingly controversy over proposals for dredging (see Corbert 1996, and Kagan 1990). Note however this factor is of less importance in the case of the automobile industry, since even the newest and largest ro-ro vessels require less than 40 feet of water. Table 2.4 indicates the current depth of the reference ports. There is also no obvious correlation between the commodity-based classification of the port and channel depth; at least, depth alone does not make a hub port. For instance, the deeper Port of Baltimore lags behind its northern neighbor, New York, with respect to containerized cargo.

---

storage to loading platforms, loading of cargo to inland transport modes, departure of inland transport vehicle from the port, and customs clearance and other service activities.

Table 2.4 Channel and Berth Depths, 2001

Class	Port	Channel Depth	Berth Depth
Hub	Long Beach	76	35-50
	Los Angeles	45	45
	New York	40	35-40
Container	Oakland	42	35-42
	Miami	42	42
	Charleston	42	40
	Seattle	175	40-50
	Tacoma	40-50	40-50
	Savannah	42	42
Diversified	Baltimore	50	36-42
	Hampton Roads	50	32-45
	Houston	40	38-40
	Portland, OR	40	40
	Jacksonville	38	38
Niche	Hueneme	35	35
	Brunswick, GA	32	30
	Wilmington, DE	40	38
	Boston[1]	40	45
	Philadelphia	40	40
	San Diego	42	35-42

Source: US DOT 1998; Luberoff and Walder 2000; port promotional materials and web sites; author research.
Note: 1. A portion of the Conley container terminal at the Port of Boston was recently dredged to 45 feet.

Ports are also commonly understood through the terminal facilities they contain. A terminal is a set of berthing stations, with a particular cargo loading and handling capacity. A single port may have a number of specialized terminals for handling particular types of cargo, and such terminals can also be operated independently of port management. Table 2.5 compares the case study ports in these terms.

Table 2.5 Terminals of the Ports of Long Beach and Baltimore

Terminal type	**Long Beach** (operator)	**Baltimore** (MPA*/Private, operator)
Container	Pier A (Hanjin Shipping Company) Pier C (Pacific Container Terminals) Pier E (California United Terminals) Pier F (Long Beach Container Terminals) Pier G (Sea-Land Services) Pier J (International Transportation Service, Pacific Container Terminals)	Dundalk Marine Terminal (MPA, various) South Locust Point (MPA, P&O Ports) Seagirt Container Terminal (MPA, MIT**)
Automobile	Pier B (Toyota)	Dundalk Marine Terminal (MPA, various) Fairfield Auto Terminal (MPA, Toyota) Masonville Marine Terminal (MPA, ATC Logistics) Atlantic Terminal (Private, Amports)
Breakbulk	Pier D (California United Terminals, Forest Terminals) Pier F (Cooper/T Smith Stevedoring and Crescent Terminals) Pier T (Pacific Coast Recycling, Fremont Forest Products, Weyerhouser)	South Locust Point (MPA, P&O Ports) North Locust Point (MPA, various) Chesapeake Terminal (Private, Amports) Canton Marine Terminal (Private, CMT Inc) Sparrows Point (Private, Chesapeake Bulk Stevedores)
Dry Bulk	Pier B (National Gypsum) Pier D (Pacific Coast Cement, G-P Gypsum) Pier F (MCC-Lucky Cement, Morton Salt, Koch Carbon) Pier G (Metropolitan Stevedore)	Curtis Bay (Private, CSX Coal/Curtis Bay Company) Rukert Marine Terminal (Private, Rukert)
Liquid Bulk	Pier B (Arco, Petro-Daimond, Texaco) Pier D (Baker Commodities) Pier F (Chemoil Marine Terminal) Pier J (Westway Terminal) Pier S (Dow Chemical Pier T (Arco Pipeline)	

* MPA = Maryland Port Administration. ** MIT = Maryland International Terminals, the operating subsidiary of the MPA

Source: Port of Long Beach 1998; Maryland Port Administration 1998; author research.

It is commonly held that containerization has dramatically changed the infrastructure requirements of ports. With containerization and the associated re-organization of the shipping industry, have come larger ships that require deeper channels, longer berths, bigger cranes, more and re-configured terminal space, and improved surface transportation connections (Chilcote 1986).

One set of infrastructural attributes that has received considerable attention in the 1990s are the landside connections between ports and inland transportation systems. A series of federal research reports have highlighted how crowded highways, low bridges and tunnels, and at-grade crossings impede access to ocean terminals[11]. Many port authorities are investing considerable effort in resolving surface transport congestion issues. The actions of two hub ports, the Ports of New York and Los Angeles / Long Beach, with respect to surface transportation are instructive.

Most of the cargo that moves through the Port of New York and New Jersey has a US inland destination or origin within 280 miles of the Statue of Liberty. This 10-State market hinterland accounts for one-fifth of the US population. This relatively small, but dense hinterland implies considerable congestion on the region's road and rail network. To deal with this, the port has proposed a Port Inland Distribution Network (PIDN) in an attempt to relieve congestion in and around the seaport (PNYNJ 2000). The PIDN would use a combination of dedicated rail, barge or truck services to move containers between the ocean terminals and inland container depots. This will reduce the time that containers occupy valuable waterfront space, and shift short-haul trucking pressures from the immediate vicinity of the port to various remote locations. If successful, it could lead to a decentralization of various port services, creating real estate opportunities in locations as far inland as Buffalo, and north and south along the coast at disused port facilities in Connecticut and New Jersey.

In contrast, the hinterland of the San Pedro ports extends across the continent. Over the 1980s and 1990s, the Ports of Los Angeles and Long Beach were able to ride two powerful growth trends, namely the rise in trans-Pacific trade, and the expansion of cross-continental intermodal traffic. This implied that by 1996 half of all foreign containers handled by the San Pedro ports had a US origin or destination outside California or Nevada (PLA/PLB 1998). Although the number of containers circulating in the greater Los Angeles region is enormous, the port authorities emphasize the throughput efficiency of the ports. These pressures contributed to the decision to build the nation's largest urban infrastructure project, the Alameda Corridor, which is designed to expedite the movement of containers from the waterfront to inter-continental rail yards 20 miles inland.

The actions of these port authorities with respect to surface transportation is instructive, because it provides an illustration of one of the key problems with the empirical study of infrastructure and economic development. Which came first, the infrastructure or the economic development? We will return to this chicken-and-egg question later.

[11] See US DOT (1999) and also US DOT (1992).

The economics of locational advantage

What does the nature of the infrastructure in a port tell us about its economic development role? If ports are seen primarily as clusters of facilities that confer services on users, then the efficiency of port operations takes on particular importance in policy. Van de Voorde's (1995) definition of a port in terms of its functions reflects this concern with the efficiency of port activities – "a chain is only as strong as its weakest link, which is certainly true for the production of port services" (220). In other words, the *ports as infrastructure* approach emphasizes investment and productivity (see also Vandeveer 1998; Cullinane, Song and Gray 2001). What does this investment and productivity do for a regional economy?

In principle, efficient ports may make hinterlands more attractive to firms, and allow for more efficient production by firms already located there. The economics of locational advantage approach would be supported by evidence that the hinterland economies of efficient ports grow faster than average, and that they become specialized in line with the comparative advantages of the ports that serve them.

In industrial location theories in the regional science tradition, ports are clearly an important consideration in industrial location decisions. Historically, transport costs were a major determinant of industrial location, and thus featured prominently in the earliest writings in regional development (for example in the work of Weber (1909) and Isard (1956)). Firms whose transport costs are a large percentage of total costs, such as producers and importers of unprocessed or semi-processed raw materials and goods with a low weight to value ratio, are still sensitive to freight transport costs. Furthermore, certainty in supply logistics is often just as important as transportation cost, for example for flexible forms of production.

Ports may thus be viewed as infrastructural attributes that confer locational advantages for certain industries. Various attempts have been made to model the impact of infrastructure spending on regional growth (for a review of econometric models applied in the US context see Berechman 1995). Aschauer's (1989) use of a Cobb-Douglas production function to explain the relationship between economic growth and infrastructure investment has stimulated a lively debate (see Holtz-Eakin 1994; Gramlich 1994; Boarnet 1997). Much of this debate has been about the appropriateness of various econometric specifications and the network impacts of infrastructure provision.

In his seminal work, Aschauer (1989) used a production function to estimate the relationship between infrastructure spending and regional economic development. Aschauer looked at relationship between aggregate productivity, and stock and flow government infrastructure-spending variables. Using annual data for entire US, 1949 to 1985, he found that non-military public capital stock is dramatically more important than flow of non-military or military spending in determining productivity growth. He also argued that core infrastructure (streets, highways, airports, mass transit, sewers, water systems etc) adds to productivity while military capital does not.

Aschauer's findings were subject to considerable critique. Holtz-Eakin (1994) argues that Aschauer's analysis proceeds from essentially one observation. Holtz-Eakin does a similar analysis using data at state level for 48 states and 8 regions, 1969 to 1986. He suggests, and corrects for, various sources of error in the original econometric specification, and finds that public capital has no role in affecting private sector productivity.

Kessides (1993) develops a powerful critique in a slightly different direction. She argues that highly aggregated infrastructure studies do not provide specific guidelines for policy, nor do they say very much about the specific mechanisms whereby infrastructure affects growth. She thus recommends an emphasis on the micro-economic effects of infrastructure. Relative costs, efficiency and certainty in service emerge as key analytical variables. It is probable that the infrastructure attributes of a particular port have become considerably less important to overall regional development outcomes in recent years. This is because transport costs have fallen relative to other factors of production over the last century, particularly in the shipping industry following containerization, and in many countries, transportation-sensitive industries have become less important in the economy (USA 1997).

In the US, the greatest cost reductions have been achieved in overland transport costs – this has had profound implications for the relative competitiveness of ports on the east and west coasts of North America (Boschken 1998). For example, the Port of Oakland's poor access to the 'land bridge' (to the interior of the country) compared with its rival

Ports at Los Angeles, Seattle and Vancouver has apparently undermined its relative competitiveness. However, the key point is that while the competitiveness of the Port of Oakland has been undermined relative to other ports, the relative competitiveness of the firms within the port's hinterland is unlikely to have declined to the same degree given the availability of alternatives.

We can take the spirit of Kessides' critique further. The differences between New York and Los Angeles / Long Beach with respect to surface transportation planning and investment are related to differences in the shape and extent of the hinterlands served by each. These different hinterlands correspond to very different sets of port users, or clients, each deriving particular benefits from the infrastructure services provided by the port.

This observation suggests that the causal link between ports and economic development is much more complex than that implied by the economics of infrastructure approach. Modeling infrastructure spending to understand productivity growth, although useful for certain types of questions, constitutes an under-socialized view of economic action (Granovetter 1985). This critique implies that we shouldn't only be looking at how the infrastructure of a port influences a regional economy. We should also examine the actual decision-making process leading to particular infrastructure investments more closely to understand their economic effects.

Ports as nodes in networks and the economics of trade

The worldwide value of foreign trade has increased dramatically since 1970[12]. What is the relevance of this ‘globalization’ for ports and the development of port-regions? It would be very hard to summarize all the issues here. However, there is now sufficient consensus around the proposition that it is not so much the fact of globalization that has implications for regional development, but rather that the way in which nations and regions are inserted into global networks that is decisive. There is thus a dialectical relationship between the local and the global (Lipietz 1993), a tension that is central to any understanding of regional performance in an increasingly connected world. This line of reasoning implies that the way in which ports connect regions to networks of trade is central to understanding economic development outcomes.

Network-based descriptions of ports

Shipping networks are important in regional development outcomes because they influence which markets are accessible, at what rates/costs and time scales, how regularly, and with what levels of reliability. These factors are crucial in the investment decisions and market penetration prospects of both importers and exporters. In short thus, ports are one of the nodal points in trade networks through which the region can connect to the global economy. What has been happening in these networks of trade? Any discussion of changing port fortunes and the implications of these changes for local and regional economies since 1980 needs to start with a consideration of the impacts of containerization. Three interrelated issues bear further elaboration.

First, changes in shipping technology, specifically containerization and intermodalism (referring to the fact that containers can be moved on ships, road and rail) have dramatically reduced the cost of shipping many goods. For example, in the US, national expenditures on water transportation grew less than half as fast as the GDP between 1960 and 1995 (US 1997). Costs savings associated with containerization include: cutting the need for port labor to handle diverse cargo moving between transport modes, allowing larger vessels and thus economies of scale, reducing ship waiting times, and reduced theft and damage (Campbell 1993). Containers carry high-value to weight ratio goods efficiently and safely.

Second however, containers also require particular land-based and other port facilities to serve the ever larger ships carrying containers – large amounts of land for stacking containers, specialized container-handling equipment, cranes, information systems, and deeper and wider shipping channels (see Hilling 1987). This has given rise to new forms of risk and uncertainty in port investments. Maritime trade is highly variable – the general increase in trade value and volume since 1970 includes some dramatic boom-bust cycles in maritime shipping rates and volumes. Investments in ships and port facilities are lumpy and subject to long lead times. Other sources of variation include seasonal

[12] The share of trade passing through seaports has lagged somewhat, particularly in terms of value handled because of the growth of airfreight and electronic transfers of high-value products. Note also that some remain skeptical about how dramatic these changes actually are, see Wade (1996).

variations in many primary commodities, global and national business cycles and short term political and other shocks (Stopford 1988).

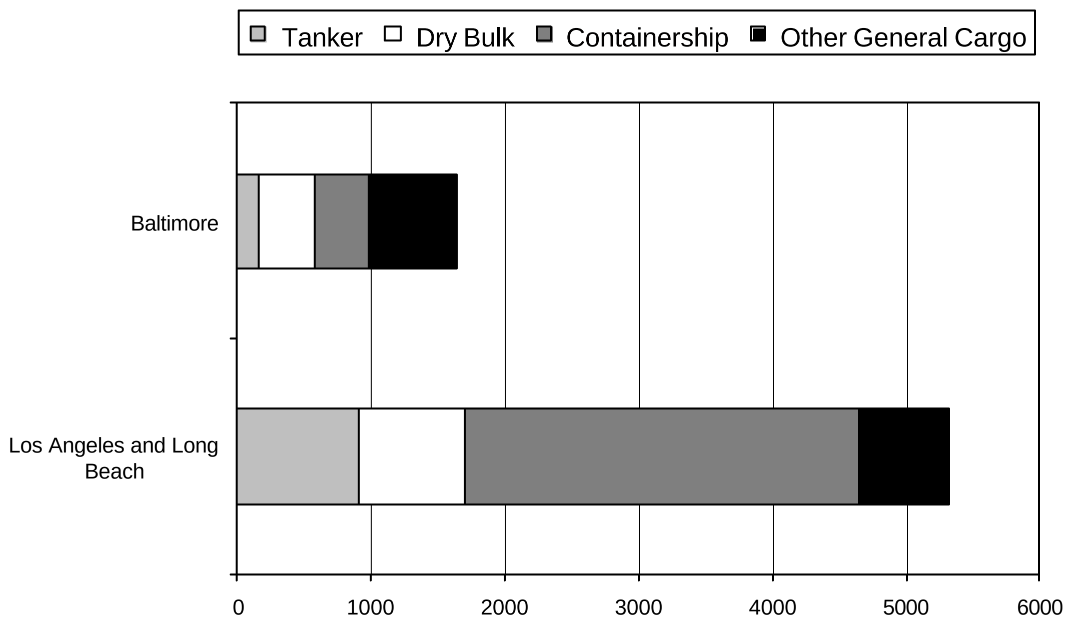
Third, the shipping industry has reorganized itself to respond to the changed environment – and in so doing has intensified competition between ports. This process has been facilitated by surface transport deregulation, and various changes to shipping law that allow service contracts and all-inclusive pricing (Shashikumar and Schatz 2000). Carriers increasingly have a choice about which markets to serve directly from a local seaport, and which to serve from a remote seaport and by overland transport.

The net result of these processes has been the emergence of a hierarchy of ports described by the concepts of "hubs and spokes" and transshipment. Shipping lines used to follow fixed routes, providing regular services to all the ports within a given trade circuit. This pattern has been largely replaced by a new, circular hierarchical system of shipping routes. In a complete hub and spoke system, the largest and most cost-effective routes will be between hubs; at hub ports, containers are transshipped onto other, smaller, ships which operate on lower tier 'spoke' or feeder routes to deliver the container to the final user.

These changes have been understood for many years. Writing in 1981, Hayut argued that containerization would result in a series of systemic changes in a range of ports. His five-stage model begins with (1) an initial equilibrium state that is (2) disrupted by innovation that then (3) diffuses and is consolidated in a limited number of ports, which thus become

(4) sites of concentration. However, (5) congestion (diseconomies) in the mature system and competition from the periphery, bring the new system into equilibrium. This new equilibrium is one in which there are fewer, larger ports, what Hayut calls ‘load centers’. Although Hayut’s model allows ample room for local variation, ultimately the number and size of the load centers, for him, is determined by the economies of scale in ship size, handling technology and hinterland connectivity. According to this theory, local conditions make a difference in influencing the location of the innovation in the first place and the speed with which it is adopted at a specific port.

Figure 2.4 Port Calls by Vessel Type, 2000



Source: MARAD Statistics (Lloyd's Maritime Information Services, Vessel Movements, computer file (London 2000)). Excludes calls by vessels under 1,000 gross tons.

Figure 2.4 presents information on one aspect of this hierarchical system - the number and type of calls at a port – for the ‘hub’ Ports of Los Angeles and Long Beach and the ‘feeder’ Port of Baltimore. The hub-and-spoke system is most clearly defined for container traffic; a diversified port such as Baltimore does not necessarily lag behind the hub ports in general cargo or bulk ship calls.

These forces have lead to increasing differentiation among seaports. A few ports have been able to attract the lions’ share of containerized cargo and intermodal movements, while others have virtually ceased operating as cargo ports. The number of foreign loaded containers handled by US seaports grew by about 6% per year over the 1990s. Over the decade, the top three US seaports captured just over half of all this growth, and they now account for 46% of foreign loaded containers (see Table 2.6). Not only are containers concentrated in just a few seaports, containers also carry the most valuable cargoes. Maritime Administration statistics show that while only 12% of foreign ocean-born cargo by weight moves in containers, 66% by value moves in containers. Virtually all manufactured and consumer products, with the exception of large items such as automobiles, now move in containers.

Notwithstanding the concentration of loaded foreign containers in hub ports during the 1990s, it is important to note concentration actually decreased in the 1980s. This is because of the sharply changing fortunes of the winners (such as Tacoma and Los Angeles) and the losers (such as Baltimore and Philadelphia) during that decade. This is measured in the lower panel of Table 2.6, which presents concentration measures using data on all containers handled (the foreign loaded series was not available back to 1980).

Table 2.6 Concentration of containers in US Ports

Foreign loaded containers handled		
	1990	1999
Share of top 3 ports	41.3%	45.8%
Share of top 10 ports	79.2%	81.4%
Share of top 20 ports	94.1%	95.9%
Total foreign loaded containers handled by US Ports	9,402,387	16,617,833
Source: PIERS		

All (foreign, domestic, loaded, empty) containers handled			
	1980	1990	1998
Share of top 3 of top 25 ports	45.1%	39.7%	43.4%
Share of top 5 of top 25 ports	63.1%	56.0%	56.9%
Share of top 10 of top 25 ports	85.9%	80.7%	80.9%
Source: Containerization International Yearbook			

The economics of trade

What are the implications of these changing trade networks for port-regional economies? The notion that trade is central to the understanding why regions develop differently and unequally is well established. In the interpretation of dependency theory to the regional scale by Myrdal (1957), Hirschmann (1958), Friedmann (1972), and Kaldor (1985), the region emerges as the result of disequilibriating flows – including trade - in the wider economy. If trade is centrally implicated in uneven growth, then it might be argued that some ports generate, or at least sustain, higher rates of growth in their immediate hinterlands than lesser ports do in theirs.

This line of reasoning is compatible with the 'new economic geography' approach of Krugman (1995), who has built a formal economic model with a disequilibrium spatial outcome[13]. Fujita and Mori (1996) have used this modeling technique to show how agglomeration economies and transport-node hub effects interplay to make major cities. Their model suggests that port cities will continue to prosper even after their initial advantages have lost their relevance.

These predictions are based on abstractions that do not consider the actual responses of policy-makers and other actors to changes in international shipping organization. What are the consequences of the fact that, increasingly, ports no longer serve clearly defined market hinterlands that define the possibilities and constraints on port expansion (Van Klink and van den Berg 1998)? Ports are now able to compete with each other in ways that were not possible in the past – even if that competition is indirect. Corbett (1996) shows how the unfolding port hierarchy has given rise to intense competition between ports seeking to secure hub status. For example, the port authorities of the US eastern seaboard were recently involved in a bidding war over which will be the hub port for the Trans-Atlantic traffic of shipping giant Maersk-SeaLand (NYT, 1999). Although these shipping lines operate their own terminals with long term leases, port authorities bid through the provision of a range of infrastructure services and subsidies. Given the costs associated with this infrastructure, it is not at all apparent that a privileged place in the hierarchy of container ports guarantees regional economic development benefits.

Campbell (1993) has stated these arguments in the elegant hypothesis that seaports are increasingly imposing their costs on host cities, while their benefits are dispersed more

[13] Krugman (1995) presents a model of agglomeration, in which he assumes that there are latent economies of scale, which once harnessed result in pecuniary (higher wages and investment rates) externalities.

widely. Using a trade-account modified shift-share analysis, Noponen, Markusen and Driessen (1997) find support for this hypothesis. They argue that United States port cities showed less growth in manufacturing employment than non-port cities in the period 1978-1986 and attribute this result to ports facilitating the growth of imports that undermine local production. However, since different metropolitan economies have very different abilities to increase exports and substitute for imports, increased port activity will have differential impacts. Thus questions remain about how ports form part of the dynamic and complex connection between regions and the global economy.

Gulick (1998) begins to address this question through his concept of a 'regional development alliance' of actors who impact investment decisions within a seaport and that condition the competitiveness of a container port. One benefit of this approach is that it focuses attention on the ability of local labor, community and environmental groups to shape the relationships that underpin port investment decision-making. However, this approach still seeks only to explain relative port performance, not relative regional performance. As with the other approaches reviewed here, the *ports as trade nodes* approach leaves unanswered for economic development planners, the question of how best to translate knowledge into action.

On why being on or off the 'network' is not a sufficient condition

The discussion of the *ports as trade nodes* perspective on the relationship between ports and economic development provides an opportunity to reflect on the recent writings of

Manuel Castells. This is an especially worthwhile endeavor in light of the prominence given to the notion of the 'network society' in a recent volume on infrastructure and urban development. In their aptly titled book, *Splintering Urbanism*, Graham and Marvin (2001) uncritically adopt much of Castells' perspective in arguing that an 'integrated ideal' in infrastructure has given way to a splintering of urban society. They argue that whereas most physical infrastructure development during the first two-thirds of the 20th Century sought to be inclusive and integrating, we increasingly see infrastructure networks that deliberately and selectively include some places, and exclude others.

While much of what Graham and Marvin argue is convincing and timely, they have repeated a fundamental error found in Castells' analysis. That error is to reify the construct 'network' to such a degree that social and economic outcomes for places are simply read off from the fact (or not) of connection to the network. This perspective draws on and extends the excellent critiques of Castells by Riles (2000), van Dijk (nd) and Friedmann (2000). The implications of this critique of Castells' work, and by extension of portions of Graham and Marvin's work, speak directly to the way we think about ports and economic development.

In three volumes, Castells argues that new technologies have allowed the rise of what he characterizes as informational capitalism. Under this mode of production, information, by which he means "data that have been organized and communicated" (Porat 1977, cited in Castells 1996: 17, footnote 27), is the central resource through which productivity and power are realized. However, information is accessed primarily through networks that connect people and places. Increasingly thus, the only way to exercise power and obtain advantage is through the network. This line of reasoning leads to the conclusion that the fortunes of places are increasingly determined by whether they are on or off the network:

> "Presence or absence in the network and the dynamics of each network vis-a-vis others are critical sources of domination and change in our society: a society that, therefore, we may properly call the network society, characterized by the preeminence of social morphology over social action" (Castells 1996: 469)
>
> "Networks organize the positions of actors, organizations and institutions in societies and economies. The social relevance of any social unit is thus conditioned by its presence or absence in specific networks. Absence of a dominant network leads to structural irrelevance" (Castells 1997a: 29)
>
> "The territorial unevenness of production will result in an extraordinary geography of differential value making that will sharply contrast countries, regions and metropolitan areas. Valuable locals and people will be found everywhere, even in Sub-Saharan Africa. But switched-off territories and people will also be found everywhere, albeit in different proportions" (Castells 1997b, cited in Graham and Marvin 2001: 15).

However, what research on ports and port cities shows is that while location on an information network may be necessary to permit participation in economic activity, it is not sufficient to ensure success. Nonetheless, these ideas have found considerable support in urban and regional studies because they appear to offer an explanation for many contemporary social conditions, such as the close proximity of poverty and privilege.

How do these observations fit the ports story? At a superficial level they fit quite well. It certainly is useful to think about ports as transfer points in networks of ocean- and land-based trade. Furthermore, it is useful to consider how technological changes (in ship size, in handling technology, in electronic data exchange and virtual integration – what we summarize under the heading of containerization) have changed these networks. It is even possible to show how these network transformations have been implicated in the changing fortunes of ports across the globe. Finally, a relatively successful port such Oakland – which presumably occupies a privileged seat in the dominant network of container traffic - sits beside the excluded and marginalized West Oakland. The notion of a ‘variable geometry’ seems to describe these circumstances quite well.

But can we really fully understand the fortunes of ports (places) by considering whether or not they are connected to particular trade routes (networks)? For example, is it correct to say that West Oakland is off the network (or on some perverse network – such as the criminal networks that Castells describes elsewhere (1998))? No. Rather, it seems that many of West Oakland’s problems are precisely because of its proximity to this apparently privileged space in the network. The short- and long-haul trucks that park in and drive through the neighborhood, the planning blight associated with the port’s future expansion proposals, the concentration of housing for contingent workers – these are all manifestations of the fact that West Oakland is on the network, not off it. And these same factors are causally implicated in West Oakland's long decline.

In other words, many of the problems facing West Oakland are not because it has been by-passed by the network, but because it occupies a particular (undesirable) position in the network. It is also not tenable to argue that the Port of Oakland is itself somehow off the network and that this explains why it’s surrounding neighborhoods are so blighted –

the most successful container ports in the United States (Long Beach and Los Angeles) also impose similar externalities on their surroundings.

These are not new arguments; various authors have commented on the fact that some of the most skilled manipulators of digital information, closely tied to the network – such as back office workers, telephonists and so on – are in low-wage jobs without career prospects (cf Benner 1998). This view also echoes the decades long debate about the distinction between development and underdevelopment (cf Frank 1969). The fortunes of people and places are not explained by whether a place or person is connected to the network; 'whether' is simply not a sufficient condition. The same criticisms apply both when we examine marginal as well as apparently privileged users of the network.

In their book Graham and Marvin's (2001) adopt Castells' network perspective in interpreting urban development trajectories from changes in the provision of infrastructure. Graham and Marvin argue, correctly, that liberalization (deregulation, privatization, etc) and technological changes have allowed an 'unbundling' of portions of previously integrated, public monopoly infrastructure systems. An example of this would be the separation and privatization of generation from the distribution of electricity. With unbundling comes 'infrastructural bypass' – some infrastructure users get better and more services than others, or what they call 'premium network spaces' (PNS) (something equivalent to 'glocal scalar fixes', to use Brenner's (1998) term).

Their central claim however involves a leap of logic, namely that from unbundling and bypass comes a splintering urbanism. In other words, they argue that social and spatial polarization is reinforced through the creation of PNS and secessionary infrastructure systems. In this way, the implications for urban development that they draw are consistent with the binary perspective advanced by Castells. You are either get infrastructure services (you're on the network) or you do not.

To be fair, Graham and Marvin's work is consistent rather than identical to Castells' because the authors are careful to note that not all infrastructure systems are moving in this direction, that infrastructure systems have long been used to include some members of society while marginalizing others, and that even the most privileged PNS are not independent of their surroundings. The emergent, incomplete and contested nature of the splintered urbanism thus creates opportunities for resistance – this is the subject of their last chapter and postscript. The problem rather is that theirs is not a generalizable analysis, because the question is not whether but how one is connected to the network. By following Castells – by accepting the premise that connection versus non-connection to the network is the key variable – Graham and Marvin have ignored, or rather not paid sufficient attention to, the mediating variable of 'how' a person or place is connected to the network.

Let me illustrate this argument by returning to the ports. Certainly it is reasonable to assume that firms are attempting to connect to trade networks in a way that is most beneficial to them. Equally, it is clear that unbundling has happened in the ports business

- for example, within ports, individual terminals are increasingly leased as separate single-user facilities. Of course these terminals rely on the availability of non-rival public goods such as dredged channels and surface transportation networks, but the fact remains that portions of the system have been selectively privatized to create what might be regarded as PNS.

The problem comes when one tries to read wider urban development implications from this observation. Does the fact that some firms secure access to the network through a PNS, necessarily imply a particular set of outcomes for a port or locality? It seems to me that Graham and Marvin's wider claim would only be correct if securing a PNS simultaneously allowed these infrastructure users to withdraw from other commitments to the locality. This is not always the case – if anything, the unbundling of port infrastructure has resulted in some firms becoming tied ever more closely to specific localities. In Part II, I show how, in order to secure terminal facilities, Toyota has had to commit resources to various ports for periods of up to 20 years. This is a direct result of the processes of unbundling and bypass they describe so vividly.

Graham and Marvin appear to be aware of this contradiction at the system-wide level – for example they make extensive use of Swyngedouw's (1993) recent work extending Harvey's (1982) notion of a 'spatial fix'. This line of reasoning suggests that in order to ensure greater mobility (in trade for example), capital requires fixed infrastructure systems. These sunk infrastructure investments – which come to constitute geography - contain the seeds of future crisis, since they rapidly become inappropriate as economic conditions change. Herein lies the rub; the unbundled premium network spaces do not arise without the firms giving something up in return. Firms face a trade-off between privileged access to terminal facilities and flexibility in their distribution system. Contrary to Graham and Marvin's wider argument, it is the firms that have secured terminal space (such as Toyota) that are most tied to localities, and that offer the most potential for local economic development. Again, the important variable that emerges is not whether the place is connected to the network, but how.

In summary then, Graham and Marvin have correctly noted that infrastructure systems are becoming increasingly fragmented and unbundled. This allows some users to secure privileged access to some services. However, the simple existence of these PNS is not the end of the story – securing privileged access to the network itself entails the commitment of resources. The point here is that infrastructure unbundling is not necessarily bad and does not necessarily lead to splintered urbanism. Rather it is contingent on a range of mediating factors. We need to get beyond that notion that being on or off the network can explain the fortunes of places, and concentrate rather on the nature of the connection. At a more abstract level this conclusion casts doubt on the existence of the network beyond academic discourse – or at the very least, it says that places and networks are in fact mutually constituting.

Exploring the relationship between cargo handling and employment growth in hinterlands

Each of the three approaches to ports and economic development reviewed here predict slightly different relationships between cargo handling and economic growth in the port hinterland. This section examines the predictions of each approach through a series of statistical analyses of regional employment and port cargo handling data. While employment is the only measure of economic development used here, I do not want to suggest that other outcomes are unimportant. This is especially the case in employment in cargo handling, where unions have consciously traded off employment for higher wages (see Chapter 4). I have two reasons for this more narrow focus. First, my goal here is to highlight the possibilities and limitations of the approaches reviewed, not to provide an exhaustive test of their predictive capacities. Second, employment statistics are available at the appropriate spatial and time scales.

The *ports as cargo* approach sees the relationship as unambiguously positive, the more cargo, the more jobs, especially in transportation-related sectors. The *ports as infrastructure* approach would expect to see the positive effects of cargo spread more widely in the hinterland economy; because of its emphasis on throughput productivity this approach is compatible with productivity-related declines in employment in the transportation sector, but not in transport-using sectors. The *ports as trade nodes* approach predicts higher growth overall in the primary trading nodes, but is more ambivalent about growth in specific sub-sectors and areas.

These broad predictions are summarized in Table 2.7. It should also be noted that each approach has a spatial component – for example, the *ports as trade nodes* approach explicitly predicts an ever-widening hinterland in which employment growth is expected. Conversely, the *ports as cargo* approach predicts employment at or near a successful port.

Table 2.7 Summary of Predictions on relationship between cargo handling and employment growth in port-hinterlands

Sector	Ports as Cargo	Ports as Infrastructure	Ports as Trade Nodes
Transportation	Positive, esp. near port; specialization likely	Indeterminate (throughput efficiency is key issue)	Positive, esp. in wider hinterland. Specialization likely.
Manufacturing	No clear prediction	Positive in wider hinterland; specialization likely. Indeterminate near port.	Indeterminate in wider hinterland (depends whether imports are substitutes or complements).
Distribution	Positive. Specialization likely.	Positive. Specialization likely.	Positive, esp. in wider hinterland. Specialization likely.
All Sectors	Positive, esp. near port	Positive in wider hinterland, indeterminate near port	Positive in wider hinterland; negative near port

How do these predictions compare with the actual employment growth performance in the hinterlands of contemporary ports? The remainder of this chapter provides some answers to this question through an examination of the relationship between cargo and employment in the hinterlands of the 21 reference ports, from 1980-1998. [14]

[14] To answer this question I have examined the relationship between port activity and employment in different economic sectors, at varying geographic scales, over time. The parameters of the data are as follows:

(a) Overall cargo handling levels are indicated by adjusted tons from the US Army Corp of Engineers, for the years 1982, 1990 and 1999. The adjustment factor follows Charlier (1996) and accounts for the fact

In the period 1980-98, employment growth[15] in the hinterlands of the 21 ports lagged behind that in the nation as a whole (see Table 2.8). This was particularly true in the 1990s, and for the narrowest definition of a hinterland. The only sectors in which the port hinterlands have consistently performed better than the nation as a whole are the otherwise declining Water Transportation sector, and the Marine Cargo Handling and Terminal Operations sub-sector. Even in the Land Freight Transportation and All Transportation sectors, port hinterlands generally did worse than the nation. These findings suggest that there is not strong prima facie support for any of the approaches reviewed above. Successful ports do not ensure successful regional hinterlands.

However there are some interesting anomalies. For example, employment growth in Automobile Parts Manufacture in the broad and jurisdictional port hinterlands matched that in the nation as a whole more closely, especially in the 1990s. So too with distribution activities, especially in the 1980s. These findings indicate that there is more going on here than suggested by the broad-brush comparison.

---

that a ton of one commodity requires less handling than a ton of another. Automobile units are from the PIERS proprietary database for the months of October 1980, October 1990 and October 2000.

(b) Employment figures are from the County Business Patterns series for 1980, 1990 and 1998.

(c) Economic sectors are (1) Marine Terminals, (2) Water Transportation, (3) Land Freight Transportation, (4) all Transportation, (5) Automobile Assembly, (6) Automobile Parts, (7) All Manufacturing, (8) Automobile Distribution and Retail, (9) All Distribution and Retail, and (10) all sectors. These were chosen to represent key port-related sectors, as well as manufacturing and distribution activities related to the automobile industry.

(d) Hinterlands are Narrow, Broad, or Jurisdictional, respectively corresponding to the (1) county (or counties) containing the port facilities, (2) the Consolidated or Primary Metropolitan Statistical Area containing the port, and (3) the county (or counties or state) corresponding to the boundaries of the jurisdiction responsible for the administration of the public port.

For full details on data sources, definitions and treatment, see Appendix B.

[15] All growth rates reported in this section are compound annual growth rates, unless otherwise specified.

Table 2.8 Employment growth in the USA and in the Hinterlands of Reference Ports, 1980-1998

1980-98	USA	Reference Port-Regions		
		Broad Hinterland	Narrow Hinterland	Jurisdictional Hinterland
Marine Cargo Handling and Terminal Operations	-2.8%	-1.9%	-1.3%	-1.4%
Water Transportation	-2.0%	-1.2%	-1.0%	-0.5%
Land Freight Transportation	2.5%	2.2%	2.0%	2.5%
All Transportation	-1.6%	-2.0%	-1.9%	-1.6%
Automobile Assembly	-0.7%	-2.7%	-1.5%	-2.2%
Automobile Parts Manufacture	0.7%	0.0%	-0.7%	0.8%
All Manufacture	-1.2%	-2.2%	-2.7%	-2.0%
Automobile Distribution and Retail	0.8%	0.7%	0.0%	0.8%
All Distribution and Retail	0.0%	-0.3%	-1.0%	0.0%
All Sectors	2.1%	1.8%	1.2%	2.0%

1980-90	USA	Reference Port-Regions		
		Broad Hinterland	Narrow Hinterland	Jurisdictional Hinterland
Marine Cargo Handling and Terminal Operations	-4.6%	-3.1%	-3.2%	-3.4%
Water Transportation	-2.7%	-2.1%	-2.6%	-0.5%
Land Freight Transportation	2.2%	2.4%	1.9%	2.6%
All Transportation	1.9%	1.7%	1.0%	2.1%
Automobile Assembly	-1.5%	-4.0%	-2.8%	-4.0%
Automobile Parts Manufacture	-0.8%	-2.2%	-2.0%	-1.6%
All Manufacture	-1.0%	-1.3%	-1.8%	-1.2%
Automobile Distribution and Retail	1.1%	1.7%	0.7%	1.8%
All Distribution and Retail	2.6%	2.7%	1.8%	3.0%
All Sectors	2.2%	2.6%	1.8%	2.7%

1990-98	USA	Reference Port-Regions		
		Broad Hinterland	Narrow Hinterland	Jurisdictional Hinterland
Marine Cargo Handling and Terminal Operations	-0.5%	-0.3%	1.2%	1.1%
Water Transportation	-1.1%	-0.1%	1.1%	-0.5%
Land Freight Transportation	2.9%	1.9%	2.2%	2.4%
All Transportation	-5.8%	-6.5%	-5.3%	-6.1%
Automobile Assembly	0.5%	-0.9%	0.1%	0.1%
Automobile Parts Manufacture	2.6%	2.7%	0.8%	3.9%
All Manufacture	-1.5%	-3.3%	-3.8%	-3.1%
Automobile Distribution and Retail	0.3%	-0.4%	-1.0%	-0.4%
All Distribution and Retail	-3.2%	-4.0%	-4.5%	-3.7%
All Sectors	1.8%	0.9%	0.5%	1.2%

For a more comprehensive analysis of the relationship between cargo handling and hinterland employment, I have used three approaches. First I examined the correlation between the level and growth in cargo/automobiles handled and employment. Second, I conducted a form of second-difference comparison of the employment growth per sector in the hinterlands of various classes of ports. Finally I examined the employment specialization in the hinterlands of each port type.

Correlation Analysis

In general, big ports are located in big cities and hence there is a strong positive relationship between the volume of cargo handled in a port, and employment in the hinterland (see Table 2.9). Note however that this finding is not independent of scale, and simply indicates that the largest ports in the reference group tend to be located in the largest regions in terms of employment. However, the consistently positive statistically significant relationships are as expected; they are to be found between cargo handling volume, and employment in the Transportation sector, its sub-sectors and in the Distribution sector. The relationship between Manufacturing employment and cargo handling is less strong, especially as regards Automobile Assembly.

The relationships are not as strong for automobile imports as for all cargo, but this simply confirms that automobile imports have been displaced from some ports in metropolitan port locations. Note that the relationship between automobile imports and employment in Automobile Distribution is positive and statistically significant.

Table 2.9 Correlation (1) between Cargo handling and Sectoral Employment within Port Hinterlands, 1980-2000

		Share of Auto Imports			Adjusted Cargo Tons		
Employment Sector	Year	Broad	Narrow	Jurisdiction	Broad	Narrow	Jurisdiction
Marine Cargo Handling and Terminal Operations	1980-82	0.402	0.559*	0.691**	0.845**	0.865**	0.754**
	1990	0.540*	0.502*	0.649**	0.838**	0.762**	0.623**
	1998-00	0.520*	0.404	0.526*	0.907**	0.903**	0.795**
Water Transportation	1980-82	0.406	0.515*	0.622**	0.772**	0.830**	0.746**
	1990	0.387	0.397	0.552*	0.664**	0.752**	0.530*
	1998-00	0.327	0.263	0.503*	0.719**	0.786**	0.548*
Land Freight Transportation	1980-82	0.496	0.613**	0.520*	0.646**	0.775**	0.650**
	1990	0.659**	0.677**	0.591*	0.631*	0.777**	0.562*
	1998-00	0.672**	0.601**	0.666**	0.708**	0.831**	0.517*
All Transportation	1980-82	0.464	0.564**	0.517*	0.606*	0.733**	0.609*
	1990	0.599*	0.622**	0.561*	0.580*	0.750**	0.536*
	1998-00	0.627*	0.592**	0.674**	0.675**	0.806**	0.540*
Automobile Assembly	1980-82	0.420	0.385	0.239	0.465	0.428	0.440
	1990	0.644**	0.374	0.392	0.599*	0.358	0.324
	1998-00	0.325	0.046	-0.076	0.411	0.165	0.013
Automobile Parts Manufacture	1980-82	0.313	0.419	0.425	0.426	0.491*	0.587*
	1990	0.618*	0.632**	0.536*	0.576*	0.654**	0.564*
	1998-00	0.688**	0.441	0.582*	0.717**	0.731**	0.458
All Manufacture	1980-82	0.436	0.592**	0.458	0.558*	0.709**	0.592*
	1990	0.657**	0.699**	0.557*	0.633*	0.776**	0.569*
	1998-00	0.682**	0.571**	0.648**	0.714**	0.863**	0.561*
Automobile Distribution and Retail	1980-82	0.490	0.576**	0.543*	0.596*	0.659**	0.600*
	1990	0.674**	0.658**	0.608**	0.625*	0.757**	0.491*
	1998-00	0.656**	0.507*	0.690**	0.698**	0.859**	0.408
All Distribution and Retail	1980-82	0.465	0.599**	0.533*	0.599*	0.750**	0.588*
	1990	0.626*	0.667**	0.580*	0.592*	0.784**	0.483*
	1998-00	0.627*	0.621**	0.691**	0.618*	0.848**	0.420
All Sectors	1980-82	0.453	0.587**	0.518*	0.590*	0.740**	0.601*
	1990	0.619*	0.666**	0.580*	0.590*	0.778**	0.522*
	1998-00	0.624*	0.649**	0.694**	0.618*	0.839**	0.462

(1) Correlation coefficient is the bivariate pearson correlation with two-tailed significance.
*=significant at the 95% level
**=significant at the 99% level

One solution to the problem of scale (i.e. defining hinterlands as counties which vary considerably in size), is to look at cargo and employment growth rather than levels. Table 2.10 presents the bivariate correlation between growth in automobile handling share and growth in adjusted cargo, and growth in sectoral employment for the period 1980-1998[16]. There is some evidence of a positive relationship between overall employment growth and growth in the Distribution sector as predicted by all three approaches to ports and regional development.

However, contra the predictions of the *ports as cargo* view, there is no significant relationship between growth in Marine Cargo Handling and Terminal Operations employment and cargo handling across the entire period 1980-1998, although there were some significant positive relationships in the period 1980-90. This is consistent with conventional wisdom, and with the other findings presented here. The long-term decline in employment of longshoremen continued through the 1980s (see Table 2.8; Marine Cargo Handling and Terminal Operations employment declined 4.6% per annum in the 1980s), although this decline did slow somewhat in the 1990s.

[16] I used two measures of cargo growth, compound annual growth and the competitive growth effect (or residual) as derived from a dynamic shift-share analysis (see Barff and Knight 1988). The Competitive Growth Effect provides a measure of the extent to which the reference ports each did better than the nation's ports as a whole, controlling for the particular mix of cargo handled at each port. I also conducted the analysis separately for the periods 1980-1990 and 1990-1998; see Appendix A.

There is a significant positive relationship between Automobile Parts Manufacture employment and cargo handling growth, suggesting that imports are complements to production within the port hinterland. This relationship is statistically significant across the entire period and appears to have gotten stronger into the 1990s. Conversely, there is a negative relationship between Automobile Assembly employment and overall cargo growth, statistically significant in the periods 1980-1990 and 1990-1998. Further evidence that Automobile Assembly was displaced by the importation of finished automobiles is provided by the negative correlation between growth in automobile import share and employment in Automobile Assembly (for example, it is –0.643 in broadly defined hinterlands in the period 1990-1998; see Appendix Table A2.1). These more ambiguous findings about the differential relationship between cargo handling and regional employment growth lend support only to the *ports as trade nodes* approach.

A more rigorous way of looking at the relationship between cargo and employment is to examine the partial correlation[17] between automobile share / cargo growth and sectoral employment, controlling for employment growth overall in the hinterland. Due to the small number of observations (the number of hinterlands varies between 15 and 20), it is perhaps not surprising that most findings are not statistically significant, as is visible in Table 2.11 (and Appendix Table A2.2). However the signs on the coefficients and the few significant variables do confirm that there is a positive relationship between cargo handling and hinterland Automobile Parts Manufacture employment growth, and a

[17] What I report as the partial correlation coefficient is the standardized beta coefficient derived from a linear regression that estimates annual growth in sectoral employment as a function of automobile import share growth, adjusted cargo growth and annual employment growth in all sectors.

negative relationship between cargo handling and hinterland Automobile Assembly employment growth.

The findings of the correlation analysis point again to the complexities in the relationship between port activities and hinterland employment. In the broadest terms, the relationship between cargo growth and employment is positive. But even at this generalized level of analysis, anomalies are visible. For example, while there is evidence that finished automobiles imports displace assembly they do not displace and may in fact be positively related to automobile parts manufacture. Within the Transportation sector, the relationships are equally complex – more cargo growth is only loosely related to cargo handling employment growth, and there is no discernable relationship between cargo handling and employment in the Transportation sector overall.

Differences in growth analysis

A significant problem facing the correlation analysis of the relationship between the ports and their hinterlands is the small number of observations that effectively precludes a thorough multivariate statistical approach. For example, it seems likely that the relationship between cargo and employment varies by port type and according to the economic structure of the port hinterland. A differences-in-differences approach that controls for these structural factors provides a convenient means to compare the hinterland employment growth performance of different port types.

The choice of which differences to draw was inspired by the shift-share method of regional growth comparison. *Relative sectoral employment growth* has been estimated for the hinterlands of various port types, and for the time periods 1980-1998 (and 1980-90 and 1990-98, see Appendix Table A2.3).[18] This approach allows us to compare employment growth performance across sectors and regions for different port types, hinterland definitions or time periods. What does this analysis tell us?

Table 2.12 indicates that port hinterlands of hub and container ports have high positive relative growth rates in Marine Cargo Handling and Terminal Operations, and Water Transportation. For the hinterlands of the hub ports, this growth occurred after 1990 (see Table A2.3 – there was a 6.7% relative annual employment growth in Marine Cargo Handling and Terminal Operations the narrowly defined hinterlands of hub ports in the period 1990-1998), but for container ports the relative employment growth was positive in all time periods. This finding supports the notion that there was an accelerated concentration of activity in the hub regions. Employment in Water Transportation in the

[18] Relative Sectoral Employment Growth = $\{E_{ij} – E_{Ij}\} - \{E_{iJ} - E_{IJ}\}$

where E_{ij} = annual employment growth in sector i in region j
E_{Ij} = annual employment growth in all sectors in region j
E_{iJ} = annual employment growth in sector i in all regions
E_{IJ} = annual employment growth in all sectors in all regions

Rationale: Using annual employment growth rates as opposed to levels addresses the problem of scale (i.e. the fact that port hinterlands vary in extent). The first difference removes overall regional employment growth from the sector-specific employment growth rate. This allows sectoral comparisons across regions, since we are now examining how well the sector performed relative to the region within which its is located. The second difference removes the national first difference (how well the sector at the national level performed relative to the national economy overall). This final step allows comparisons across both regions and sectors. In other words, each cell in Table 2.12 represents the extent to which employment growth in that sector in that port hinterland type differed from overall growth in that type of port hinterland, relative to the extent to which growth in that sector in the nation differed from overall growth in the nation. For example, relative sectoral employment growth in marine cargo handling and terminals operation employment in the broad hinterlands of hub ports was positive 2.3%. This accounts for the fact that this sector performed below the national average for all sectors, as did the hinterlands of hub ports. This 2.3% is hinterlands of diversified ports lagged behind that in the hinterlands of the container and hub ports in the 1990s, after having kept pace in the 1980s.

Other key differences between the hinterlands of hub, container and diversified port types can be found in the manufacturing sector. In the manufacturing sector overall, only the container port hinterlands had positive relative employment growth, and particularly strong growth in Automobile Parts Manufacture employment (2.8% in both the broad and narrowly defined hinterlands). This finding is compatible with the notion that containerized commodities are inputs to manufacturing and/or that manufacturing firms with privileged access to such facilities are more productive. This finding lends some support to both the *ports as infrastructure* and the *ports as trade nodes* approaches.

However, in the Automobile Assembly sector, growth was positive in the period 1980-98 only in the hinterlands of diversified ports. In the 1990s the relative growth in Automobile Assembly employment in the hinterlands of container ports was also positive.

Relative employment growth in Distribution was positive in diversified and niche port hinterlands, and to some extent in hub port hinterlands. Conversely, the hinterlands of container ports, by definition those that are not automobile import ports have negative relative growth in Automobile Distribution for all but one time period–hinterland definition. This provides further evidence that the pattern of automobile imports is

---

higher than that for any other port type or for any other sector of the hub ports' broad hinterland, indicating that the hinterlands of hub ports performed relatively well in this sector.

associated with the geographic distribution of employment beyond the immediate waterfront.

Together these findings indicate the important differences in the relative employment performance of hinterlands associated with different cargo profiles (remember that the port classes were derived from a commodity-based cluster analysis). This points again to a weakness of all the approaches reviewed here, namely that they approach the relationship between ports and regional development in terms that are too general. We need to pay more attention to specific cargoes, and the specific economic sectors with which they are associated.

Specialization Analysis

Does employment in the hinterlands of ports become specialized in particular sectors related to the cargoes handled at those ports and vice versa? The *ports as cargo and ports as trade nodes* approaches suggest that this is most likely in the transport and distribution sectors, while the *ports as infrastructure* view suggests that it will happen in all transport-dependent sectors. There is little in my evidence to support any of these assertions.

There are no statistically significant bivariate correlation relationships between sectoral employment specialization (as measured by location quotient) and cargo / automobile handling levels. Similarly, the correlation between change in employment specialization and cargo growth is also generally not statistically significant. Only two relationships were statistically significant; more cargo growth is associated with increasing specialization in Automobile Parts Manufacture employment, but (in narrowly defined hinterlands) it is associated with decreasing specialization in Automobile Assembly employment.

These results were confirmed by examining the relationship between hinterland employment specialization and port type, as shown in Table 2.13. The hub, container and niche ports became less specialized in Automobile Assembly, while diversified ports became more so. Again we find that the hinterlands of container ports becoming more specialized in the Automobile Parts Manufacture sector. These differential findings run somewhat against the *ports as infrastructure* approach that suggests that the hinterland of a successful port should become more specialized in manufacturing overall.

In transportation sub-sectors most closely related to port operations, the hinterlands of hub and container ports became more specialized in Marine Cargo Handling and Terminal Operations. This trend was especially strong in the narrow hinterlands, and for the container ports. Specialization in this sector is compatible with the predictions of the *ports as cargo* and *ports as trade nodes* approaches.

Summary: the relationship between cargo and employment growth

The empirical analysis provides mixed support for the three approaches (summarized in Table 2.14). In general, more cargo does translate into more cargo handling jobs, as predicted by the *ports as cargo* approach. However employment growth in these sectors has been disappointing – the number of longshoring jobs has been in a long term decline in the United States and worldwide. Narrowly defined port hinterlands have consistently experienced overall employment growth well below the national average since 1980. The *ports as infrastructure* approach thus finds empirical support for its less optimistic predictions about transportation-related employment. The main problem with this approach is its undifferentiated positive prediction with respect to manufacturing and distribution-related activities. Cargo growth is associated employment growth in some sectors, but not in others. On this point, the predictions of *ports as trade nodes* approach appear to fit the evidence more closely.

Table 2.14 Support for Predictions on relationship between cargo handling and employment growth in port-hinterlands

Sector	Ports as Cargo		Ports as Infrastructure		Ports as Trade Nodes	
	Prediction	Support	Prediction	Support	Prediction	Support
Transportation	Positive, esp. near port. Special-ization likely	?	Indeter-minate (throughput efficiency is key issue)	+	Positive, esp. in wider hinterland. Specialization likely.	?
Manufacturing	No clear prediction	?	Positive in wider hinterland; specialization likely. Indeterminate near port.	-	Indeterminate in wider hinterland (depends whether imports are substitutes or complements).	+
Distribution	Positive	+	Positive. Specialization likely.	+	Positive, esp. in wider hinterland. Specialization likely.	+
All Sectors	Positive, esp. near port. Special-ization likely	-	Positive in wider hinterland, indeterminate near port	?	Positive in wider hinterland; negative near port	+

+ = prediction consistent with evidence
- = prediction inconsistent with evidence
? = no prediction or no clear evidence

Conclusion: towards a dynamic view of ports and regional economic development

In this chapter I have reviewed three approaches to understanding the relationship between ports and economic development in their hinterlands. I have shown how each approach tends to emphasize some aspect of a port, be it cargo, infrastructure or network connections. Each of these understandings of what makes a port combines with an understanding of how the economy works to provide a series of predictions about the relationship between ports and regional economic development. I find mixed empirical support for each of these approaches.

However, the main thrust of this chapter has not been to say that the alternative approaches are wrong on their own terms. Indeed, each approach alerts us to important aspects of *how do* ports influence economic development outcomes. What is missing from each is an understanding of *how might* port planners, managers and other public policy makers intervene to make more of these economic relationships. In part, this is because the approaches all try to provide a generalized understanding of the port-economic development relationship.

Rather, to answer the *how might* question, we need to look more closely at specific economic sectors and firms. What is the logistics system of a particular firm or sector? What role does ocean transport and ports play in that logistics system? How do decisions by firms in that sector influence ports, and how do decisions in ports influence firms in that sector? It is questions of this kind that I will address in the following chapters.

Chapter 3

Ports as Institutions

How are cars, especially imports, shipped from the point of production to sale in the United States? How many cars are being moved, and through which ports? How have these commodity flows changed over time? And what difference do Port Authorities make to this trade and the associated patterns of economic activity? The 'derived demand' understandings of the role of ports in regional development discussed in the previous chapter approach these questions in a very limited way. The port is or is not on the trade network, it does or does not provide the infrastructure services, and jobs do or do not result from the handling of cargo. If the port is lacking any of these attributes, the role of the Port Authority is to correct this shortcoming.

These approaches lead to the recipe-like ‘you either have it or you better get it’ thinking that pervades so much infrastructure and economic development planning. While there is much that is useful in each these approaches, these are the static perspectives of the *how do*, rather than the dynamic perspective of the *how might* ports influence regional development. They can all be criticized for not paying close enough attention to actual firms and authorities, and the specific relationships between them. My purpose in this chapter is to begin the task of correcting these shortcomings in empirical and theoretical terms.

I start this chapter with a statistical analysis of the patterns of port usage by automobile firms. The data source for this analysis is the PIERS proprietary database on automobile imports for the month of October in the years 1980, 1990 and 2000. This identifies both the port of entry and the name of the importing automobile firm (for full details, see Appendix B). I show that while the overall trade in automobiles has not become concentrated over the last 20 years, individual firms are concentrating their imports in fewer ports. I refer to this as *mutual specialization*, a process that is only visible in a firm and authority-level analysis.

How are we to explain the process whereby specific firms become increasingly tied to particular ports? In the second part of the chapter I turn to theory to begin the task of constructing an understanding of *ports as institutions* – that is as a cluster of rules, norms, and patterns of behavior. I first critique the existing 'institutional' approaches to ports, and indeed other public authorities, for focusing too much on formal structure and not enough on the relationships between public and private actors in development outcomes. I then draw on recent literature on the developmental state and the role of institutions in regional development that highlights the importance of institutionalized relationships – what I call the *relational fix* - in promoting the information exchanges that are so important to economic development outcomes.

In subsequent chapters I present qualitative evidence of the relational fix. In Chapter 4 I trace the processes and intermediary actors involved in handling automobile imports at US ports in order to highlight the variety of possible relationships that firms may enter into in order to successfully import automobiles. In the Chapters 5 and 6 I show how and why these institutionalized relationships vary systematically from port to port, and in Chapter 7 I show how and why they vary from firm to firm.

Mutual specialization: which Ports handle which autos?

Unlike the container trade that has become concentrated in a small number of ports (see Chapter 2), the trade in automobiles has remained relatively dispersed. This is despite a dramatic decline in the overall number of imports from the mid-1980s to the mid-1990s and dire predictions of port consolidations in the early 1990s (see Ross 1992). Indeed, the share of imports accounted for by the largest automobile ports has decreased, and a pattern of hubs and spokes in automobile distribution has not emerged. However, the aggregate numbers mask important changes in which ports automobile firms use, and how they do so.

In the period 1980-2000, there have been two kinds of specialization within the trade. The more obvious specialization can be seen in a small number of niche ports that specialize in handling automobiles and perhaps a few other commodities. The more subtle specialization is the process whereby manufacturers have tended to concentrate their operations in fewer ports. To some extent ports have also tended to specialize their automobile handling operations around a smaller number of manufacturers, but some ports do find it possible to accommodate several manufacturers.[1] This process of mutual specialization has resulted in a highly differentiated geography of distribution, one in which firm-authority relationships play a critical role.

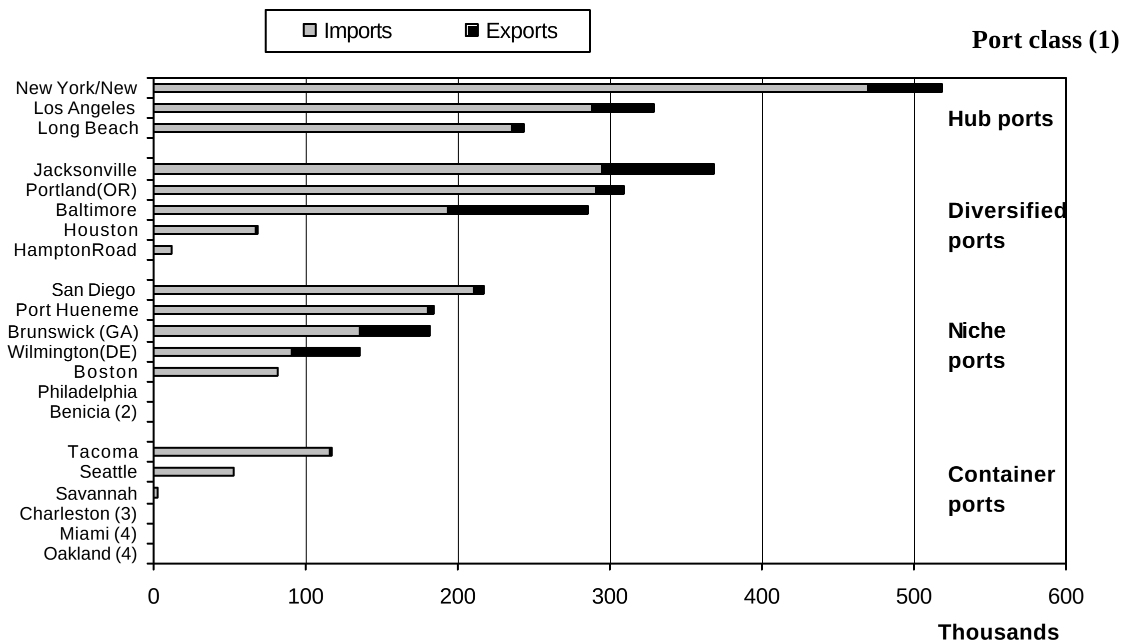
Over 30 US seaports have been involved in handling imports of new automobiles since 1980, while 14 can be said to have a significant presence in the trade (see Figure 3.1). Ports with a significant presence in the trade hold what are known as 'accounts'; even though the Automobile Assembler may not have any direct relationship with the Port Authority, in these ports the firm has a significant presence, with processing, storage and other facilities at or near the waterfront (see Table 3.1 provides full information on automobiles operations, accounts and other features of the 21 reference ports).

At the end of the 1990s, the Hub Ports all handled significant numbers of automobiles, with the Port of New York and New Jersey the largest automobile port in the country. This suggests that proximity to market is an important consideration in port usage – the Hub Ports have prime locations in the largest metropolitan markets. However, the next largest automobile ports are Diversified and Niche Ports generally outside large metropolitan areas, but with good access to hinterland markets. For example, Jacksonville, the second largest automobile port in the country is in the 45th largest

[1] This process is not easily visible in aggregate analyses of commodity handling data. Following Charlier (1988) I examined the overall level of specialization in the US Port system using US Army Corp of Engineers data from 1982-1999 for the 21 reference ports and commodity data organized in 26 'summary' and 123 'detailed' commodity classes. This analysis indicated an overall decrease in specialization within Ports across all commodities, and within all commodities across all Ports. In other words, Ports have become less specialized in particular commodities, and commodities have become less concentrated in specific Ports. However, this did not occur for the automobile commodity group (which includes both non-containerized finished automobiles and containerized parts), and in general specialization appears to be

metropolitan area, while Portland, the fourth largest auto port is in the 22nd largest metropolitan area.[2] Jacksonville is a gateway to the southeast region, while Portland is a gateway to the Pacific north-west and much of the mid-west. By definition, Container Ports do not feature in the automobile handling rankings.

Figure 3.1 Automobiles Handled by Reference ports, 1999



Source: Association of American Port Authorities

Notes: 1. Class derived from cluster analysis; see Chapter 2.
2. In 1999, the Amports terminal at Benicia had no major automobile accounts; Kia began importing through this port in 2000.
3. Limited numbers of Porsche and BMW vehicles are shipped through the Port of Charleston.
4. Miami and Oakland ports handle small volumes of privately owned vehicles in containers, especially for the US Military and to US island territories.

---

more likely for non-containerized commodities and in Ports with lower levels of containerization. For method, data and discussion, see Appendix A2.

[2] Source: Bureau of the Census, Metropolitan Area Rankings by Population Size and Percent Change for July 1, 1998 to July 1, 1999 and April 1, 1990 to July 1, 1999 (http://eire.census.gov/popest/archives/metro/ma99-04.txt)

Over the last twenty years, the geographic distribution of automobile imports across the ports of the United States has changed in small and subtle ways. Comparing the shares of individual ports provides some indication of the competition between ports for this cargo. Table 3.2 traces the changes in the share of the automobile import trade over 30 US (and two Canadian) ports. It is immediately apparent that there have been a few significant new entries in the last 20 years – ports such as Port Hueneme, San Diego and Brunswick (Georgia). Equally, there have been a few significant exits – ports such as Richmond (California), Seattle and Houston. However many ports have displayed remarkable stability – ports such as Portland, Tacoma, Long Beach, Los Angeles, Jacksonville, Baltimore,[3] Boston, New York and Wilmington (Delaware) have remained in the trade and not seen major changes in their market share.

[3] The monthly statistics presented here show Baltimore's share of the automobile trade declining dramatically from October 1990 to October 2000. The limits of the data account for this distorted picture – the monthly statistics are subject to variation, and the import statistics do not reflect Baltimore's impressive export growth.

Table 3.2: Share of Foreign Auto Imports by Port (Percent)

Port	Oct 1980	Oct 1990	Oct 2000
New Westminster, BC	-	1.8	0.6
Portland, OR	13.5	10.1	9.8
Seattle	9.8	1.6	1.4
Tacoma	3.8	4.8	4.5
Vancouver, BC	-	0.8	0.0
Vancouver, WA	-	0.1	1.2
Alameda	0.7	-	-
Benicia	6.8	5.9	2.2
Oakland	0.0	0.0	0.0
Richmond, CA	2.3	5.3	0.0
San Francisco	0.3	0.3	0.0
Long Beach	8.5	9.6	7.8
Los Angeles	5.6	8.8	6.6
Port Hueneme	0.1	3.3	6.5
San Diego	-	0.6	7.4
Galveston	-	0.0	0.0
Houston	7.9	4.4	1.5
Mobile/New Orleans	0.0	-	0.0
Brunswick, GA	-	2.4	4.1
Charleston	-	0.7	2.3
Jacksonville	11.2	11.3	12.6
Miami	0.0	0.0	0.0
Port Everglades	-	0.0	0.0
Savannah	-	0.0	0.0
West Palm Beach	-	0.0	0.0
Tampa	-	-	0.2
Baltimore	7.9	8.7	4.7
Boston	2.3	1.2	3.9
New York	12.8	12.4	16.4
Norfolk/Newport News	0.2	0.8	0.1
Philadelphia	0.0	-	0.0
Portsmouth	2.0	0.1	-
Providence	1.2	1.4	0.4
Wilmington, DE	1.1	1.4	2.4
Other (2)	0.2	0.0	-
Honolulu	-	-	0.6
Puerto Rico	1.8	2.1	2.9
Total	**100**	**100**	**100**

Source: Authors analysis of PIERS Data for October of each year.

Notes: (1) - indicates no vehicles; 0.0% indicates a less than 0.05% share.
(2) Other North-East Ports include Chester (PA), Chicago, and Albany.

Thus, in general terms, automobile shipments have not become concentrated in particular ports to the same extent that containers have. Table 3.3 confirms this assertion for a variety of concentration measures. While the number of ports involved in handling new automobile imports has increased, the number of ports with large shares (more than 5% or 10% shares) has decreased. Similarly, the overall share of the trade accounted for by the top 3, 5 or 10 ports in the trade has remained stable or perhaps even declined. At an inter-port (read inter-regional) and sector-wide (read not firm-specific) level we thus cannot discern much in the way of significant change in the distribution of this economic activity.

Table 3.3 Concentration in Automobile Imports in US Ports

	Oct 1980	Oct 1990	Oct 2000
Number of Ports			
All Ports handling imports	25	32	32
Ports with 1% + share	16	18	18
Ports with 5% + share	9	8	7
Ports with 10% + share	3	3	2
Percent of Market			
Share top 3 Ports	37.6%	33.8%	38.7%
Share top 5 Ports	55.9%	52.2%	54.0%
Share top 10 Ports	87.9%	81.3%	80.3%

Source: Authors analysis of PIERS Data for October of each year.

There have, however, been some important changes within and between the various 'port ranges' that signal the more subtle change of mutual specialization. The concept of a port range refers to a group of ports that share a portion of the coastline and hence are in most direct competition. The US coastline may be divided into the West and East/Gulf Coast ranges, and into six finer ranges (the North West, northern and southern California, the

Gulf, and the south- and north-East). Shifts in the shares of the various port ranges reflect re-organization of the trade at a continental or global scale, rather than the inter-port competition reflected in relative port shares.

Table 3.4 presents the share of automobile imports by origin and port range. The following trends are apparent. First, at the continental level, with falling surface transportation costs (USA 1997) there has been a shift towards land-bridging, with imports from Asia increasingly unlikely to go through East Coast ports, and imports from Europe increasingly unlikely to go through West Coast ports. The West Coast share of imports has declined slightly relative to East Coast, primarily because West Coast port rationalization by European importers has proceeded further than that on the East Coast by Asian importers. However, at least one European firm, Saab, has reversed this trend. After consolidating all its import operations in Brunswick (GA) in 1992, it then began importing through Port Hueneme in 2001 (Dunlap 1992 and Lamb 2001).

Second, there have been important shifts within the shares on each coast. On the West Coast, the share of the Northern California range has declined dramatically, with only the Port of Benicia handling some Asian imports in 2000. Furthermore, automobiles from Europe to the West Coast became concentrated in Southern California in the period 1980 to 1990. On the East Coast, the southeast range has gained share. In the 1980s this was because some automobile imports from both Asia and Europe shifted from the northeast to southeast – presumably reflecting the redistribution of population and spend-power southwards. In the 1990s, the Gulf Ports virtually ceased to be a factor in the automobile trade, except for the import of Volkswagens assembled in Mexico and Europe through the Port of Houston (see Table 3.1). Cars from Asia are no longer imported through the Gulf Ports, with firms such as Toyota and Honda distributing to these markets from Southern California ports.

Table 3.4 Share of Automobile Imports by Origin and Port Range (Percent)

US Port Range	Asian Assemblers			European Assemblers			All Assemblers		
	1980	1990	2000	1980	1990	2000	1980	1990	2000
West Coast	**54.2**	**59.1**	**60.8**	**33.3**	**27.1**	**25.2**	**52.3**	**54.1**	**49.6**
North West	30.1	22.8	25.8	2.3	1.2	0.0	27.6	19.6	18.0
Northern California	9.8	13.1	3.3	14.5	4.2	0.0	10.3	11.7	2.3
Southern California	14.3	23.2	31.7	16.6	21.6	25.1	14.5	22.8	29.3
East Coast	**45.8**	**40.9**	**39.2**	**66.7**	**72.9**	**74.8**	**47.7**	**45.9**	**50.4**
Gulf	7.9	3.6	-	9.0	7.9	4.2	8.0	4.5	1.5
Southeast	12.0	13.8	18.0	5.5	20.8	28.7	11.4	14.8	19.9
Northeast	25.8	23.5	21.2	52.2	44.2	42.0	28.2	26.6	28.9
Continental US	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Author's analysis of PIERS Data for October of each year.
Notes: - indicates no vehicles; 0.0% indicates a less than 0.05% share. Origin refers to the nationality of the automobile assembler. 'All assemblers' includes imports by the US Big 3 (Ford, Chrysler, GM).

This re-organization of the distribution systems by firms at a continental (or inter-range) level points to the importance of examining the differences in port usage of the specific automobile firms. Despite the lack of concentration in port usage overall, it is clear that individual automobile firms have concentrated their operations to some degree, and it is clear that manufacturers are tending to use fewer ports for their large volume imports. The fact that concentration by individual firms is not associated with concentration overall indicates that ports are specializing in handling the automobiles of particular firms. [4]

Table 3.5 presents various measures of the change in the average number of ports per Automobile Importer / Manufacturer. Automobile manufacturers are concentrating their large import volumes in fewer ports[5]. Whereas in 1980, on average a firm would use four-and-half (4.41) ports for 1% or more of its imports, by 2000 on average a firm would only use three (3.18) ports to this extent.

Table 3.5 Ports per Automobile Manufacturer

Average number of ports per firm handling...	Oct 1980	Oct 1990	Oct 2000	Change 1980-2000 (1)
1+ vehicles of the firm	7.00	11.41	11.41	+4.41**
100+ vehicles of the firm	5.00	5.47	3.41	-1.59 (2)
1%+ of firm imports	4.41	4.59	3.18	-1.24* (2)
5%+ of firm imports	3.29	3.24	2.88	-0.47

Source: Author's analysis of PIERS Data for the month of October in each year. To control for entry and exit, these figures are for an unchanging group of 34 US Ports, and 17 automobile importers.

Notes: (1) Paired samples t-test was used to determine statistical significance of changes from 1980 to 2000. **Significant at the 99% level, *Significant at the 95% level.
(2) Change from 1990 to 2000 is significant at the 99% level.

It should be noted that within the general trend, there are important variations in automobile firm strategy. Table 3.6 indicates various measures of the number of ports used by selected automobile firms. All firms have increased the overall number of ports used, and only some have reduced the number of ports used for a large proportion of their

[4] A similar pattern of ports becoming associated with one or a few manufacturers is developing in Europe. Nils Lie, a WWL manager is quoted in the trade magazine, *Automotive Logistics* (2000a) thus; "Bremerhaven is the BMW and Mercedes port, while Zeebrugge is already used by numerous manufacturers. Emden is the export port for VW. Ford, meanwhile is using both Bremerhaven and Zeebrugge."

imports. Furthermore, the rationalization process has been highly uneven. For example, in 2000 only two ports handled 1% or more of Honda's imports, down from nine ports in 1980. In 1980, nine ports handled 1% or more of Toyota imports, but this had only been reduced this to six by 2000. This selective and differential process of port rationalization is explored in greater detail in subsequent chapters.

Table 3.6 Port Usage for Selected Automobile Importers

	VW / AUDI			MERCEDES			TOYOTA			HONDA		
Number of ports handling...	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
1+ vehicle	19	21	7	11	10	15	5	12	16	9	11	20
1%+ of firm imports	3	9	5	9	5	3	9	9	6	9	7	2
5%+ of firm imports	3	6	4	7	4	3	7	7	5	7	6	2
10%+ of firm imports	3	3	4	5	3	3	4	4	4	4	4	2

Source: Author's analysis of PIERS Data for October of each year.

There are also indications that some ports are specializing in handling the automobiles of fewer firms, but there is nothing automatic or universal about this process. For example, the Port of Long Beach handled 5% or more of the imports of 6 firms in 1980, but by 2000 it handled 5% or more of the imports of only one firm, Toyota. In contrast, the Port of New York handled 5% of more of the imports of 9 firms in 1980, and by 2000 this had only declined to 8 firms. The fact that these ports are similar in many other respects – both are hub ports in major metropolitan areas - suggests that mutual specialization is a highly uneven process. An important policy question, therefore, is to understand what

---

[5] In order to control for entry, exit and mergers, these averages are calculated for a group of 17 automobile importers active and separately identifiable in the months of October 1980, 1990 and 2000.

makes it possible for some ports to hold onto a diverse group of automobile importers, while others cannot.[6]

Similarly, there is no clear statistical evidence of ports specializing in handling automobiles of particular firms. The Herfindahl concentration index can be used to measure the extent to which a port is specialized in handling the automobiles of one or just a few firms. If one firm accounts for all the automobile imports in a particular port, then the index value is one, and if all firms account for an equal proportion of the imports, then the index value is 0.059 (for the group of 17 automobile importers). While the change was not statistically significant (tested using a pair-wise paired sample t-test), the average concentration index did rise over the entire period, especially during the 1990s. On the other hand, an analysis of the specialization index per port with respect to automobile firms yielded contradictory (ie specialization decreased) but also statistically insignificant results.[7]

Altogether, these findings indicate that while the overall level of concentration in the system has changed relatively little, firms are concentrating their high-volume imports in fewer ports. *Mutual specialization* began in the 1980s, but intensified in the 1990s – the

[6] The differences between the Ports of Long Beach and New York are not explained by the fact that Long Beach and its neighbor, the Port of Los Angeles may be regarded as forming one port complex. The Port of Los Angeles handled 5% or more of the automobiles of five firms in 1980, but by 2000 it handled 5% or more of the imports of only two firms, namely Nissan and Mercedes. Thus the number of automobile manufacturers routing 5% or more of their imports through both ports has declined from eleven to three, whereas in New York it has only declined from nine to eight.

[7] Following Charlier (1988) I calculated an index of how specialized each port was in 1980, 1990 and 2000 with respect to 14 automobile importers. The specialization index actually fell over the period, although the change was not statistically significant according to a paired samples t-test. See Appendix A for method.

decline in the number of large volume ports per manufacturer was statistically significant in the 1990s.

What makes mutual specialization so interesting from a regional planning perspective is that it suggests a convergence between specific ports and specific firms, rather than a more general convergence between regions and sectors. This evidence is consistent with the notion that ports and firms are becoming increasingly interpenetrated over time. A more general convergence would have implied that the more traditional location factors could provide a sufficient account of the economic geography of this activity. These actor-blind factors, such as physical infrastructure, external economies and network connections, are precisely the same as those underpinning the approaches reviewed in the previous chapter.

The aggregate analyses of the port-economy relationship reviewed in the previous chapter miss the subtle but important variations in firm and authority strategy that underpin the process of mutual specialization. Furthermore, these approaches cannot provide a clear account of the way in which infrastructure-related decisions are actually taken, as part and parcel of the wider process of the formation of a regional economy. Infrastructure projects do not simply drop out of the heavens – they are lobbied for, planned, and anticipated by private as well as public agents. Hence we can only understand the economic geography of such distribution activities through a firm- and authority-specific analysis. To do this we have to re-examine our theoretical assumptions about the process of regional development, and in particular the role of public authorities in that process.

On Local Public Authorities

How are Port Authorities implicated in the process of mutual specialization? As we start to consider the active role of Port Authorities in regional development, we have to be careful not to repeat the converse of the error identified in the previous chapter, which is to separate the provision of infrastructure from its usage, in this instance by examining only the providers. This is a shortcoming in the existing literature on ports as local public authorities. However, recent theorizing about the role of the state in development, and in particular concepts such as embeddedness, governance and co-production that stress the fluid nature of the public-private divide do provide an important remedy.

The existing literature on the development role of ports as local public authorities can be characterized as attempting to relate the actions of the authority to one or more feature of the formal governance system. Table 3.7 presents the variation in the formal institutional structures of the 20 reference ports (Benicia is excluded because this is a private port). Note that there is no obvious connection between governance structure and port class. Nor should we expect there to be; despite the great value of focusing on formal governance structure, reading development outcomes from structure alone constitute what Granovetter (1985) might call an over-determined approach. Three studies of port authorities are emblematic of this approach.

Port Authorities can be approached as a category of special purpose government, in contrast with general-purpose government. Foster (1997) shows how special governments have become an increasingly popular form of government arrangement with a mixed public-private character and substantial independence from other local governments. These considerations have given rise to concerns about accountability and biases towards certain kinds of expenditure by such authorities. This is essentially the same view that informed Walsh's (1978) influential study of public corporations, which included the Port Authority of New York and New Jersey.

Walsh's writings concern the problems of accountability and policy bias associated with public corporations. While public corporations may be endowed with considerable public resources and be eligible for public grants and subsidies, they generally do not receive direct tax revenues. This creates something of a democratic deficit, since public corporations generally avoid direct political oversight. Instead, public corporations generate revenue streams through user-charges, which are then used to repay long-term bonds. Walsh argues that this use of bond finance influences all aspects of an Authority's activities and decisions, biasing spending towards capital-intensive, financially secure physical infrastructure spending. [8] This view suggests that we should understand Port Authorities as revenue maximizers, with all the imperial implications of the term, subject to considerable risk-aversion.

---

[8] Rauch (1995) uses a similar idea in a formal economic model to argue that "the professionalization of the state bureaucracy lengthens the period that public decision-makers are willing to wait to realize the benefits of expenditures, leading to allocation of a greater proportion of government resources to long-gestation-period projects such as infrastructure" (977).

Walsh's work has proved an invaluable contribution to our understanding of public authorities, but the dependent variable is infrastructure spending not regional growth that is the central concern here. In other words, while this structural approach can tell us why a Port Authority may have a preference for one kind of investment as opposed to another, by itself it cannot tell us why one Authority is better able than another to make the right investments and make them sooner than other authorities. Understanding why some authorities are more able to provide infrastructure services in a timely fashion is the central focus of Boshken's (1988) study of containerization on the US West Coast.

Over the early years of containerization, three US West Coast ports fared much better than their geographically closest rivals – Oakland versus San Francisco, Seattle versus Tacoma and Long Beach versus Los Angeles. Working in the organizational theory tradition of Simon (1961) and Thomson (1967), Boshken develops a series of hypotheses that predict when a public organization is more likely to engage in strategic planning in response to environmental turbulence. He argues that strategic planning was one of the decisive factors that distinguished the successful ports from their less successful neighbors. This usefully focuses our attention on the factors that differentiate public authorities.

However there are some problems with the study, not the least being that Tacoma and Los Angeles have both drawn level with (and some would say surpassed) their rivals in recent years. Certainly Boshken's study needs to be understood in historical context. In the 1960s and 1970s, containerization was not yet associated with consolidation in the shipping industry, surface transport deregulation and the emergence of hub ports. Speculative investments by port authorities are less common today, in part because the investments are so large that ports are unlikely to build facilities without long-term guarantees from shipping lines / alliances or other users.

More fundamentally, it seems that factors that are exclusively internal to the organization, such as the strategic planning function are a necessary but not sufficient condition to explain an organization's success. If the ports environment was indeed as turbulent and uncertain as Boshken suggests, and it surely was, then presumably other actors such as the shipping lines who were to make use of the new facilities also faced these high levels of uncertainty about which ports to use and which technology to deploy. The question that then arises is how is it that investments by the Port Authorities alone were enough to generate growth and increased market share? Either these public investments so dramatically reduced costs that they crowded out all other options (which seems unlikely given that this was relatively new and hence presumably expensive technology), or there was something else going on to assure a return on these infrastructure investments. This 'something' concerns the nature of the relationship between the public and private actors.

Kagan (1990a) provides an alternative to looking at internal organizational structure by situating Port Authorities within a wider constitutional context. The central question in his comparison of containerization in the US, China and Hong Kong is "how has governmental structure, law, and policy in each of those countries affected its capacity for implementing efficiency-enhancing innovations in the intermodal transportation of goods?” (171). Kagan’s comparative approach provides a compelling account of how differences in national political institutions affect the ability of actors to adopt transportation innovations in a timely fashion. The essence of his argument hinges around the values of decision-makers and how these translate into political choice, and the role of more or less centralized governance structures in influencing these choices.

In the US, the decentralized port system resulted in rapid experimentation in containerization:

> “by virtue of this decentralized planning and financing system, intermodal port facilities proliferated extraordinarily rapidly. Competing ports sought to make their facilities more attractive to shippers and ocean carriers. They built large container yards outside the old urban harbor. They worked to build better rail and highway links to the docks. They further decentralized infrastructure planning, acceding to ocean carrier demands for dedicated single-user container terminals, larger storage yards and on-dock rail facilities” (Kagan 1990a: 181).

When combined with Walsh and Boshken's insights, Kagan's approach can explain why a particular Port Authority may invest in a particular technology, and why that technology may proliferate more rapidly in one system of ports than another. And while like the others, Kagan cannot explain why a particular investment choice is more likely to be 'right', his approach does provide valuable clues about where we should look. Decentralized public authorities are possibly more responsive to industry needs than those in more centralized contexts. In other words, the potential and actual relationships between public and private sectors have entered the equation.

Doig's (2001) history of the formation and first three decades of the Port of New York Authority hints at these dynamics. Doig takes from this agency's successes and failures, various more general lessons about the role of public sector entrepreneurial leadership in the American political context. He relates, for example, the times when agency officials actively sought partners, allies and constituencies to support the activities of the agency.[9] He concludes "the relationship between any public agency and its surroundings is likely to be interactive and dynamic. The challenge for entrepreneurial leaders is to respond in creative ways to external demands, and on occasion to help create such 'external demands' so they can serve as tools on behalf of the leader's goals" (366).

Such a relational understanding of public sector performance has received a major boost in the early 1990s in the work of Putnam (1993), Evans (1995), and others[10]. Putnam's work on regional government in Italy accounts for economic and institutional (governmental) performance in terms of deeply embedded patterns of civic engagement, or social capital. Evans' perspective explores the relationship between economy and governmental institutions more directly. He develops the concept of 'embedded autonomy' to denote a developmental state that is Weberian in its' institutional ethic and

[9] One of the most interesting examples of this interaction cited by Doig concerns the co-operation between Port Executive Director Austin Tobin, the founder of SeaLand and father of containerisation, Malcom McLean, and the Oakland and Rotterdam port authorities over early innovations in containerisation. However Doig also recognizes the importance of history and luck. He notes that one of the main reasons Tobin was willing to entertain McLean's proposals was because the Port's earlier efforts to take over New York City's piers had been rebuffed. Had the Port taken over these piers, it would have invested "millions in modernizing that city's finger piers, which a few years later would be of little use because of the 'containership revolution'" (2001:354).

[10] See also Tendler (1997), Evans (1996) and Ostrom (1996). Hall's (1986) *Governing the economy* is also an important contribution to this literature, in the sense that it seeks to understand how institutions mediate and shape the economic policy responses of the state. Hall's definition of institutions as "the formal rules, compliance procedures and standard operating procedures that structure relations between individuals in various units of the polity and economy" (19), shares much with the approach adopted here even if tending to ignore informal and non-economic institutions.

organizational operation, but also deeply connected to private sector interests. This provides responsiveness and accountability, flexibility and certainty.

In their efforts to overcome the public-private divide, Putnam and Evans can be respectively criticized for over-emphasizing and under-emphasizing the private sector. For Putnam, regional growth performance is related to two stark outcomes in which policy choice is very limited; a virtuous cycle of increasing civic engagement and self-reinforcing norms of generalized reciprocity, or a vicious cycle of increasing distrust and stagnation. Equally, Evans may be criticized for ignoring non-state institutional forms that shape economic outcomes. For example, Doner's (1992) case studies of the Asian auto industry show that collective action problems have been solved in a variety of ways. These critiques point to the more fundamental point that the analytical categories of public and private lose much of their utility when we recognize that it is their interaction that is important, not merely their separate existence (for more on this point, see Amin and Hausner 1997).

This all suggests a very different kind of institutional account, one that builds upon, and gets beyond, considerations of formal organizational and constitutional structure. The following section outlines such an institutional approach.[11] The usage of a port by a firm

[11] There are a variety of approaches to institutions (for a recent review, see Immergut (1998)). In this study I have been strongly influenced by the approach of Giddens (1979) who highlights the role of human social interactions in creating and re-creating the structures that pattern human behavior. Institutions are fundamental structuring elements that provide the basis for social action. Institutional effects are thus viewed as cognitive, simultaneously enabling and constraining (Douglas 1986). Institutions provide stability in the face of uncertainty and constitute the context for acquiring knowledge. This view of institutions has been adopted by economic sociologists who stress the embedded and inter-personal nature of human action (cf Granovetter 1985). Note that while very few of these authors explicitly address the spatial dimensions of institutions, their arguments are not incompatible with notions of spatial

depends, in part, on the ability of the firm to secure and sustain appropriate institutionalized relationships with other port users, and service / facility providers. I call such a set of appropriately institutionalized relationships a *relational fix*. The nature of this fix, and quite how it is structured, depends in part on the actions of the public port authority. Only through this kind of understanding of *ports as institutions* can we begin to understand the dynamic role of ports in economic development.

Seeking a 'relational fix'

The notion that firms (or capital) are dynamically, or constantly, seeking to solve problems inherent in making profits in geographic space draws on a long tradition. In his book *The Limits to Capital*, David Harvey (1982) presents a dynamic approach to the relationship between infrastructure and development of the capitalist economy. Time and space are, for capitalists, two sides of the same problem of increasing the speed of circulation of capital. Public infrastructure investments, particularly transportation improvements, provide one way of addressing this problem. In cutting transportation time, infrastructure allows capitalists to shrink space, thus widening markets and allowing firms to exploit economies of scale.

The geography of capitalist production can thus be understood as a result of the attempts by capital to resolve this two-edged problem. Capitalists seek a 'spatial fix' that allows the ever-faster circulation of capital, and will support public policies that lead to the

differentiation. For example, Giddens (1984) recognizes that geographic spaces/scales (what he calls regionalizations) are constituted through spatial differentiations in 'routinized social practices' (for more annihilation of time and space. However, fixed infrastructure may itself be a source of rigidity, since infrastructure needs to be used to recapture the costs of providing it. In this way, one solution to the time-space problem simply becomes the context for its new form. The problem never goes away, and might be regarded as a source of an internal contradiction within capitalism.

This understanding of the fixity of economic activity does not explain the variation in automobile trade. Although some firms are tied to particular spaces, it is possible for an automobile firm, under certain circumstances, to switch from one port to another on very short notice.[12] Indeed, the physical infrastructure requirements of the automobile trade are relatively modest. The channels for the ships that carry automobiles typically need be no deeper than 35 feet. In tidal and river ports, floating berths may be required, but otherwise lightly paved or even wooden piers suffice. There should be sufficient secure, clean surge and storage space on the terminal, and depending on the organization of the distribution system, other factors – such as landside connections, space for processing and storage – may be more or less important. In comparison to other commodities, especially those carried in containers, the infrastructure requirements of the 'spatial fix' are relatively modest.

However, more recent work on the geography of capitalism suggests that firms may become 'fixed' for other reasons beside physical infrastructure. These ideas are

discussion, see Herod 2001).

[12] For example, in contrast with other automobile importers, the Korean assembler Kia maintains a distribution system that allowed it to switch its main West Coast import port from a terminal operated by DAS (a Nissan Motor Corporation subsidiary) in the Port of Los Angeles, to the Amports operation at the

developed usefully in Schoenberger's (1997) book, *The Cultural Crisis of the Firm*. Schoenberger is concerned to avoid the teleology of Harvey's earlier accounts and so introduces two innovations. First, she prefers the notion of time-space transformation to Harvey's (1989) notion of time-space compression.[13] Her formulation implies openness to the possibility of multiple outcomes. For example, Schoenberger shows us that the time problem may be resolved through a spatial fix, and vice versa. Through a reconstruction of the work of economic historian Lazonick (1990), she shows us that the British textile industry was able to resolve its 'slowness' in production through its colonial power, or in other words its dominance of space. Conversely, inventory management systems in just-in-time production may be thought of as a temporal fix to the problem of spatially dispersed production sites.

Second, having established the possibility of a variety of solutions to the time-space problem, Schoenberger then inserts the notion of competitive strategy. Firms are not simply concerned with overcoming the problem of space and time in and of itself, they also acting in relation to other firms in the market. If some firms are able to find new ways of overcoming the space-time problem, this puts competitive pressures on other firms to reorganize their management of time and space. This is precisely what Japanese and other developing country firms did to North American producers from the 1960s onwards. Specifically, Japanese firms were able to shorten the time taken to move from

---

Port of Benicia in the San Francisco Bay on short notice in 2001. This switch also entailed a change in the stevedoring company that it used, and a reorganization of landside distribution.

[13] A similar theoretical development can be traced in the work of Neil Smith. In *Uneven Development*, Smith (1984) argues that the various spatial scales (cities, regions, nations, the global) represent the various levels at which the tension between capitalist's desire for both mobility and fixity in capital is resolved. In his later work, Smith adopted a less mechanistic approach, recognizing the contested processes whereby spatial scales are produced (see Herod 2001).

product concept to market, through innovations in the design process and in production. We will return to the question of competition later in this discussion.

What is troubling in Schoenberger's argument is the way in which time and space are given privileged status over other problems, in particular the problem of information, that firms face when trying to make a profit. When Schoenberger reviews various alternative explanations for why firms may have been unable to respond appropriately to competitive pressures, she uses a very narrow definition of information. One of the alternative explanations for corporate rigidity is the possibility of information failure (cf Simon 1961; Stinchcombe 1990). Schoenberger does not dismiss this account entirely, but persuasively argues that firms – particularly the type of large corporations that found adjusting so hard – invest considerable resources in information-gathering and processing. Thus despite evidence of 'enough' information, firms still fail to adjust to changing environments; something else impedes their using the information available.

While there is much to agree with in this critique of the information failure literature, it seems that we need to take the definition of information further.[14] When information is presented in strictly utilitarian terms – a resource of which one can have more or less of – it seems reasonable to subsume it under the categories of time and space. So, for example, firms can use better information on expected transportation arrival times and delays, better forecasts of seasonal demand, boost demand with targeted advertising and so on, to overcome the time-space problem. Indeed, it takes time to find out what competitors are doing, and respond effectively. This version of the information problem might well be addressed through a spatial fix – for example, one of the touted benefits of propinquity is early warning of changes in the market.

However, this understanding of information seems too narrow; a broader understanding indicates that overcoming the information problem itself is a basis for a firm becoming 'fixed'. The key to this insight is the notion that information is not (merely) a resource or commodity that one individual can hold, but is something that is shared through common participation in institutional structures.[15] At the most basic level, an automobile importer can only know which infrastructure to demand, and a port planner can only know which infrastructure to supply if they are able to effectively communicate with each other, and that effective communication cannot exist outside the context of some institutionalized relationship.

These institutionalized relationships constitute the 'relational fix'. The term *relational fix* conveys the hypothesis that economic actors seek an appropriate set of institutionalized relationships, specific to the parties involved, that allow ongoing investment in plant, equipment, infrastructure and systems in the face of uncertainty. The term 'fix' contains a useful ambiguity.

---

[14] I suspect that Schoenberger's notion of culture as reflexive identity – firms have to decide what to be, as well as what to make - is compatible with my understanding of information (Schoenberger 1997; 83 and 119-123).

[15] This conception of information is related to that of mutual or tacit knowledge (Polanyi 1966), or "generically taken-for-granted 'knowledge' which actors assume others possess, if they are 'competent' members of society, and which is drawn upon to sustain communication in interaction" (Giddens, cited in Cassell 1993; 105). See also Lambooy (2002).

The first meaning of the word ‘fix’ refers to the way in which particular sets of relationships constitute a *solution* to the problem uncertainty. However, given the actor-specific nature of any relationship, it would be incorrect to assume that there is an optimal solution to a given set of circumstances. In other words, the appropriateness of a particular relational fix is contingent upon which actors are party to it, and so it makes little sense to speak of an optimal set of relationships separately from the actual participants. In addition, there may be more than one equally viable solution for the same sets of actors. Hence, the analytical task is to understand the economic development consequences of particular sets of relationships.

The second meaning of ‘fix’ refers to way in which the participants to a particular set of relationships become mutually interpenetrated over time. This may lead to commitments that are *hard to break* and thus may constitute a basis for path-dependency, but need not necessarily do so. A related idea in regional studies is the notion of ‘stickiness’, which refers to the forces that hold economic activity in some places (cf Markusen 1996). Given that relationships need to be constantly (re)enacted to persist (cf Giddens 1979 and 1984), they can, in principle and at some cost, be broken by either party at any time. It is thus incorrect to think of a relational fix as something static or permanent. Hence the analytical task is to understand which sets of relationships are more easily built, changed or broken than others.

Institutions and Economic Geography

This inter-subjective understanding of the role of institutions and information has informed much of the recent work in regional studies and economic geography, albeit using different language. Indeed, understanding regional economies as institutional ensembles has become very popular in recent years as a way of explaining why, despite the dispersing effects of globalization, economic activity continues to agglomerate and why some regional economies consistently perform better than others. In a recent review of the new economic geography, Michael Storper (2000) traces the evolution of the institutional paradigm in economic geography since Piore and Sabel's (1984) seminal study of what has become known as flexible specialization. This initial work established an empirical basis for growth outside large corporations rooted in local regulatory systems.

Building on Piore and Sabel’s work, the transactions costs (or Californian) approach, provided the formal prediction that vertically disintegrating firms would cluster spatially (cf Scott 1988). In other words, proximity would replace intra-firm hierarchies as a solution to the problems associated with transactions characterized by information asymmetries (cf Williamson 1975). In general terms however, the transactions cost approach could not account for the lack of dense traded input-output relations in many agglomerations (Storper 2000). In other words, it could not account for the fact that firms without direct business contacts were clustering spatially.

The transactions cost approach also does not offer much assistance in understanding why maritime transportation and related economic activity clusters in particular places. Hierarchies in both the automobile sector and the shipping industry have persisted, and where they have declined, they have not given way to clustering so much as to complex patterns of inter-firm relationships and alliances. Similarly, one does not need transactions costs to explain why some ports have become container hubs – economies of scale in an increasingly concentrated industry (see Slack, McCalla and Comtois 2002) provide enough of an answer.

The alternative explanations for economic agglomeration reviewed by Storper (2000) faced similar problems. The 'regional politics' explanation, which accounted for regional growth in terms of the success of coalitions in attracting external resources, especially military spending, could not account for the uneven success of these external injections (cf Markusen 1985 and 1987). The port analogy to this explanation might be the importance of the relative success of regional and local coalitions in securing dredging and other federal resources (cf Gulick 1998). However, port infrastructure spending is no guarantor of regional growth.

Likewise, the 'economy of organizations' approach, which understands regional growth in terms of the intersection of networks of resources co-ordinated by firms, could not account for the inability of firms to free specific portions of their operations from particular locations (cf Dosi, et al 1988). The port analogy to this explanation might be the relative success of cities in which the headquarters of shipping lines are located.

However, as Campbell (1993) shows, maritime service firms did not follow the cargo out of San Francisco to Oakland, even though Oakland hosted the headquarters of leaders in the container revolution such as the American President Line.

What was missing in all these accounts was an understanding of importance of uncertainty, and the role of non-trade relationships in promoting the learning required to overcome that uncertainty. Information – understood here as a common understanding or mutual knowledge that forms the basis of action – is the 'product' of this kind of learning. Hence, subsequent theorizing in regional development has placed more emphasis on the process of learning, specifically how learning is supported through face-to-face relationships (see Storper 1997; Amin 1999).

Storper (1997) views the regional economy as a cluster of specific conventions and relations that define the action capacities of agents. Some conventions have become placeless - for example, standard operating procedures written down in the production manuals of large firms - but others are place-specific and cannot be captured by one firm or group, or by another region. The latter conventions, what he calls 'untraded interdependencies', allow some regional economies to be more successful than others. Amin (1999) argues that in the successful, learning regions, the actors are reflexive, continually learning new, or improving old, production processes and technologies. This attention to learning is closely related to the view that innovation is central to the process of regional development. These views follow in the tradition of Marshall (1892), Schumpeter (1950), Perroux (1950) and Hirschmann (1958), distinguishable from the neo-classical and trade-based theories of regional growth that underpin the approaches reviewed in the previous chapter.

In both Storper and Amin's accounts, relationships are important because of uncertainty and changes in supply, demand and technology. The value of particular institutionalized relationships becomes apparent when we consider the difficulties of investing in new technologies under conditions of uncertainty. As agents consider investment decisions and the adoption of technological changes, they try to balance uncertainties, guided by their relationships with others (Storper 2000; see also Storper and Walker 1989; and Sabel and Zeitlin 1997).

Firm A (or Public Authority A) is more likely to invest in a new technology if it can be sure that Firm B will support it in some co-operative way – through providing complementary products (supply), by purchasing its products (demand), or through enhancing the network effects of the new technology. Where does Firm/Authority A's information about the likely actions of Firm B come from? Not alone from price signals, as implied by the concepts of urbanization and localization economies. This is especially the case when we are dealing with new or emerging markets, or with infrastructure where externalities are likely to lead to inaccurate price signals. Such information also cannot be found in a consultant's report – this information is not a commodity that can be known, let alone peddled, by a third party. Rather, the information referred to here comes from the institutionalized relationships that link Firm/Authority A and Firm B. These might be contractual obligations defined and enforced in law, although in an uncertain environment a personal relationship of trust is likely to have equal or greater salience.[16]

Certainly these ideas have resonance in the automobile distribution context, which is characterized by considerable uncertainty. The sources of these uncertainties are discussed in greater detail in Chapter 7, but in summary we can say that the decision to assemble automobiles away from market depends upon the co-operation of a range of actors responsible for safe and efficient transportation. Co-operation from these actors can only be secured through a set of institutionalized relationships. For example, co-operation between shipping lines and automobile firms instigated by national industrial policy was central to the export expansion of Asian automobile assemblers (see Chapter 4 for more on this point).

Port users need to be concerned both with relationships of co-operation, as well as with ones that involve competition since both are sources of uncertainty. Competition is perhaps even more important than in other contexts because ports, and indeed other public provided infrastructure, are rival goods supplied and used in common. In other words, they are multi-user facilities.[17] When a berth is occupied another ship cannot call there, and when a terminal is used for handling one type of commodity it may not be available for handling another. When containerization prompts a change in terminal configurations and landside connections, some users may be advantaged at the expense of

---

[16] Indeed, in legal theory a contract is regarded as "a meeting of minds", implying that a relationship of trust is a pre-condition for a more formal relationship.

others. Hence, securing some certainty in competitive access to infrastructure services – knowing that they will be available when needed and even when things change – also depends on an appropriate set of institutionalized relationships.

Mutual Specialization, Local Public Authorities and the Relational Fix

In summary then, my perspective departs from the work of Harvey (1982 and 1989), and to a lesser extent from Schoenberger (1997), in the sense that I argue that the problems of time and space are no more significant than the problem of information. A spatial or temporal fix alone cannot adequately address the problem of uncertainty, and so firms require a set of appropriately institutionalized relationships in order to overcome the uncertainties associated with making economic decisions. I have argued that these uncertainties are essentially informational in origin – they are about knowing that co-operating actors will continue to co-operate, and that competing actors will not be able to monopolize scarce resources. I refer to these institutionalized relationships as a 'relational fix' in order to highlight the fact that they have the potential to bind actors together.

How does the notion of a relational fix help us account for the observed pattern of mutual specialization? If firms seek and find a set of appropriately institutionalized relationships, we would expect to see the parties to a particular relational fix becoming increasingly interpenetrated over time. Hence this firm-and authority-specific process is selective may

[17] This use of the term 'multi-user facility' is informed by an emerging literature on 'multi-employer environments' in which activities have to be co-ordinated for people not sharing a common employment relationship, see Cooke, Earnshaw and Rubery (2002).

constitute a basis for path-dependency - it has a history, it involves some actors and not others, and has a spatial dimension. This is not to deny that such relationships of learning may transcend spatial confines (see Gertler, 2001). This perspective is consistent with the statistical evidence of mutual specialization, whereby automobile importers have concentrated their imports in fewer ports and some ports have become specialized in handling larger proportions of the imports of fewer automobile firms.

Having established the theoretical case for the relational fix, several empirical and policy questions remain. What do the various relational fixes look like? Is there much variation? For port and regional economic development planners, given the selectivity of the relational fix, is it possible to accommodate more than one firm or business model? What are the consequences of different relational fixes, and can we identify and create 'better' ones? In the following chapter I trace the processes and actors involved in handling automobile imports at US ports. I show that there are a variety of possible relationships that firms may enter into in order to successfully import automobiles. In the subsequent chapters I show how and why these relational fixes vary from port to port and from firm to firm, and I trace their consequences for the distribution of economic activity.

Chapter 4

Processes and intermediary actors in the handling of automobile imports

Introduction

If automobile manufacturers had to deal only with Port Authorities to successfully handle vehicle imports, then the arguments about the importance of appropriately institutionalized relationships contained in the previous chapter would lose some of their salience. As it turns out, there are several intermediary actors involved in the trade, actors over which neither port authorities nor importers can exercise complete control. Some relationships with these intermediary actors may, from the perspective of an individual port authority or firm, be regarded as given or as exogenous. For example, labor regimes in various ports are the product of histories of conflict and collective bargaining between longshoremen and employers, while the relationships between Japanese automobile manufacturers and shipping lines are the result of national industrial policy and the Keiretsu system of business organization.

Questions thus arise about these actors. In particular, what are the relationships between these intermediary actors, port authorities and firms? How have these relationships changed over time? In this chapter I discuss the range of actors besides automobile manufacturers and port authorities that are involved in handling automobile imports, and I show why it is necessary to ask what are perhaps awfully detailed questions about a process that is on the face of it, apparently rather simple.[1] There are four major steps involved in moving finished automobiles through a port – ocean carriage, discharge, processing and landside distribution. These steps or processes, and the actors involved, are summarized in Table 4.1.[2]

In an analysis of inter-organizational interactions in a "typical breakbulk berth of the early 1960s, and ... a modern container terminal community", Martin and Thomas (2001; 279) argue that the previously fragmented system has been replaced by more cooperation at the operational level, although not necessarily by longer-term contractual commitments. In the case of the automobile trade, there is in fact considerably more variation in which actors are involved and how they relate to one another, than this assertion might suggest. In what follows I discuss each of the four steps through which an automobile passes, emphasizing the variation in actors involved in the trade and in their relationships with each other.

These variations reflect differences in the strategies of firms, and the institutional structures associated with ports, and they have consequences for the distribution and nature of economic activity. The fact that others, besides the two main parties, are implicated in a relational fix is part of what gives it a spatially distinctive character. Each relational fix is constituted with different intermediary actors, each with different

[1] Indeed, I recall being asked by one such intermediary actor, a longshoreman: "What's the big deal? The ship comes in, we drive the cars off to the first point of rest, we go home. What else is there to talk about or study?"
[2] The data in this chapter was collected from a telephone survey of 21 port authorities, interviews with individuals in a range of firms and agencies, review of secondary material, and the PIERS database (See Appendix B for more detail).

histories, cultures and organizational boundaries. When these different actors combine or more correctly when they institutionalize relationships with each other they create distinctive spaces. This notion of regions and localities arising through the distinctive intersection of various actors echoes Storper's (1997) notion of 'possible worlds of action' that arise at the intersection of particular technologies, organizations and territories.

Table 4.1 Moving automobiles through US Ports: Processes and Actors

PROCESS	ACTORS
Ocean carriage by steamship line	K-Line, Mitsui-OSK, NYK, Hyundai Merchant Marine (HMM), Wallenius-Wilhelmsen Lines (WWL), Hoegh-Ugland Autoliners (HUAL); Nissan, Toyota and VW lines
Discharge (Loading) at port by longshoremen hired by stevedoring firm	Marine Terminals Corporation, Stevedoring Services of America, Metropolitan, P&O, Ceres, Universal, Pasha. PMA and ILWU (West Coast); various Steamship Trade Associations and ILA (East Coast)
Processing and Storage by vehicle processing firms (includes customs clearance, cleaning, accessorization, quality control, customization)	Toyota Motor Sales, Distribution Auto Services (Nissan), Mercedes VPCs; Pasha, Autowarehousing, FAPS, Amports, Premier Auto, Transworld Diversified Services, FAS; Pacific / Atlantic Vehicle Processors (WWL), Autoport (HUAL)
Land-side distribution by railroad or trucking company	Burlington Northern Sante Fe (BNSF), Union Pacific (UP), CSX Corporation (CSX), Norfolk-Southern (NS); Allied Automotive Group, Auto Elite Transport, Auto Port, Auction Transport, Centurion Auto Transport, Commercial Carriers, DMT Trucking, Fleet Car Carriers, Jack Key Auto Transport, Leaseway, Legion Transport, Sunbelt Auto Carriers, Tri-Star, Waggoner; Toyota Motor Sales trucking

Source: Author's research.

Ocean carriage

The first step in the distribution chain of automobile imports is ocean carriage. Today shipments of new automobiles are carried in specialized vessels operated by a handful of Asian and European steamship lines. Automobile firms relate to the owners and operators of these vessels in a variety of ways, with important consequences for the nature of the relationship between firms and ports. Deeper involvement by automobile importers in ocean carriage arrangements presents them with possibilities for direct and durable relationships with port authorities. Conversely, automobile firms may be less involved in port choice and other logistics decisions when they use the regularly scheduled services of a shipping line.

There are four approaches to ocean carriage, representing different levels of involvement by the automobile importer, and hence different relationships between the automobile importer and the owners and operators of shipping lines (see Table 4.2). The four possibilities are (1) ‘house lines’ where the automobile importer operates its own line, (2) ‘cargo guarantee’ arrangements, where the automobile importer and the shipping line are involved in some long term agreement, (3) ‘liner’ services where the shipping line provides a regular scheduled service, and (4) a ‘tramp’ service chartered on a short-term basis for a specific shipment.

Table 4.2 Actors in Ocean Carriage

CATEGORIES	MAJOR FIRMS
Cargo guarantee	K-Line, Mitsui-OSK, NYK, HMM
Liner	WWL, HUAL
House line	Nissan, Toyota and VW
Tramp	Small lines, generally operating chartered vessels

Source: Author's research.

These possibilities reflect the historical development and industrial organization of the shipping industry. In general terms, European importers have tended to use house lines or liner services, while Japanese importers have used house lines or consignment guarantee arrangements. New market entrants, for example, some of the Korean importers, and those importing batches of automobiles infrequently or experiencing a demand spike, use tramp services.

My purpose here is not to explain this system fully, but simply to establish the variety of options available to an individual automobile importer and highlight the implications of this portion of the business for the nature of the relationships between automobile importers and port authorities. I start with some background on the structure and evolution of the car carrier industry, and then turn to the relationships and their implications.

Today the ocean carriage of automobiles into the US is dominated by just five carriers, namely the Korean Hyundai Merchant Marine (HMM), the Japanese 'big three' of K-Line, NYK and Mitsui-OSK (MOL), and the Norwegian-Swedish Wallenius-Wilhelmsen Line (WWL) (see Table 4.3 for the share of automobile imports by steamship line).

Together these lines account for four-fifths of all new automobile imports to the US. In general Asian carriers dominate in the Asian trade, and European carriers in the European trade, although some of the Japanese lines have entered the European trade. There are no US lines significantly active in the new automobile import trade.[3]

Table 4.3 Share of Automobile Imports by Major Line and Origin (percent of total imports)

		Asian Assemblers (2)			European Assemblers (2)			All Assemblers (2)		
		1980	1990	2000	1980	1990	2000	1980	1990	2000
Asian Lines	Hyundai Merchant Marine (3)	-	7.8	24.3	-	-	0.0	-	6.6	17.1
	K-Line	18.1	25.4	19.6	12.4	-	0.0	17.6	21.6	13.8
	Maritime Tokyo	1.6	4.5	5.5	-	-	-	1.5	3.9	3.9
	Nissan Motor Car Carriers	1.8	10.7	5.6	2.7	-	-	1.9	9.1	4.0
	NYK Line	26.1	17.9	22.6	2.8	-	6.8	24.1	15.2	19.0
	MOL (Mitsui OSK Line) (4)	28.2	19.8	16.6	-	1.1	7.0	25.7	17.0	13.6
	Toyofuji (Toyota) Line	-	3.9	2.0	-	-	-	-	3.4	1.4
European Lines	Atlantic Container Line	-	-	-	29.0	0.1	0.1	2.6	0.0	0.0
	Hoegh Ugland Auto Liners (3)	2.2	-	0.3	10.6	21.3	0.3	3.0	2.9	0.2
	VAG (VW) Transport	-	-	-	-	12.1	21.0	-	2.4	8.7
	Wallenius-Wilhemlsen Line (5)	2.4	6.6	2.2	28.7	63.0	62.4	4.7	14.4	16.5
All other lines		19.6	3.4	1.4	13.7	2.5	2.3	19.1	3.4	1.8
Total		100	100	100	100	100	100	100	100	100

Source: Author's analysis of PIERS data for October of each year.
Notes:
(1) - indicates no vehicles; 0.0% indicates a less than 0.05% share.
(2) Origin refers to the nationality of the automobile assembler. 'All assemblers' includes imports of US Big 3.
(3) Shipment classified by shipping line, not by ship owner. Many shipowners, especially Hyundai and HUAL in the automobile shipment trade, lease vessels to other lines.
(4) Includes automobile shipments of Japan Lines, part of MOL since 1964 but operated separately until 1988.
(5) Includes automobile shipments of Wallenius Lines and Wilhelmsen Lines before their merger in 1999, and the shipments of NOSAC (Norwegian Specialist Auto Carriers) acquired by Wilhelmsen in 1996.

[3] Many of the lines that transport cargo between ports on the US mainland, Alaska, Puerto Rico, Hawaii and various island territories have car carrier capacities, including Crowley, Matson, The Jore Group, American Roll-on Roll-off Carrier, Central Gulf Lines, Maybank, Overseas Shipping Group, Sea Star Line, Pasha, Totem Ocean Trailer Express, Trailer Bridge and Waterman Steamship Line. These vessels are used for privately owned vehicles or secondary distribution of new vehicles. As cabotage carriers, they are protected from international competition by the Jones Act. For more on US flag carriers see www.marad.dot.gov.

In the last twenty years, an already highly concentrated industry has become extremely concentrated, and will become even more so when the third largest carrier of US-bound automobile imports, WWL, proceeds with its plans to purchase HMM's car carrier division, currently the second largest carrier of US-bound automobile imports (Business Times 2002). This trend is indicated in various concentration measures presented in Table 4.4.[4] For example, the share of the top five and ten lines has risen across all trade routes.

Table 4.4 Concentration in the Automobile Carrier trade

	Asian Assemblers			European Assemblers			All Assemblers		
	1980	1990	2000	1980	1990	2000	1980	1990	2000
	Number of Lines								
Total Lines in Trade	27	25	23	20	26	37	34	55	62
Lines carrying 100+ vehicles	23	16	10	10	6	8	25	21	16
Lines with 1%+ market share	13	9	9	10	5	5	14	10	9
	Market Share (percent)								
Share top 5 lines	78.9	81.6	88.7	86.4	98.6	98.3	73.7	77.4	80.0
Share top 10 lines	89.5	98.5	99.9	99.7	99.8	99.6	87.9	96.5	98.9

Source: Authors analysis of PIERS Data for October of each year. Origin refers to the nationality of the automobile assembler. 'All assemblers' includes imports of US Big 3.

Evolution of Car Carriers

The ocean carriage of automobiles has undergone a series of developments that are related to the process of containerization. Before there were containers, cars were carried in the holds of general cargo ships, generally on the upper deck because they are

[4] The increase in the number of lines carrying one or more vehicles shown in Table 4.3 reflects the growth of small loads carried within containers. These are mostly Privately Owned Vehicles (known as POVs) and

relatively light (see Kendall and Buckley 1973(2001)). They would be lifted out of the hold using a crane, in much the same way as pallets of boxes or netted bags. Automobiles were hence 'lift-on lift-off' cargo, handled much the same way as just about every other piece of cargo.

During the period immediately following World War Two, there were some developments in the technology used to handle cars carried in general cargo vessels. At first, cars were lifted in nets. Later came an X-shaped device that attached to the wheels of the vehicle. This was finally replaced by a metal cage. Although each successive innovation was an improvement, apparently damage rates remained very high. The handling of automobiles was as labor intensive as the handling of other commodities before containerization.

During the initial phase of containerization, especially in the late 1950s, it appeared that the shipment of automobiles and containers might be entirely compatible.[5] This may seem strange to us now, but it should be remembered that the first containership – the *Galveston* that was operated between Newark and Houston by SeaLand Services from 1956 – was actually an oil-tanker converted into a roll-on/roll-off vessel (Chilcote 1988;

---

are handled separately from the manufacturer-arranged loads under discussion here.

[5] Very few automobiles are carried in containers today because of the problem of wasted space. Various firms have attempted to market technologies for stacking up to six automobiles in a container. These technologies are marketed under names such as *Autostack*, *Cartainer*, *Car-Rac*, *AutoRailer* and the *Vehicle Transport Module* (Hensel 2000) and *Trailer Bridge* (AJOT 2002c). The consensus among my respondents was that these technologies were unlikely to secure significant market share beyond the transportation of Privately Owned Vehicles and trades between the US mainland and island territories. Container steamship lines are thus unlikely to secure significant market share in the automobile trade.

Hayut 1981). [6] Containers were initially trailers driven onto specially rigged decks; in principle these decks could just have easily carried automobiles.[7] However, by the late 1960s, containers had lost their wheels. Cellular containerships – in other words, those loaded by cranes as opposed to being loaded in a ro-ro fashion – became the norm.

Today, most cars and other self-propelled vehicles are transported in what are often described as floating garages, formally known as Pure Car Carriers (PCCs) and Pure Car/Truck Carriers (PCTCs).[8] One of the first ships built specifically for carrying vehicles was the American-designed and built *Comet*. This ship, built in 1958, featured a stern ramp and interior ramps between decks (Kendall and Buckley 1973(2001)). However, from the early 1960s onwards, innovation in the shipment of self-propelled vehicles has been vested in a relatively small number of Japanese, Korean and Scandinavian shipping lines. Design differences between Asian and European carriers have become more important as recent automobile model offerings have become more diverse and as vehicles have become larger.

---

[6] It should not surprise us that the commercial application of containers for carrying cargo was first undertaken between two US ports. Metal boxes (known as the Conex boxes) were reportedly first used by the US military in World War Two (Chilcote 1988: 126) but the container revolution was only commercialized with Malcomb McLean's trailer-container system. This was possible because the US ports are linked to a common surface transport system, with similar road and handling rules. Furthermore, the apparently risky experiments of the much-vaunted first-mover, were afforded some protection from competition by cabotage laws (known in the US as the Jones Act). The Jones Act ensures that only US shipping lines may carry shipments between US ports. Of course, an institutional account of the commercial adoption of containers is beyond the scope of this study.

[7] Indeed, on some short-distance trades (such as between the United Kingdom and Europe), automobiles are carried on ro-ro vessels which also carry containers on trailers (Branch 1988).

[8] Some new vehicles, especially heavy trucks and other rolling stock, are carried in 'con-ro' vessels. These ships have holds for ro-ro cargo and carry containers above deck. These ships generally only do well in niche trades requiring a mixture of cargo modes (for example, 'project' cargoes that combine rolling and containerized elements). The most significant operator of con-ro vessels in the new automobile trade is the Atlantic Container Line that serves ports on the US east and European north-west coasts.

The first Japanese car carriers were designed to optimize the transportation of small passenger cars. These vessels, termed PCCs, were built through the 1980s but are now being phased out. They have become obsolete with SUVs and mini-vans, and they also cannot take agricultural and construction equipment. For these reasons they are regarded as inflexible.

The European vessels have followed a slightly different trajectory. European car carriers evolved from ferries designed to carry more diverse loads in the Baltic, and hence were from the start, more like the current PCTCs. European vessels have internal ramps set against the bulkhead of the vessel that run straight down the vessel as opposed to the circular ramp configuration in the center of the vessel found on PCCs. This difference is important when the turning circle of an automobile is too great to allow safe turning in the center of the ship. Apparently this dramatically increases the time to load / discharge, and increases the chances of vehicle damage. Another traditional difference between European and Japanese vessels is deck height, which has become more important as automobiles have gotten bigger. Finally, the location and strength of the loading ramp also differs. In general, automobiles would be driven onto the first generation of Japanese PCCs on a loading ramp located at mid-ship. These ramps were generally designed for lighter cars. This configuration also requires greater wharf length than a rear ramp – this may be important when berthing space is severely constrained. Rear ramps, similar to those used on car ferries, are generally stronger than those located at mid-ships.

The modern PCTC has a stern ramp with a capacity of up to 200 tons, a maximum load height of up to 20 feet, and even hoistable decks – decks consist of large plates that can be hydraulically raised or lowered to accommodate vehicles of varying heights. The differences between the Japanese and European car carriers have diminished in recent years with the construction of PCTCs by Japanese lines, and scrapping of PCCs (Dupin 2001a). However, the historical differences between PCCs and PCTCs point to deeper differences between the Asian and European steamship lines in terms of industrial organization, inter-firm relations and technology.

Cargo Guarantee Arrangements

The development of car carriers by Japanese shipping lines needs to be understood in terms of their formalized relationships with a variety of Japanese exporters, including the various automobile assemblers.[9] The three biggest Japanese shipping groups each maintain a car carrier division, and their current corporate structures can be traced to the re-organization of the industry in the 1960s. For example, the Japanese ocean carrier, K-Line was first established in 1919 as Kawasaki Kisen Kaisha Ltd, and merged with Iino Kisen to form K-Line in 1964. The merger was part of the conscious export-promotion strategy of Prime Minister Ikeda's (1960-64) administration.[10]

---

[9] While the shipping line, Mitsui-OSK claims that it built the first Japanese specialized car carrier in 1965, its rival K-Line claims that it built the first Japanese PCC – named *Toyota Maru No. 10* - in 1970 (MOL 2001; K-Line 2000). K-Line's first car carrier vessel, the combination bulk and car carrier, the *Toyota Maru No. 1* was built in 1968. The largest Japanese ocean carrier, NYK Line, also maintains a large fleet of car carriers. It makes little difference which was first; the important point is that in both cases this was done with the active involvement of the automobile manufacturers through the mechanisms afforded by the national industrial policy and the Keiretsu system of business organization (Gerlach 1989).

[10] K-Line's own corporate history is quite clear on this point, noting that in response to the post-Suez overbuilding crisis, "the government responded by revising its sweeping shipbuilding promotion policy and

The three large Japanese shipping lines all have Keiretsu-type relationships, involving cross-shareholding, with automobile manufacturers (Gerlach 1989). Gerlach places Toyota and Mitsui-OSK in the Mitsui Keiretsu, although the Mitsui-OSK line does not carry many vehicles for the company. Toyota's relationship with K-Line (which Gerlach places in the Dai-Ichi Kangyo Keiretsu) is much closer – a logistics planner for another automobile importer described them as being "married to each other". This appears to have something to do with Keiretsu-type relationships – 5 of Toyota's 10 largest shareholding companies are also top ten shareholders in K-Line (Sakura Bank, Nippon Life Insurance Co, Mitsubishi Trust and Banking Corp, Long-term Credit Bank of Japan and Sumitomo Marine and Fire Insurance Company) (Toyota 2000c and K-Line 2000).

These relationships have afforded the automobile manufacturers privileged access to ocean carriers. For example, Toyota's official corporate history notes that in the 1960s the firm

> "held a series of negotiations with shipping companies to reduce ocean freight charges. Those negotiations were successful in bringing about substantially lower shipping rates. Also, on the condition that TMS would provide a freight guarantee, it had special car carriers built, thus greatly reducing shipping costs. In November 1968, the *Toyota Maru No. 1* was launched. By 1972, a total of 20 car carriers had been launched" (Toyota 1988; 240).

---

passing two new laws as radical measures to strengthen the industry. The first law was the Provision Measures Law Concerning Reorganization of Shipping Lines, which promoted consolidation of the industry. The second was a partial amendment to the Interest Subsidy Law. The government then proceeded to consolidate Japanese shipping lines into six groups. This consolidation of the shipping industry aimed to focus and strengthen the shipping business in support of trade, enhance the industry's international competitiveness and aggressively expand tonnage" (K-Line 2000).

These freight guarantees – known as CGV (Cargo Guarantee Vessel) arrangements – are especially common on the trans-Pacific trades. A CGV arrangement involves the carrier making a vessel available on a regular and exclusive basis for a particular automobile assembler. Approximately 60% of Toyota's shipments with K-Line and NYK are guaranteed in this way. Similar arrangements exist between other Japanese carriers and automobile importers. For example, Honda is traditionally closest to Mitsui OSK, but divides its business between all three big Japanese carriers (Cullen 2001a).

Although the precise nature of the arrangements are proprietary information, the relationships between automobile manufacturers and lines appear to be very similar in the Korean case; approximately 70% of the revenue of Hyundai Merchant Marine's car carrier division comes from Hyundai Motors and Kia (Business Times 2002). However, without the integrated ownership structures found in Asia, such consignment guarantee arrangements are less common in the case of European importers.

It should be emphasized that these formal consignment guarantee arrangements are supported by a series of less formal mechanisms of joint decision-making. For example, automobile manufacturers consult shipping lines closely when planning their logistics systems. Commented one manager with K-Line; "sometimes you can go through two or three scenarios with a manufacturer – initially they're open to a variety of scenarios – and then they start to realizing that ... its going to be to their advantage to be in a specific location and then they'll come out with a more specific request for bids".

House Lines

Despite these close relationships with major shipping lines, the largest Japanese automobile manufacturers, Nissan and Toyota, have also become directly involved in ocean carriage (see Table 4.5). For example, in 1964, Toyota formed its own shipping company, Toyofuji Kaiun Kaisha, and in 1967 it built a storage yard and pier at the port of Nagoya for exports. In the mid-1980s, the system was updated and improved, with a new wharf center at Tobishima completed in 1985 (Toyota 1988, 317). While Toyofuji initially only operated between Japanese ports, it does now have 4 ships on cross-pacific routes, of which its newest, the *New Century 1,* is a vessel that can carry up to 6,000 vehicles.[11]

When explaining the relationship between Toyota and Toyofuji, a representative of Toyofuji suggested that theirs be regarded as a 100% cargo guarantee arrangement, just a higher percentage guarantee than is the case in Toyota's relationships with other shipping lines. The point is that the difference between a house line and a cargo guarantee arrangement is a matter of degree; in both cases, these are close, deep and enduring relationships.

[11] Toyota jointly founded and owns Toyofuji with the Japanese transportation corporation, Fujitrans. Fujitrans specializes in Japanese inter-coastal and inland transportation, although it has expanded operations globally (see Fujitrans 2002). In Long Beach, Fujitrans is ships agent for Great American Lines, a New Jersey-based foreign flag of convenience carrier with two vessels specializing in two-way trade of refrigerated goods and automobiles (see GAL 2002). Since its establishment in 1978, Great American Lines has maintained a close relationship with Toyota, its major client. However, it is not correct to regard this as another Toyota house line.

Table 4.5 Carriers for manufacturers with house lines

		VW / AUDI			TOYOTA			NISSAN		
		1980	1990	2000	1980	1990	2000	1980	1990	2000
Asian Lines	Hyundai Merchant Marine (2)	-	-	-	-	2.0	-	-	-	-
	K-Line	46.7	-	-	34.2	44.5	43.1	2.9	-	-
	Maritime Tokyo	-	-	-	-	-	-	-	-	-
	Nissan Motor Car Carriers	-	-	-	-	-	-	**5.9**	**84.3**	**42.7**
	NYK Line	-	-	21.2	47.9	34.6	45.5	-	-	-
	Mitsui OSK Line (3)	-	-	0.3	0.3	0.0	0.0	55.7	7.7	54.6
	Toyofuji (Toyota) Line	-	-	-	-	**14.1**	**6.8**	-	-	-
European Lines	Atlantic Container Line	-	0.0	0.0	-	-	-	-	-	-
	Hoegh Ugland Auto Liners (2)	31.6	29.5	0.0	-	0.0	-	7.4	0.0	1.9
	VAG (VW) Transport	-	**67.1**	**77.5**	-	0.0	-	-	0.0	-
	Wallenius-Wilhemlsen Line (4)	0.0	0.1	0.1	-	0.2	0.0	-	0.2	0.0
All other lines		21.7	3.3	0.8	17.7	4.4	4.7	28.1	7.8	0.8
Total		100	100	100	100	100	100	100	100	100

Source: Author's analysis of PIERS data for October of each year.
Notes:
(1) - indicates no vehicles; 0.0% indicates a less than 0.05% share.
(2) Shipment classified by shipping line, not by ship owner. Many shipowners, especially Hyundai and HUAL in the automobile shipment trade, lease vessels to other lines.
(3) Includes automobile shipments of Japan Lines, part of MOL since 1964 but operated separately until 1988.
(4) Includes automobile shipments of Wallenius Lines before merger with Wilhelmsen in 1999 and shipments of NOSAC (Norwegian Specialist Auto Carriers) acquired by Wilhelmsen in 1996.

Volkswagen is the only European automobile importer to operate its own 'house line'. VW Transport carries approximately three-quarters of the firm's US-bound imports but does not own any ships (see Table 4.5). Rather, it charters them from various firms for use on specific routes. This type of involvement provides Volkswagen with many of the information benefits enjoyed by the Japanese automobile importers. Rudolf Luttman, VWT Manager of Group Traffic and Transportation Vehicles, notes that "as a ship charterer, we know what it costs to run a ship in terms of canal dues, lighthouse dues and such things". He also noted that this knowledge proved useful in negotiating reduced container freight rates (Cullen 2001b).

Liner Services

Most automobile imports from Europe are carried by steamship lines that have historically not shared the same close relationships with automobile manufacturers as the Asian lines. Furthermore, unlike the Japanese carriers which are active in most shipping markets (i.e. containers, dry and liquid bulk, etc), the largest European car carrier lines are specialized in car carrying. In general, liner services limit the opportunities for direct and close relationships between automobile importers and port authorities.

The Norwegian Hoegh-Ugland Auto Line (HUAL) provides many of the ships chartered by VW Transport and is an important ro-ro carrier in its own right on Europe-Asia routes (ITJ 2001). However, currently the dominant line in the trans-Atlantic new automobile trade is the Wallenius-Wilhelmsen Line (WWL). This line accounts for over three-fifths of all trans-Atlantic new car imports to the US, and for the vehicles of almost all importers besides Volkswagen (see Table 4.3). WWL was formed by the merger in 1999 of Wallenius Lines of Stockholm and Wilhelmsen Lines of Oslo. It advertises itself as the largest ro-ro and auto logistics company in the world, with a fleet of 80 vessels, vehicle processing operations in US and Australia, and trucking in Europe. Prior to this, Wilhelmsen had acquired (in 1995) the car carrier line Norwegian Specialized Auto Carriers (NOSAC), and its purchase of Hyundai Merchant Marine's car carrier division will expand its reach into the trans-Pacific trade (Business Times 2002).

A shipping line such as WWL offers any interested automobile importer a regularly scheduled service. This is known as a liner service. There are of course relationships and contracts of varying duration and intensity here too, but without the certainties provided by the type of institutionalized relationships that characterize house lines and consignment guarantee arrangements, WWL has been very active in trying to secure cargo through other means. WWL's current strategy to reduce these uncertainties, as well as increase its market share, consists of three elements.

First, the line has attempted to take over an ever-greater portion of an automobile importers' logistics operation. A WWL port manager described the strategy as follows:

> "Our core strategy is to be the front line contact for all the top manufacturers of automobiles, ro-ro and other moving equipment, globally ... we want to position ourselves to be able to handle the most comprehensive form of logistics management they want to throw at us .... from soup to nuts, factory to dealer we want to be in that position to handle it ... (I)f Toyota or somebody else comes to us and says we want to manage this piece of it and you manage that piece, we'll say okay, we want to be in a position to do that as well. If for whatever reason other partners need to be involved, we're open-minded to work with other partners, but our core strategy is to be front-line contact with the manufacturers".

An important component of this door-to-door logistics package in the automobile sector has been WWL's involvement in automobile processing. WWL has established subsidiary automobile processing firms – in 1992, Pacific Vehicle Processors in the Port of Port Hueneme (CA) and in 1998, Atlantic Vehicle Processors in the Port of Brunswick (GA) (see the subsequent section for more on processing). WWL's decision to expand its involvement beyond ocean transport has attracted considerable interest and attention in the business press (see Linn 2000; Buxbaum 2000; Dupin 2001).

The second strategy, closely linked to the first, is one in which WWL is trying to develop a hub and spoke system for automobile imports. This lies behind WWL's recent long-term commitment to the Port of Baltimore (see Chapter 6) and is apparently also a goal in Europe (see AutomotiveLogistics 2000a) and Central America (see AJOT 2002a). This involves concentrating the automobile imports of several firms into one port. For example, Volvo recently relocated its operation from Jacksonville to Brunswick at WWL's request in order to reduce their visits to the SE Atlantic Coast by one call.[12] WWL was already bringing Land Rover and Jaguar into this port (Sharkey 2001).

Third, WWL may be attempting to secure deeper relationships with the various automobile assemblers. Although it has not yet entered into any similar formal arrangements in the US, in 2001 WWL purchased a 20% stake in the consortium that acquired Renault's transport and logistics company, Compagnie diAffeEtement et de Transport (AJOT 2001).

All of these strategies decrease the likelihood that automobile importers will sustain direct and close relationships with port authorities if they make use of liner services. Finally, ocean carriage by a tramp vessel arrangement may entail a very high level of involvement by the automobile importer – something similar to the chartering arrangements described in the case of Volkswagen – or a very low level of involvement – where a third party logistics provider arranges a shipment on behalf of the importer. In

[12] This move was made easier for Volvo by virtue of the fact that its processor, Amports, is present in both ports (AJOT 2002b).

the former instance, the automobile importer is responsible for port choice and other logistics decisions, and may thus have direct dealings with the port authority.

Summary: ocean carriage

In summary, there are a variety of ways in which automobile importers and ocean carriers relate to each other. These represent something of a continuum from the integration and quasi-integration of the house line and cargo guarantee arrangement, to the arms-length liner transactions. These sets of arrangements between the automobile importer and steamship line have important implications for the nature of the relational fix in a port.

The key differences of interest here concern the extent to which automobile firms are involved in choosing which ports are visited, arranging loads, schedules and other operations. House line, cargo guarantee arrangements and some tramp shipments provide the automobile importer with more direct relationships with port authorities. For example, Toyota plays a leading role in deciding which ports are visited, and when, by the ships of Toyofuji and its cargo guarantee lines. This draws Toyota into relationships with a variety of other actors, including stevedoring firms, port authorities and others.

In contrast, an automobile importer such as Mercedes uses the liner services from WWL, and to a lesser extent NYK and MOL. Although Mercedes USA does have a representative at each discharge operation to ensure that the off-loading is done properly, they are not directly involved in shipping decisions. Hence, the same possibilities for direct communication between port authorities and automobile importers enjoyed by Toyota and Volkswagen are not present under these arrangements.

Discharge, Stevedores and Longshoremen

Discharging automobiles from PCCs and PCTCs is a relatively simple process with minor infrastructure requirements. A berth with little tidal variation, a lightly paved terminal, and surge space to park the vehicles suffice. Rather, the central challenge for an automobile importer is to ensure that vehicles are discharged expeditiously and without damage. The smallest scratch on a new vehicle can cost several thousand dollars in repairs and delays.

The physical task of off-loading cars from a ship involves two discrete steps – unlashing, and then driving the car from the ship to the point of rest of the terminal. There are opportunities for damage to the vehicle at both stages. Cars are lashed to the deck of the vessel and although the straps used are generally standardized across the various manufacturers, each vehicle model has its own lashing points. Today's straps are fastened with metal buckles, and so there are ample opportunities for scratching vehicles during unlashing. Cars are then driven off the ship – here too there are opportunities for damage such as windows being left open in the rain, smoking, spillages of coffee, and any sort of collision.

How does an automobile importer go about guarding against an unacceptable level of damage in discharge operations? In their ideal world, automobile firms would probably like to have exclusive access to pools of workers with appropriate commodity- and firm-specific skills[13] they can draw on when needed to discharge automobiles. However, an individual automobile importer is not able to achieve such a 'desired' mix of skills and flexibility in port labor unilaterally. Rather, to discharge a load, an automobile importer, working through the ocean carrier, hires the services of a stevedoring firm, which in turn employs the longshoremen who actually do the work.

The hiring of longshoremen is the defining feature of a stevedoring firm, although in some ports, stevedores are also terminal operators[14]. Stevedoring firms generally contract with shipping lines for approximately a year at a time, although their relationships may last for several years. The ship's agent (or port captain of the shipping line) works closely with a representative of the stevedoring firm to manage the discharge and loading. As in other parts of the shipping industry, in recent years stevedoring firms have consolidated into a smaller number of national and international firms (Slack et al 2002).

---

[13] I am using the conventional distinction between job- and firm-specific skills in a specific way. By commodity-specific skills I mean the skills to handle a particular commodity, such as crane operating, driving left-hand drive automobiles, and so on. By firm-specific skills I am referring both the practices and systems of the direct employer (the stevedoring firm), as well as the particular handling requirements of the various automobile manufacturers. For example, lashing points on vehicles vary by manufacturer and model, as do instructions such as how to start engines, where to place the keys after discharge, and so on.

[14] At the San Diego automobile import terminal, the terminal operator and vehicle processor, Pasha, is also the stevedore. Multi-national stevedoring firms such as Stevedoring Services of America (SSA) also act as terminal operators in some ports, while multi-national terminal operators such as P&O Ports also act as stevedores (P&O Ports, an Australian firm purchased the US terminal operator and stevedoring firm, International Terminal Operating Co. in 1999). Indeed the line between stevedores and terminal operators is becoming increasingly blurred (Slack, et al 2002; Martin and Thomas 2001). I am however not aware of any cases where automobile manufacturers, which do sometimes act as terminal operators, have also directly taken on the role of stevedoring.

Stevedoring firms are party to coast-wide collectively bargained systems of hiring, training, pensions and so on that govern labor relations on the waterfront. On the US East and Gulf Coasts, the International Longshoreman's Association (ILA) and the various local shipping associations (eg, the Steamship Trade Association of Baltimore), and on the West Coast, the International Warehouse and Longshoreman's Union (ILWU) and the Pacific Maritime Association (PMA) are the parties to these labor agreements (see Table 4.6). Both systems provide pools of trained workers who are allocated among multiple employers through a dispatch hall.

Table 4.6 Actors in Automobile Discharge

CATEGORIES	MAJOR FIRMS / UNIONS
Stevedoring firms	Marine Terminals Corporation, Stevedoring Services of America, Metropolitan, P&O, Ceres, Universal, Pasha
Employers' Organizations	Pacific Maritime Association (West Coast); various Steamship Trade Associations (East/Gulf Coast)
Longshoremen's Unions	ILWU (West Coast); ILA (East/Gulf Coast)

Source: Authors research.

From the perspective of an individual importer, this co-operative system is also a competitive one. The various importers are in competition with each other over training priorities, and other aspects of the work process. For example, automobile importers are in competition with importers of other commodities about commodity-specific training and handling skills. This is in addition to the dual-edged nature of the co-operation and competition between workers and employers. The point is that automobile importers are not able to establish, at will, the port labor system they would prefer; rather this is also an arena of variation, uncertainty and change.

The purpose of the remainder of this section is show how individual automobile importers have gone about institutionalizing a set of relationships that allow them to successfully secure ‘acceptable’ port labor over time, and to understand the consequences of one such set of relationships as opposed to another. Of particular interest are those instances where the Port Authority has become actively involved in port labor matters. The goal is however not to explain or even fully describe the port labor market. It is also not to explain what role labor costs differentials may play in explaining why a firm uses one port as opposed to another. This is not to imply that labor cost differentials do not exist, or to deny that they may be important.

Although the actual process of discharging vehicles does not vary much from place to place, automobile manufacturers use different strategies to secure the same outcome in different ports. In order to understand how automobile importers have gone about securing skilled labor for discharge operations, we need to understand the interaction between two key aspects of the port labor system. First, the relationships between the two main actors involved here, namely stevedoring firms and longshoremen, are defined by a system of collective bargaining that is different on the US east and west coasts. Second, these coastal labor regimes combine with various local labor market factors, particularly the level of containerization, to generate differences from port to port. These two factors combine to provide distinctive regional outcomes in terms of the training system, gang and wage structure, shifts and other work rules, which in turn influence the nature of the relational fix from port to port.

East vs West Coasts

In general terms, longshoremen and employers on both coasts have traded off higher wages for fewer jobs in the second half of the 20th Century, a result of the technological and organizational changes associated with containerization.[15] Most of the literature on US port labor has sought to understand the relative success of longshoremen's unions, especially on the West Coast, in securing high wages and benefits in the face of reduced overall employment, considerable technological change and deregulation (cf Wellman (1995), Talley (2001), Herod (2001), Ircha and Garey (1992), Finlay (1988) and Kagan (1990)). However, there are important differences in the labor relations systems on the US east and west coasts. [16]

In general terms, the more decentralized ILA (east/gulf coast) has secured fewer benefits for its members that the ILWU (west coast). The ILA has also faced competition from Teamsters and non-union labor, especially in southern right-to-work states (Talley 2001). Wages, and hours of work, are higher for ILWU as opposed to ILA members ($27.18 vs $25 per hour as the basic pay rate on January 1st, 2001). In the 1996 contract, ILA members finally lost a minimum annual guaranteed income (Wooton 1996), something that ILWU members still receive.[17]

[15] According to County Business Patterns data, the number of people employed throughout the US in the Terminal Operations and Cargo Handling sub-sector declined from about 90,000 in 1980 to just over 50,000 in 1998. Most of this decline occurred in the 1980s.

[16] The following section draws heavily on the most recent labor contracts (STA-ILA 1996 and ILWU-PMA 1999), as well as interviews with union members and employers' representatives.

[17] The ILA secured the Guaranteed Annual Income on a port-by-port basis in successive bargaining rounds in the 1960s (Herod 2001). The Mechanization and Modernization Agreement of 1960 between the ILWU and PMA established annual pay guarantees on the US West Coast. The current "Pay Guarantee Plan" (PGP), established in 1972, created a coast-wide fund that guarantees each longshoreman with minimum

On the east and gulf coasts (from Maine to Houston), there is a coast-wide Master Contract that governs wages for handling containers and ro-ro cargo. However, in each port, there are also local contracts that create the possibility for variations in the wages for handling other commodities. Automobiles are not included in the ro-ro category, and so in principle, automobile discharges could be paid differently, although in Baltimore, automobile handling is paid at the same rate as containers / ro-ro. Handling of breakbulk and some bulk cargoes is generally paid below the container / ro-ro rate.

The Master Contract also specifies starting times, vacation and holiday pay, and other general contract provisions. However, local contracts allow non-wage concessions for specific customers or cargoes. For example, in a 1986 concession, ILA Local 333 in Baltimore permitted 'one-time handling' of automobiles (JOC 1987). To understand this concession we need to understand the work rules and conventions governing gang structure on the east coast.[18] In Baltimore, gangs of 15 or more workers (excluding supervisors and mechanics) are the basic work unit and act as the repository of skills. Three members of the gang are top-men; when discharging containers they are the crane operators. On car carrier vessels, the top-men give directions. The remainder of the gang are general longshore workers who perform all tasks, which means they unlash vehicles

---

weekly pay. In recent years, PGP payments have been insignificant in Californian as compared to Pacific Northwest ports. California ports account for approximately seven-tenths of active longshoremen and only one-tenth of PGP payments (see PMA 2002).

[18] Gang structures vary up and down the east coast – what is known in the industry as 'past port practice'. For this reason I have focused this discussion on Baltimore. By way of comparison, in New York for example, lashing teams are not included within the gang structure. After the lashers have done their work, deep-sea longshoremen's gangs drive cars to first point of rest, and unlike Baltimore, there are no drivers outside these gangs. ILA warehousemen then pick up the vehicle at that point and do the processing work.

and drive them off the ship. On any discharge, a stevedore may add additional general longshoremen to the gang. However, additional drivers employed during automobile discharges are not members of gangs in Baltimore.

The 1986 concession established that drivers could go on to the vessels. Previously only gang members would take cars off ship and then the driver would take the car to the first point of rest. Now both gang members and drivers go onto the vessel. The automobile processors and importers wanted this ‘one-time handling’ rule change since it increased productivity and reduced the potential for damage by eliminating the handover point. Similar concessions have been made for shipping lines committing to the port for a long time. For example, Baltimore longshoremen agreed to additional starting times in the unsuccessful Maersk bid, and then extended the same concessions when WWL recently signed a long-term contract with the port (see Chapter 6).

Gangs on the east coast are semi-permanent and so act as a repository of commodity- and firm-specific skills. Every stevedoring firm in Baltimore has a number of “house gangs”. The members of these gangs are eligible to work for any employer, but receive preference when work is allocated to their ‘home’ employer. Some of the house gangs specialize in handling particular commodities and so house gangs become a point of competition between the various stevedoring firms. For example, of the 14 house gangs with P&O Ports in Baltimore, 3 are specialized in handling ro-ro cargoes. These gangs are supported by 75 house drivers who are given preference in the allocation of

---

This is the only port where longshoremen do the processing work; outside New York this work traditionally falls under the jurisdiction of the Teamsters Union.

automobile discharges. In contrast, the Maersk (ocean carrier conglomerate) terminal operating and stevedoring subsidiary, Universal, has no car gangs and so has no advantage in bidding for contracts to handle ro-ro cargo. In other words, on the east coast, an automobile importer can secure skills by choosing and working closely with a particular stevedoring firm.

The absence of such a system of house gangs on the US west coast presents a different challenge. On the west coast, gangs are constituted from 14 different skill-specific (ie crane, winch, etc) discharge boards at the hiring hall. The stevedore thus has very little control over which longshoremen work on a specific automobile discharge job, since automobile drivers and lashers are taken from the general board. Hence an automobile importer potentially starts each day with a completely new set of workers, with no way of retaining commodity- or firm-specific skills.

One option for retaining firm-specific skills, especially of foremen and clerical longshoremen, on the west coast is the system of 'steady-men', which essentially implies a full-time, permanent employee. This system began informally, but became a source of competition between employers when some stevedoring firms began offering individual longshoremen higher rates of pay or more than 40 hours work per week as a way of avoiding the more anonymous allocation mechanism of the dispatch hall. The 1996 contract included provisions to formalize the system and avoid these problems (see Kagan 1990; ILWU-PMA 1999; Talley 2001). Most stevedoring firms handling automobile discharges do have a few steady clerks so that they don't have to request workers from the hall for small orders, irregular tasks, and so on.[19] However, this does not address the issue of commodity- and firm-specific skills amongst the wider group of longshoremen.

The abundance of cargo handling work in the Ports of Long Beach and Los Angeles means that automobile discharges (apart from the lashing jobs discussed below) are less likely to get the most experienced workers. Automobile discharge jobs are regarded as arduous work, but are paid the basic or lowest wage rate ($27.18, as opposed to $31.72 for more skilled jobs such as operating cranes at January 1st, 2001). Since jobs are allocated in the hiring hall on the basis of seniority, long-time and presumably more skilled longshoremen have preference in getting the higher paid and less arduous jobs. Instead, a significant proportion of the automobile discharge work is done by unregistered longshoremen known as 'casuals'.[20] This further reduces the incentives to provide commodity-specific training.

A combination of formal work rules and informal norms in the Los Angeles / Long Beach region have resulted in specialization among automobile lashers, thus allowing some degree of commodity-specific skill accumulation in this portion of the work. Although the workers doing this work are allocated through the general workers dispatch

---

[19] It should also be noted that in all ports, there are informal and irregularly used mechanisms to ensure that particular individuals are employed under exceptional circumstances. For example, I was introduced to the longshoreman who is entrusted to discharge the Boeing Helicopters occasionally handled in the Port of Baltimore.

[20] Newly admitted longshoreman undergo basic training, but remain in the casual pool for several years until admitted as registered members by a joint management-labor committee (see Talley 2001). Casuals earn the same wages as registered longshoremen, although they receive reduced pay guarantees of only 4 hours. In 2001, 29.6% of wages paid for automobile discharges were paid to casuals (PMA 2002) and it is likely that this proportion was considerably higher in the busier ports such as Long Beach and Los Angeles.

board, lashers in these ports are generally the same group of senior longshoremen. Unlashing is physically demanding work, involving sliding around the deck on ones knees unfastening the straps that hold the vehicles to the deck of the ship. However, a load of vehicles can be unlashed in a matter of a couple of hours. Lashers thus work very hard for the first couple of hours in the day, and for this they receive a full day's wages. Then they are able to go back to the hall to get another job ticket, or do something else.

To understand why working this way is so attractive to this particular group of workers, we need to understand the system of 'shorties' in west coast ports. In terms of the ILWU-PMA (1999) contract, if a shift is ordered then workers are paid for the full shift regardless of whether the work takes less time, although if they do no work at all (for example, because the ship is delayed or if the weather is too bad), then they are paid for four hours.[21] On the east coast, the guarantees are less generous and so longshoremen are generally only paid for hours actually worked.[22] Hence the concept of a 'shortie' on the west coast and the resultant accumulation of commodity-specific skills by automobile lashers.

These work rules raise some difficult contracting issues for stevedoring firms. With a fixed or flat rate per vehicle discharged (apparently the norm), a ship delay may result in the stevedore ordering a gang and not having discharge work for them. Furthermore,

[21] There are three shift starting times on the west coast; the first shift of 8 hours starts at 8am and is paid at the basic wage rate, the second shift of 8 hours starts at 6pm and is paid at 1.333333 times the basic rate, and the third shift of 5 hours starts at 2:30/3am and is paid at 1.6 times the basic rate. Unregistered longshoremen (known as casuals) have a 4 hour guarantee.

[22] The Master Contract does provide for a minimum guaranteed number of hours paid depending on the start time of a shift. Even if the discharge is completed sooner, an ILA member is guaranteed 4 hrs pay if

ILWU foremen and business agents actively enforce established work speeds (cf Wellman 1995; Finlay 1988). According to both stevedores and longshoremen respondents, if there are more automobiles than can be safely and comfortably discharged within a shift, longshoremen will 'go slow'. The stevedore then has to order another gang, or risk missing a sailing, something both carriers and shippers seek to avoid at just about all costs.

The differences between east and west coasts result in very different approaches to securing expeditious, damage-free discharges. The decentralized structure of collective bargaining on the east coast allows for port-wide[23] commodity-specific training, while the gang structure allows some commodity and firm-specific skill accumulation. Furthermore, the involvement by public port authorities in labor matters on the east coast is facilitated by the fact that many ports, especially those in the south, are 'operating' ports. On the west coast, such options do not exist. Rather, here the differences between the large container ports and other ports are more important. Automobile importers thus have chosen one of two options. In the largest container ports they have developed a series of shift-specific[24] training mechanisms, or they have moved automobile operations outside the container ports.

---

they start at 8am or 1pm, 5 hrs if they start at 7pm or 7am, and 8 hrs if they start at 12am. Foremen have an 8hr guarantee on all shifts.

[23] By port-wide training I mean training of longshoremen in a given port undertaken collectively by the port authority or a group of employers. Initial formal training of longshoremen in the US is port-wide, undertaken by the employer's association. Hence, when I use the term here I am referring specifically to training in handling automobiles, unless otherwise specified.

[24] By shift-specific training I mean training at the start of each shift not undertaken collectively by the port authority or a group of employers. This may include briefings, the use of information boards and leaflets.

The differences between the east and west coasts, and the container and non-container ports have important consequences for the nature of the relationships between automobile importers and port authorities. The remainder of this section contrasts port-wide training on the east coast with shift-specific training on the west coast, and highlights the consequences of each for the relationships between the various actors.

Port-wide training

Case study material on the Port of Baltimore illustrates the nature of the port-wide approach to training.[25] The public authority responsible for the Port of Baltimore is exceptional in its commitment to the automobile trade, and has initiated and sustained a program to reduce damage in handling automobiles[26]. This program, known as the Q-Chat has informed various collective actions to train longshoremen in commodity-specific skills, and has strongly influenced the general training of longshoremen in the port.

In November 2000 the Baltimore Steamship Trade Association conducted initial training for the recent intake of approximately 140 new longshoremen. This new group represents

[25] Without having conducted full comparative research on other east coast ports, I cannot be certain to what extent the training systems described here are specific to Baltimore. However, I am able to make the more general claim about the labor regime on the east coast, which is that such port-wide approaches to training are facilitated by the decentralized bargaining structures of the ILA. Apart from local concessions, local employer's associations are able to secure central funds for training that is tailored to local circumstances, and provide this training exclusively for local longshoremen. Furthermore, a port-wide automobile training process that was very similar to Baltimore's was initiated in the Port of New York. The Auto Quality Program was initiated in 1990 when automobile importers complained to the Port Authority of New York about damage to automobile imports. The Port Authority convened a meeting of the main actors, and with the support of the New York Shipping Association (the local employer's association), over 6000 members of deepsea local were trained in handling left and right-hand drive vehicles.

a very significant development, since there are currently only approximately 800 longshoremen in Baltimore, and the last such intake was in 1978. Unlike the training of longshoremen in Long Beach / Los Angeles, the two-day Baltimore training included explicit components on automobile handling drawing heavily on training materials prepared by the car carrier division of K-Line.

Most of the trainees had already started working, and most were related to existing longshoremen. They were well aware of the issue of port competition, a point reinforced constantly during the training. For example, a manager from the local Toyota processing facility attended the training and made a presentation. He began by asking, “how do we keep jobs in the Port of Baltimore?” His answer was that only the longshoremen could make the difference – “how well you do the job, how efficiently”.

Trainees were constantly made aware that they would be monitored while working on automobile discharges. In addressing the issue of vehicle damage, the Toyota manager said that the company’s policy was not to blame the individual responsible for the damage, but to find out what caused the damage and correct that. He asked the longshoremen to inform managers when they caused damage. Furthermore, at the time of the training, Toyota Motor Sales (TMS) head office was evaluating whether to keep the Baltimore operation open. The local manager told the trainees a story about a longshoreman having allegedly cursed him in front of some visitors from the TMS head office. “You never know who’s company” he told the trainees by way of letting them know that they shouldn’t misbehave because visitors from the corporate head office

[26] For more on Baltimore’s automobile focus and the Q-Chat, see Chapter 5.

might be watching. These were the people who would decide whether the Baltimore operation would stay open.

In other words, in addition to port-wide training for commodity-specific skills, this automobile importer was also able to promote self-monitoring behavior amongst the trainees. With sufficiently high levels of trust, such monitoring could be used to improve overall work performance without resulting in workplace conflict. Without trust, it could be resisted or be used to victimize particular workers. In the case of Baltimore today, there appears to be sufficient trust, and certainly the local Toyota managers had as much desire to keep the Baltimore operation open as local longshoremen.

On the east coast, thus, the labor relations system creates possibilities for port-wide commodity-specific training and accumulation of firm-specific skills. Automobile importers have opportunities to participate in the training of longshoremen. Under the best circumstances this draws them into relationships with local unions and the employers' organization, stevedoring firms and the port authority, although this may also imply more opportunities for worker control. Furthermore, port-wide training has particular benefits for smaller users of port labor, since they are able to capture the benefits of commodity-specific training from a shared labor pool.[27]

---

[27] Another example of port-wide commodity-specific training closely related to the automobile trade and involving the port authority is the Baltimore annual *ro-ro rodeo*. Since 1993, the Baltimore Steamship Trade Association and Maryland Port Authority have held four such events where manufacturers display recent models of heavy trucks, harvesters and earthmoving equipment, and demonstrate how to handle them properly (see Brown 2000).

Shift-specific training

On the west coast, automobile importers do not have similar opportunities to enter into such relationships to secure firm- and commodity-specific skills. How have automobile importers dealt with these differences? With coast-wide collective bargaining, ports on the west coast do not differ according to labor costs, and there are only minor differences in port-wide training. Rather, automobile importers employ different strategies according to the extent of containerization in each port. In the container hub ports some automobile importers have developed shift-specific training methods, while others have shifted their operations to ports where containers do not dominate port training and employment practices.

When asked why there was no specific training for handling automobiles on the West Coast, an official of the employers' organization (the PMA) answered as follows:

> "The Pacific Maritime Association collects money from our member companies for dues and assessments, and for that we provide a number of services of which training is one, but in the training arena, we only provide training on equipment and/or cargo handling that is done by a predominant number of our members. For instance, in Southern California the emphasis is clearly on containers ... it's pretty much always been this way."

Given the number of hours devoted to handling containers in the Ports of Long Beach and Los Angeles, this is hardly surprising or unreasonable. Table 4.7 contains information on the total number of hours worked per port, as well as an estimate of the percentage of hours devoted to handling automobiles. In the Ports of Long Beach and Los Angeles (both drawing on the same ILWU locals and hiring halls), automobiles have never accounted for more than 16% of the work hours, and in recent years this has fallen to just over 5%.

However, in the ports where automobiles form a larger proportion of the work hours, there is some port-wide commodity-specific training. For example, in San Diego and Port Hueneme, automobiles account for between one half and three-quarters of all hours worked (see Table 4.7). Hence, a PMA training official noted that "in San Diego, autos are more predominant ... our general safety training in San Diego includes a segment on auto handling ... the same is true in Port Hueneme ...". Combined with the particular mix of work, this port-wide training provides some of the commodity-specific skill accumulation that automobile importers enjoy in Baltimore.[28]

In the absence of port-wide commodity-specific training, automobile importers in the west coast hub container ports have adopted a series of shift-specific training approaches. These training approaches do not attempt to find collective action solutions to the problem of accumulating commodity-specific skills and do not involve the port authority. Furthermore, it seems plausible to argue that large volume importers with a substantial presence in the port have found it easier to implement shift-specific training programs than small volume importers.

[28] In 1998, the Port of San Deigo initiated a Port Vehicle Quality Program. Interested parties – processors, steamship lines, longshoremen, but not automobile importers – meet quarterly to address issues of concern. The program has not yet resulted in any formal port-wide training, but does create a forum for information exchange and holds the potential for more direct interventions.

Table 4.7: Labor at West Coast Ports, 1982-1999

	Ports of Long Beach And Los Angeles		Port of Port Hueneme		Port of San Diego	
	Hours worked by ILWU members	Percentage of hours handling automobiles (1)	Hours worked by ILWU members	Percentage of hours handling automobiles (1)	Hours worked by ILWU members	Percentage of hours handling automobiles (1)
1982	5,449,079	8.0	185,731	(2)	179,359	(2)
1983	5,782,015	9.0	145,714	(2)	134,021	78.3
1984	6,926,687	11.8	243,324	76.6	158,701	78.2
1985	7,175,731	14.8	236,868	81.2	180,000	77.2
1986	7,294,901	15.8	229,604	71.8	164,720	77.2
1987	7,390,253	15.0	260,314	66.7	123,866	78.5
1988	7,386,638	12.4	175,975	71.1	99,199	79.4
1989	7,671,886	12.0	175,254	74.1	95,487	79.6
1990	7,551,176	11.9	228,463	69.9	86,739	78.1
1991	7,205,692	10.5	208,239	61.7	107,801	80.1
1992	7,350,194	9.4	204,699	58.6	90,208	80.5
1993	7,453,227	8.3	182,706	50.9	82,697	78.1
1994	8,373,995	7.4	300,597	43.9	121,852	74.8
1995	9,082,504	7.6	293,016	41.0	111,798	73.7
1996	9,575,227	6.7	250,476	40.4	108,458	75.1
1997	11,277,516	5.8	232,992	46.6	144,566	77.0
1998	13,138,586	5.3	310,619	49.4	168,446	78.4

Source: Authors analysis of data from the Pacific Maritime Association. Unfortunately the PMA could not provide commodity-specific work hours due to confidentiality concerns.

Notes:

1. This is the percentage of predicted hours of automobile handling to predicted total hours. Predicted hours were derived by regressing actual hours worked per year against the number of metric tons of automobiles, lumber, dry goods, and general cargo, and the cubic polynomial of container tons handled. Metric and container ton definitions follow the reporting method of the Pacific Maritime Association (see PMA 1999). Pooled time series-cross section estimation included fixed annual effects, and for the ports of San Diego, Los Angeles / Long Beach, Port Hueneme, the Bay Area, Portland, Seattle and Tacoma. (R-squared = 0.998).
2. Estimates omitted due to outlying residuals.

In the late 1980s and early 1990s, automobile importers using the Ports of Long Beach and Los Angeles tried to implement a port-wide training program to reduce automobile handling damage in much the same way as was being tried in Baltimore and New York at about the same time (Cantwell 1994). As with the east coast equivalents, the Auto Port Quality team attempted to bring together the main actors – the steamship lines, stevedores and automobile importers – and did briefly succeed in providing a forum for sharing information and building social relationships.

However certain key differences between this program and the ones on the east coast point to the real limits on port-wide commodity-specific training on the west coast. First, the program did not last very long in comparison with the Baltimore and New York programs. The words of one of the participants indicate that the program was not successfully institutionalized; "the main people moved on and so the program ran its course." Second, the measures implemented by the Auto Port Quality team – a training video and set of pamphlets to raise awareness of damage – did not influence port-wide training in the same way as was apparent in the Baltimore case. Rather they focused on shift-specific training. Third, the employer's organization, the PMA, was not involved. According to one PMA official, this is because "we can't show favoritism to one area.... but everybody has containers so that is not contentious".

Fourth, and most important for this discussion, the role of the port authorities was limited. The port authorities did talk up the program, and the Port of Los Angeles did take on the task of making the training video (a substantial donation). However, the port authorities did not play a leading role in convening the process, nor did they attempt to define and implement a collective action solution to the training problem. This reflects, in part, the different structure of labor relations on the west coast, where the opportunities for port-wide training available on the east coast simply do not exist.

The failure of the Auto Port Quality team co-incided with the departure of some automobile importers from the ports of Long Beach and Los Angeles for the smaller niche ports of San Diego and Port Hueneme. The major importers that have remained in the Ports of Long Beach (Toyota) and Los Angeles (Nissan) now use their own firm- and shift-specific training to reduce damage to vehicles. Before each shift, longshoremen are reminded of a series of "dos and don'ts" when handling vehicles, and are periodically shown the video originally developed by the Auto Port Quality team. Discharges take place on terminals leased to the automobile firms themselves or their subsidiaries, and so firm employees are directly involved in monitoring discharge operations. And in the fall of each year, when the new models for the following year are imported, automobile importers provide coffee, donuts, baseball caps and other publicity to encourage lower damage rates.

Toyota's stevedoring firm, Stevedoring Services of America (SSA), also operated a scholarship program that can be viewed as a strategy of shift-specific damage-reduction. About the same time as the Auto Port Quality team was meeting, SSA implemented an in-house program that paid money into a scholarship fund for the children of ILWU members, for each damage-free discharge at the ports of LA and Long Beach. Apparently this is the only example of a commodity-specific scholarship program in the port. The program ended when SSA decided that pre-shift briefings would achieve the same goals at lower cost.

Summary: discharge

In summary, this section has shown how differences in the labor regimes on east and west coasts, and from port to port, have led automobile importers to approach reducing damage during discharge operations in a variety of ways. On the east coast, the decentralized collective bargaining systems and work rules governing gang structure allow for commodity- and firm-specific skill accumulation through port-wide training. This draws the union, local employers organization and port authority together on training matters, and into direct relationships with automobile importers over labor matters.

On the west coast, these options are not available. Instead, in the successful container ports such as Los Angeles and Long Beach, automobile importers have experimented with a variety of shift-specific training mechanisms in the absence of port-wide commodity specific training and involvement by the port authorities. This outcome reinforces the biases towards large volume importers with a substantial presence in these ports. Smaller importers have thus been encouraged to move their import operations to ports such as Port Hueneme and San Diego, and here they have been able to secure commodity-specific skills training and accumulation by virtue of their dominance in these ports.

Processing and Storage

Once vehicles have been discharged from a ship, they are taken for processing and storage before being finally distributed to dealerships for sale. Processing and storage often take place at the waterfront since this is a point of mode transfer, although this need not necessarily be the case. Despite advances in information technology designed to reduce the time between production and final sale, processing and storage, and the flexibility they allow, remain important steps in the importing of automobiles. In Chapter 7 I show in greater detail where processing fits into the overall distribution system of the various automobile importers.

In this section I am concerned only with showing that there are a range approaches to processing and storage, and highlighting the consequences of the various possibilities for the nature of the relationships between automobile firms and port authorities.[29] As with ocean carriage, automobile importers can internalize or externalize processing activities. In addition to processing undertaken by divisions (eg Toyota Motor Sales) and subsidiaries (eg DAS, a subsidiary of Nissan) of the automobile manufacturer, some ocean carriers (eg WWL) now offer processing services, and there are many independent processing firms (see Table 4.8). Each possibility has varying implications for the nature and consequences of the relationships between automobile importers and other actors. In part, this is because who does the processing, and where, determines who is the direct tenant of the port authority.

---

[29] The sources for this section include interviews with managers at FAPS, Amports, Pasha and other port facilities, and review of the business press, corporate publications and web sites.

Table 4.8 Actors in Processing and Storage

CATEGORIES	MAJOR FIRMS
Automobile Manufacturer or Subsidiary Processors	Toyota Motor Sales Distribution Auto Services (Nissan) Mercedes VPCs
Independent Processors	Pasha, Autowarehousing, FAPS, Amports, Premier Auto, Transworld Diversified Services, FAS
Shipping Line or Subsidiary Processors	Pacific / Atlantic Vehicle Processors (WWL), Autoport (HUAL)

Source: Authors research.

At a minimum, processing involves paperwork and customs clearance. In principle this could take place at the first point of rest on the dock, and the vehicle could then be transported directly to the dealer. However, processing almost always encompasses one or more of the following: cleaning, surveying for damage, repairs if necessary, post-production quality control, accessorization and customization. The aggregate level of these activities has changed over time; for example, in the past cleaning used imply a specialized process to remove the cosmoline wax that was put on vehicles to protect them during ocean carriage. This has now been replaced with protective tape that is only removed once the vehicle reaches the showroom. Similarly, whereas in the past air conditioners were an optional extra added during processing, today's optional extra may be a telephone or satellite tracking system. Before discussing independent and carrier-linked processors, I will briefly describe the operation of Mercedes, an automobile importer with in-house processing.

In-house processing

Mercedes uses the ports of Jacksonville, Los Angeles and Baltimore to handle imports, and in each case conducts processing at in-house Vehicle Processing Centres (VPCs) some distance inland from the port. In the case of Baltimore, the VPC is located at Belcamp MD, about 30 miles north of the port. The 35-acre Belcamp facility is located in an industrial park, with good access to highway I95. A manager at the facility cited good local labor, low tax rates and expansion space as the main locational attractions. The workforce of 67 permanent and temporary employees processes some 75,000 vehicles per year. There is also always at least one technician from corporate headquarters in Germany present, generally on a 6-month rotation. When needed, a technical team will visit for training in dealing with a new model, or for correcting a recall error. Activities include a post-voyage diagnosis, customization for the US market, repairs and some warranty work for vehicles already sold.

Because Mercedes does not have a direct presence in the Port of Baltimore, it hires a firm, Premier Automotive, to deal with port processing. This involves customs clearances and storage. Storage, as we shall see, is a very important function. Note also that without a direct relationship to the Maryland Port Authority, the Mercedes VPC is not directly involved in the Port of Baltimore's Q-Chat process that seeks to reduce damage in vehicle discharges (see Chapter 6). This is in contrast to a firm such as Toyota that conducts processing in-house on waterfront land leased from the port.

In recent years Mercedes has invested heavily in information technology to make processing operations more efficient. The in-house IVIS scanner system allows the processor to prioritize specific vehicles and track them at all points from the waterfront to the end of processing. A unique Vehicle Identification Number (VIN) allows the IVIS system to link to the dealer's tracking system, and to the global Daimler VISTA system that tracks each car from 'birth to death'. While these information systems have been points of competition between the various automobile manufacturers and the processing firms, and will presumably become more important with the advent of web-based automobile purchasing, they do not eliminate the need to process and store vehicles. In other words, no importer has a pure pull system in which a vehicle is sold before assembly, nor can any assembler predict final demand with sufficient precision to eliminate the need to store inventory.

The need for storage space was particularly apparent in 1998 when Daimler-Chrysler decided to adopt a more aggressive approach to marketing Mercedes vehicles in the US. This meant providing dealers with more stock, which in turn dramatically increased the need for storage space at or near the processing facility. However, the 35-acre Belcamp VPC could only accommodate some 3,000 vehicles at a time, whereas storage space was required for up to 10,000 vehicles. The Premier Automotive lease at the port was only 7 acres at the time. However, the Maryland Port Authority was able to reorganize space on the Dundalk Marine Terminal and so accommodate up to 8,000 vehicles at one time (Chapter 6 address the reasons why the port authority was able to do this). In other ports, with different terminal leasing and operating approaches, this storage space might not have been available (see the case of Long Beach, Chapter 5).

Following this experience, Mercedes USA apparently considered opening an Annex VPC at the Port of Baltimore. This would provide the firm with a direct leasing relationship with the port authority, and thus secure the kind of flexible storage arrangements described above. The Annex VPC would also be used to expedite the processing of vehicles that don't require work and can be sent direct to dealers (currently about 40% of imports). However, the Annex VPC was being viewed within the company as a temporary experiment, that would only be adopted elsewhere if it proved workable, and if it was compatible with whatever other changes resulted from the Daimler-Chrysler merger.

Foreign Trade Zones

The discussion of storage provides a good opportunity for a brief digression on the role of Foreign Trade Zones as a source of flexibility in storage and processing operations.[30] Owing to their ubiquity, FTZs are not points of comparison and competition between ports. Of the 20 public port authorities used as a reference group in this study, all had one or more FTZ associated with it. In 1987, automobiles and automobile parts were the top

[30] The source of this information on FTZs is Donnie Turbeville of BMW and the National Association of Foreign Trade Zones, and Mark Nichols, head of Trade Zone Associates, a firm that specializes in administering FTZ operations for various firms including several automobile importers. See also the web site of the Foreign Trade Zone Board at http://ia.ita.doc.gov/ftzpage/

commodity moving through FTZs (Miller, 1990), although their use by automobile importers has declined with increased production and parts sourcing in north America.

FTZs provide automobile importers with various financial advantages, including the following:

- duties are deferred while the vehicle is on the terminal, which may be particularly important for importing expensive vehicles;
- accessories such as radios that might face import duties of 10-12% are only taxed at 2.5% if fitted in the FTZ;
- if a car is destroyed in the FTZ, the firm doesn't have to pay duties;
- vehicles can be re-exported without paying import duties, a factor that will be central if transshipment is to become prominent in global automobile distribution; and
- there are some administrative cost savings since an FTZ operator only has to file data once a week, not per shipment.

The main costs of an FTZ result because the operator has to hold a bond with the US Customs Department. Official FTZ status is sought by the operator, which is generally the Port Authority or some other public authority. Approval of zone status rests with the FTZ Board of the Department of Commerce. Establishing a zone may take several years of studies and hearings, especially since FTZs are exempt from certain state and local taxes.

However, once established, zone status is flexible. A firm can be within the FTZ without using zone status, and zone status can be activated in 20-30 days once established. This has proved very important during trade conflicts. For example, in 1995 the Clinton administration threatened 100% duties on luxury cars, but specifically excluded vehicles processed in FTZs. Toyota activated FTZ status in each of the ports it used at the time.

Thereafter, they were free to elect whether to route each load through the FTZ or not on a vessel by vessel basis. This explains why in most ports, automobile processors and automobile importers have established operations in FTZs, even if they have not activated zone status.

Independent Processors

A review of the ongoing changes and experiments with Mercedes processing operations highlights the fact that the nature of the relationship between the firm and the port authority is an arena of conscious, strategic decision-making. The Mercedes approach represents something of a hybrid; while the firm has in-house processing facilities, the firm has until now not developed a direct relationship with port authorities as a processor. Firms such as Toyota and Nissan have done the most to secure a long-term direct contractual relationship with the ports they use (see Chapter 7). What about automobile importers that do no processing themselves, but make use of a third party?

In making use of an independent processor, the automobile importer is less likely to be tied to a particular port, but forgoes one of the most important possibilities for a direct relationship with the port authority as tenant. The particular circumstances of the intermediary actor gain salience. The duration of contracts, and the possibilities for internalizing external economies through pooling clients, are of particular importance to such independent processing firms. This can be illustrated through a discussion of the business model of the largest independent port processor in the US.

The largest independent processor in the US, FAPS (formerly known as Foreign Auto Preparation Service), has been in business in Port Newark since 1956. It has processed vehicles for more than 20 years for Volvo, Ford and GM, and currently also has Saab, Volvo, Daewoo, Hyundai and Jaguar as clients. This mixed pool of clients allows the firm to internalize a series of localization economies. This dynamic is reflected in the organizational structure of the firm.

Each automobile account is handled separately within the firm. According to a senior manager at FAPS, there are teams of "electricians and mechanics that really report to that manufacturer on a daily basis ... each account has an account manager and staff ... each manufacturer has a representative here outside of General Motors and Ford which used to". However, the vehicles of two or three importers are processed in each building which does allow the firm to shift resources according to production needs. Furthermore, FAPS cross-trains men in the vehicles of at least two importers, i.e. Saab and Volvo, Hyundai and Daewoo, and so on. There is also one body and paint shop as a common facility for all accounts.

Other independent processors also rely on a diversity of clients and particular local institutionalized relationships to stay in business. For example, in Baltimore, the terminal operator and processor, Amports, handles vehicles for Land Rover, Isuzu, GM, Chrysler, Mazda, Suzuki, Ford, Volvo.[31] The Pasha processing operation in San Diego handles Honda, Mitsubishi-Fuso, Hino, Isuzu, Volkswagen and Audi vehicles.[32] To understand why a diverse client base is so important to independent processors, we need to understand the nature of the business relationships between processors, automobile importers and ports.

FAPS leases a facility of approximately 180 acres from the Port of New York and New Jersey. Of this, up to 30 acres is leased on a short-term permit basis as and when needed for storage space. However, the bulk of the facility, some 147 acres, is leased on a 10-year (plus 10-year automatic renewal) basis. The lease includes over 500,000 square feet of buildings and processing space. A manager at FAPS reflected on the benefits of such long-term leases:

> "We rely on long term commitments from the port authority for the infrastructure of land and buildings, and as such our leases are constructed. If we had a two or three year deal our customers would be a bit concerned about our long-term plans of staying in the business. That's why we have a long term lease with options to add or subtract as business conditions change".

Furthermore, long-term leases provide the incumbents with a competitive advantage over potential market entrants. In answer to my question about whether they might consider

[31] Amports is the wholly owned subsidiary of Associated British Ports. Amports has purchased and consolidated terminal operations and independent vehicle processing firms in Baltimore, Benicia, Brunswick (GA) and Jacksonville (Darrup-Boychuk 2002).

[32] In Chapter 6 I deal in more detail with the independent processor, Pasha. This family-owned company was formed in 1942 in San Francisco to provide storage services for military personnel assigned overseas. It first began processing activities at Fort Mason in 1960, with a body shop at Fisherman's Wharf, and today has automobile processing operations at Richmond, Los Angeles, Philadelphia, San Diego, although today only at San Diego are significant numbers of vehicles processed. Pasha first moved to San Diego 10 years ago after losing its foothold in the Port of Long Beach (see Chapter 6). Pasha also has other business divisions, including ocean cabotage between the US west coast and Pacific territories, and surface transportation (www.pashagroup.com, accessed 4/19/01).

expanding the FAPS operation beyond the Port of New York and New Jersey, company officials responded that,

> "we have an open invitation from our friends at the Port of (*name withheld at request of respondent*) to bring, you know, our expertise and our reputation to their fine port ... the problem is that we are not getting the benefit of grandfathered leases from 20 or 30 years ago, we're going to pay 2001 rates, and that represents a negative competitive edge right from the very beginning. So our outlook as regards expansion elsewhere – not likely. You have pre-existing operators there that have the benefits of lower land lease costs because of their length of time in those facilities. So conversely, it would be our outlook to find a port that has not maybe traditionally an auto-port but yet can bring to that the benefits of low land costs which are a major factor in our business".

In contrast with their long-term lease with the port authority, an automobile processor such as FAPS has only short-term (3 to 5 years) contracts with automobile importers. They are thus between a proverbial rock and hard place:

> "There is some exposure when we have ports in other states using incentives to try to buy the business (away from New York) ... anything less than 2 years in a way of a term would be a risk for us because there are certain investments we make in our buildings and facilities and our information systems ... we will outfit a building or a section of a building for a specific manufacturer, this would include lighting, heating, car wash systems, tire changing machines, we could go right down the list".

In other words, while its facility lease provides FAPS some certainty that it cannot be evicted from what is clearly a very desirable port location, it also suggests inflexibility. Indeed, Pasha's unwillingness to take on a long-term lease contributed to its departure from the Port of Long Beach (see Chapter 5). Understanding why FAPS is able to tolerate this leasing arrangement provides some important insights into the local specificity of institutionalized relationships.

FAPS has been able to deal with incommensurate time scales of its contractual arrangements with the port authority and automobile firms for two reasons. First, the relationships between the processor and its main clients (i.e. the automobile firms), although limited in formal contractual terms are nevertheless enduring. Second, there are unique local rules governing processing work in the Port of New York and New Jersey. Here, processing is conducted by the members of a warehouseman local in the ILA. Labor costs are subject to contract negotiations every three years, and hence "we prefer the 3 year contract (with automobile firms) because of our labor cost, so that we can re-adjust as necessary." New York is the only port where longshoremen are responsible for processing work, although it is of course likely that processors elsewhere have coincident contracting cycles.

Finally, it bears repeating that some ocean carriers have become involved in automobile processing. The shipping line WWL has begun processing operations in Brunswick GA and Port Hueneme CA, while the Wilmington DE family-owned automobile processor, Autoport, was bought by the car carrier line, Hoegh-Ugland Autoliners (HUAL). Autoport handles some of the east coast distribution operations for domestically produced Hondas, but most of its processing work is for US automobile manufacturers preparing their exports for Middle East. This involves adding under body coating for harsh desert conditions and removing catalytic converters. In both cases, processing by subsidiaries of ocean carriers is a strategy to secure cargo.

Whether using an independent processing firm, or one linked to a shipping line, the key implication for an automobile importer remains the same. By not undertaking processing operations in-house as direct tenants of the port, they forgo a direct relationship with the port authority. In other words, in making use of an independent processing firm, the automobile importers' relationship with the port authority is mediated. The importer's foothold in a particular port is as secure as the processors', and its means of communicating with port officials is as good as the processors'. This is not to say that it is more desirable for an automobile importer to conduct its own processing operations; profitable firm such as BMW and Volkswagen are doing just fine without in-house processing operations (see Chapter 7).

However, the relationships between processing firms and port authorities are complicated by the issue of competition that in turn may make it less likely for an automobile importer to get what it wants from the port authority. In general, senior employees of independent processing firms enjoy close relationships with port officials, but this need not be the case (see Chapter 5 for a case study of how relationships between Pasha and Port of Long Beach officials broke down, resulting in the departure of Honda from this port and the reorganization of its distribution system).

In general terms thus, port officials constantly need to take care not to be seen to be favoring one tenant over another. If one goal of a public port authority is to attract more cargo, then processing firms as tenants are a key attractor of cargo. Respondents at FAPS, Amports, Pasha and others all knew which port officials to contact when problems needed solving, but were also aware of the limits to overt co-operation. This is how a FAPS manager described the extent of the assistance they could count on from Port of New York and New Jersey officials:

> “(T)he port has to take a neutral position because they have multiple tenants, and they can’t be found favoring one tenant over another. So primarily when we have secured an account we will jointly support that account’s business requirements".

These complexities do not intervene when the automobile importer is the tenant of the port undertaking its own processing operations; Toyota the importer has a direct relationship with various port authorities by virtue of its own in-house processing operations. Again, however, this is not to say that all importers should adopt this business model. In-house processing facilities tie automobile firms to ports for several years. While it has worked well for Toyota, it is by no means clear that this has been desirable in Nissan's case (see Chapter 7). In summary thus, what I have shown in this section are the implications of in-house as opposed to independent processing operations for the nature of the relationship between port authorities and automobile importers.

Landside Distribution

The final step in the handling of new imported automobiles is landside distribution to dealerships for sale by road or rail (see Table 4.9). In trucking matters in particular, this is the handling step around which automobile importers and port authorities are least likely to develop direct relationships. In part, this is because long-distance landside distribution of automobile imports is generally organized nationally, and does not display much of the regional variation of central concern here. This is less the case with rail, which often involves firm-specific investments and relationships similar to those found in other steps in the handling of automobile imports.

However, this is not to suggest that the considerable policy attention that has been directed at congestion on highways around ports is unwarranted (see USDOT 1992 and 1999). Indeed the lack of working relationships might well have contributed to these problems. In this section I will review the issues involved in landside distribution of automobiles, noting those cases of close and durable relationships between importers, port authorities and surface transportation firms.[33]

Table 4.9 Actors in Landside Distribution

CATEGORIES	MAJOR FIRMS
Railroads	BNSF, UP, CSX, NS
Trucking Companies	Allied Automotive Group, Auto Elite Transport, Auto Port, Auction Transport, Centurion Auto Transport, Commercial Carriers, DMT Trucking, Fleet Car Carriers, Jack Key Auto Transport, Leaseway, Legion Transport, Sunbelt Auto Carriers, Tri-Star, Waggoner Trucking
	Toyota Motor Sales trucking

Source: Author's research.

[33] The data in this section draws on interviews with logistics managers of various automobile importers. The analysis was severely constrained by the difficulties in finding a comprehensive data source on the inland distribution of automobile imports. The inland destination point identified in the PIERS database acquired for this project was generally the point of processing, at or near the waterfront. Substantial analysis of the Commodity Flow Survey (CFS) would provide some indication of the inland distribution mode for automobiles. The CFS is conducted as part of the five-year Economic Census and collects data on the mode choice and final destination of shipments from manufacturers and wholesalers on a detailed commodity basis, at state and metropolitan area geographic levels. However, the CFS does not explicitly identify imports, a particular problem now that imported and domestically assembled vehicles are redistributed from processing facilities at various US ports. For this reason I have not undertaken an analysis of this data source.

The overall context for landside distribution in the trucking and railroad sectors since the late 1970s has been heavily influenced by deregulation. The Motor Carrier Act of 1935 had given the Interstate Commerce Commission (ICC) authority to restrict entry and set rates for truck companies or owner-operators hired to provide long-haul (i.e. inter-state) services. The ICC started making policy changes in 1978, allowing more competition for routes (Hirsch 1988). These changes were approved in the Motor Carrier Act of 1980, and the sector is now characterized by lower barriers to entry and is populated by more carriers (Peoples 1998), although this is less the case in the more specialized business of hauling automobiles.

The effects of deregulation were different but no less dramatic in the railroad sector. Regulation in the railroad sector had sought to protect the industry against boom and bust cycles while extending non-discriminatory service to remote locations (Grimm and Windle 1997). The results were an industry in decline; over-priced relative to other competitors in some markets, and forced to operate unprofitable services elsewhere (Peoples 1998). The Railroad Revitalization Reform Act of 1976 and the Staggers Act 1980, allowed railroads to charge unregulated (competitive) rates, abandon unprofitable routes and consolidate with others in the sector (Grimm and Windle 1997). Following a series of mergers and acquisitions, today there are just four long distance rail carriers of automobiles; Burlington Northern Sante Fe, Union Pacific, Norfolk Southern and CSX Corporation. Automobile importers have repeatedly raised concerns about the quality of service and lack of competition in the rail sector overall, and at specific ports.

Despite the different experiences of deregulation, it is not clear whether this has encouraged more usage of trucking by automobile importers. In a static sense, mode and provider choice in inland distribution depend primarily on two factors, namely distance and the possibilities for backhaul transportation. However, we also need to understand these mode choices in the context of the overall distribution strategy of individual firms, and recognize that automobile importers have, particularly in the case of rail, become actively involved in securing the transportation services they desire. In other words, automobile importers do not simply demand transportation services; they also actively seek to shape the supply. In a few instances they have directly involved port authorities in this dynamic process of mode choice.

Trucking

In general, automobile importers use one type of trucking firm for local and regional distribution directly to dealers, within a radius of up to 200 miles of the processing facility. For example, Mercedes in Belcamp uses Leaseway for such short-haul distribution, as well as for moving vehicles the 30 miles between the Port of Baltimore and the processing facility. Long-haul distribution is organized by the national head office and involves a different set of trucking firms, in Mercedes' case Tri-Star. Toyota and Volkswagen both maintain this distinction between locally arranged short-haul and nationally arranged long-haul trucking.

Unlike most of the post-deregulation trucking sector, the narrowly defined long-haul new automobile distribution sector is dominated by one firm. The Decatur (GA)-based Allied Automotive Group participated in the transportation of approximately 62% (over 10 million vehicles) of all new vehicle sales in the USA and Canada in 2000 (Allied 2000). The company estimates that its 2000 revenues were four times those of its closest competitor. Although the firm's three largest clients - the US Big Three (Ford, GM and Chrysler) – accounted for three-quarters of corporate revenue in that year, Allied does transport some automobiles for most importers as well. The company provides hauling, yard management and rail loading services. Allied employees are represented by the Teamsters' union, and the company prides itself on its low employee turnover and Christian management principles (for more, see www.alliedholdings.com). Axis, a subsidiary of the same holding company offers vehicle tracking and logistics services to various automobile assemblers, including Toyota.

Both short- and long-haul trucking may involve long term relationships where the trucker maintains an office at the processing facility, and where there is extensive consultation in decision-making. Given the costs of damage to new automobiles, it is likely that automobile importers generally use larger trucking firms with newer equipment and more skilled drivers, such as Allied. However, automobile importers have generally not become directly involved in providing trucking services. The only exception apparently is Toyota's current experiment with providing short-haul distribution in-house in the southern California region.

Rail

Rail transportation of vehicles apparently only becomes cheaper than trucking at distances of close to 1,000 miles, depending on a range of factors, especially the volume to be transported on the particular route. However, it is here where overall firm strategy plays a particularly important role in framing the mode choice. A firm such as Mercedes, which imports relatively small volumes through ports on both coasts does not use rail at all. Dealerships as far west as the Dakotas are supplied out of Baltimore by truck.

Toyota makes use of various railroads, principally Union Pacific on the west coast and CSX on the east coast, for distribution of domestically assembled vehicles and some imports.[34] In 1993, 45% of Toyota imports were distributed by rail, including 85% of the luxury Lexis range (Muller 1993). Respondents, both within Toyota and without, indicated that the firm uses overt pressure on rail companies to improve performance, and even to change rail deliveries in order to maintain steady workflow at processing facilities, something independent processors and smaller importers might not be able to achieve.

In the early 1990s, Toyota logistics managers worked with other automobile manufacturers to present a united front to press the railroads to improve transit times and handling performance (Muller 1993; Mongelluzzo 1990). In particular, the automobile manufacturers encouraged the railroads to reduce damage to vehicles during switching by eliminating a procedure known as 'humping' in which rail cars are left to run downhill into each other. Apparently these improvements, combined with the tendency in the automobile industry to concentrate assembly of each model in one plant, led to a revival in the use of rail to carry new automobiles (Johnson 1996; Plume 2001).

The automobile importer most invested in rail transportation is Honda. Rail is central to the inland distribution strategy of Honda, which in the 1990s consolidated all its import operations for Japanese-assembled vehicles in just two west coast ports (see Chapter 7). A Honda logistics manager indicated that:

> "a substantial rail infrastructure is vital to a port to facilitate the movement of product to inland destinations whether they are containers or automobiles. Any movement of vehicles from a port to a railhead for shipping that requires trucking places the vehicles in a more susceptible position and should be seriously avoided if at all possible".

At San Diego, Honda worked with the port authority, processor Pasha, and the Burlington Northern Santa Fe (BNSF) railroad to ensure on-site rail connections. When Honda first began importing vehicles through the port (in 1999) there was only one rail spur that held 12 rail cars at a time. The port authority leased some land from BNSF for use by the automobile processor, and convened a planning process that resulted in a $31m ($22m from BNSF, $9m from the port) re-organization of the BNSF railhead. The rail spur now accommodates 125 rail cars, with clear separation of automobiles and other commodities.

[34] Maintaining direct access to rail has been a central concern at Toyota's facility at the Port of Long Beach, and developments here have been closely related to the sale to the port authority of land formerly owned by the Union Pacific Railroads' subsidiary, Union Pacific Resources (see Chapter 6).

This degree of port authority involvement in addressing the specific surface transportation needs of automobile importers is uncommon, if not unique.[35]

Honda's relationship with BNSF appears to be special in other ways, described by a company official thus; “there is a good match between BNSF and American Honda in terms of attitude to business and approach to customer relations.” Although some shippers have argued that competitive rail access is a key issue at US ports, Honda apparently sees no need to use the other West Coast railroad, Union Pacific (UP). Honda and BNSF have also shared the benefits of improved rail tariff and scheduling at San Diego by virtue of BNSF bringing Fords to the Pasha facility for storage and regional distribution.

Honda's processor in San Diego, Pasha, also works very closely with the railroad to get the automobiles to the dealerships. The parties have established a system where they have a daily conference call to sort out which string of railcars should go together. They have also developed a distribution matrix to minimize stops and starts, re-coupling and so on, since each of these events may damage the vehicle. However there is no port involvement in these programs.

Finally, so committed to the land-bridge is Honda, that it has entered into a joint venture with the railcar manufacturer, Greenbrier, to develop a flexible auto-carrying railway car, known as the AutoMax. Honda worked very closely with Greenbrier and the BNSF in the

[35] In 1992, the Port Authority of New York extended a $1.5m, 2.5-mile rail spur into the Auto Marine Terminal which was opened in 1989 (Johnson 1992). The Port of Portland, another port used by Honda, has

development stages and testing stages, and BNSF was the first railroad to place orders for the cars. The Auto-Max was introduced in 1996 and the first train sets went into service in August 1999. The AutoMax has a movable deck, thus allowing it to carry either three layers of passenger cars, or two of SUVs and minivans (Plume 2001). Apparently this flexibility has significantly increased the number of revenue trips per month for rail-cars. This is partly because the load can be mixed at the point of origin (i.e. thus no shunting and switching is required in the middle of country), and also because of the opportunities for backhaul. The Auto-Max trains run a circular route between production sites at Marysville/East Liberty, Ohio and Alliston, Ontario, the import/export site at National City (San Diego), and major markets in southern California (Los Angeles), Texas and elsewhere.

While Honda's use of rail is exceptional, Volkswagen/Audi's current experiment with containers-on-rail distribution is also worth noting. By the mid-1990s, Volkswagen had consolidated all its west coast import operations in San Diego, and has used rail to transport imports to the Pacific Northwest from east coast ports. At Wilmington (DE), a small number of top-of-the-range automobiles are being loaded into containers (using the Autostack system) after having been transported across the ocean in conventional ro-ro car carrier vessels. The program is still under evaluation and it is not clear whether it will be adopted more widely by Volkswagen.

The second main factor in mode choice, which is the possibility for backhaul (in other words, not sending empty trucks / railcars back to their point of origin), depends upon the

---

also been actively planning to improve on-dock rail access for automobile importers.

relative mix of domestic and imported product, and the extent of urbanization economies. This has become more important with the diversification in new automobiles and increases in domestic production. However it also presents port authorities with dilemmas about the appropriate use of port land.

More domestic production means that importers can derive considerable backhaul savings by consolidating domestically produced and imported vehicles at ports, and then using the same trucks / railcars that brought the domestic production to the port to deliver imported vehicles to dealers. Optimizing these arrangements is of course not an uncomplicated challenge for corporate logistics planners, especially given the diversity in today's automobile model offerings. For example, Toyota logistics planners used to get 11 Corollas on a truck, but with Sequoias and Land Cruisers thrown into the mix, they only get 9 vehicles on a truck. The Toyota Motor Sales logistics planning division considers these cost factors and tries to find opportunities for back-haul cost savings.

Backhaul is however not simply an optimization problem internal to the firm, and may draw an automobile importer or processor into conflict with a port authority. The conflict revolves around the use of waterfront land for activities not directly related to waterborne commerce. Most port authorities apparently tolerate a certain degree of latitude on this point, although in most cases ports have changed their pricing systems to charge what is known as landside wharfage (a charge for bringing cargo onto the terminal overland). Of more concern for officials in cargo ports is the possibility that these activities might encourage other land users to seek to expand onto port land, or to seek to limit port expansion as in the case of National City (San Diego).

Summary: landside distribution

In general terms, landside distribution issues do not present specific opportunities for automobile importers and port authorities to develop close and enduring relationships. When port authorities address surface transportation issues, it is for the benefit of all port users, and involves numerous federal, state and metropolitan agencies. For their part, automobile importers generally do not look to port authorities for assistance in land-side distribution matters. Trucking firms are typically hired centrally by the corporate / national logistics office, and there is generally no need to involve the port authority in day-to-day trucking matters. Only those automobile importers using rail extensively have sought direct relationships with port authorities in this portion of automobile handling.

Conclusion: back to the waterfront

This chapter has described the intermediary actors involved in the business of shipping automobiles through US ports. Table 4.10 summarizes these processes and the types of actors involved in handling imported automobiles at US Ports. There are four steps through which an automobile moves when it is imported to the US. There are important variations in which actors are involved in these steps, and in how they relate to each other

– variations between Asian and European ocean carriers, between east and west coast labor regimes, between independent and in-house processing firms, and in mode choices in landside distribution.

Only under certain conditions are public port authorities more likely to develop direct relationships with the automobile importer in undertaking these steps. This occurs when the automobile importer is more involved in arranging ocean carriage and vehicle processing, when labor relations are more decentralized and when the automobile trade predominates in a port, and when rail is an important inland transportation mode for import distribution.

In some respects these intermediary actors are bit players to the central issue of this study, which is the relationship between firms (automobile importers) and public agencies (port authorities). However, the variety of actors presented here and the distinctive ways in which they combine, themselves constitute a basis for the creation of spatially distinct development outcomes. At the crudest levels, four ocean carriage approaches, two labor regimes, three processing options and two surface mode choices imply 48 possible permutations, and that is so even without considering specific firms, shipping lines, union locals and port authorities.

Table 4.10 Moving automobiles through US Ports: Summary

PROCESS	ACTORS	
	CATEGORIES	MAJOR FIRMS / UNIONS
Ocean carriage	Cargo guarantee	K-Line, Mitsui-OSK, NYK, HMM
	Liner	WWL, HUAL
	House line	Nissan, Toyota and VW
	Tramp	Small lines, generally operating leased vessels
Discharge (Loading)	Stevedoring firms	Marine Terminals Corporation, Stevedoring Services of America, Metropolitan, P&O, Ceres, Universal, Pasha
	Employer's Organizations	PMA (West Coast); various Steamship Trade Associations (East Coast)
	Longshoremen	ILWU (West Coast); ILA (East Coast)
Processing and Storage	Automobile Manufacturer or Subsidiary Processors	Toyota Motor Sales Distribution Auto Services (Nissan) Mercedes VPCs
	Independent Processors	Pasha, Autowarehousing, FAPS, Amports, Premier Auto, Transworld Diversified Services, FAS
	Shipping Line or Subsidiary Processors	Pacific / Atlantic Vehicle Processors (WWL), Autoport (HUAL)
Land-side distribution	Railroads	BNSF, UP, CSX, NS
	Trucking Companies	Allied Automotive Group, Auto Elite Transport, Auto Port, Auction Transport, Centurion Auto Transport, Commercial Carriers, DMT Trucking, Fleet Car Carriers, Jack Key Auto Transport, Leaseway, Legion Transport, Sunbelt Auto Carriers, Tri-Star, Waggoner Trucking
		Toyota Motor Sales trucking

Source: Authors research.

For an institutional approach to regional planning, this observation might be regarded as a cautionary tale in the importance of contingency. In other words, there is a lot more to the relational fix between a firm and a public authority than just how the two get along. Hence, we also need to be concerned about how various intermediaries influence the nature and content of the relationship. As with all aspects of their business, automobile importers regard these actors and their relationships with them as arenas of strategic decision-making and action. Time and again we see examples of automobile firms attempting to influence processes as diverse as shipping routes, labor relations, and rail switching. Again we find infrastructure being shaped rather than simply demanded through a variety of institutionally mediated processes. This all said, the chapters that follow present case studies of various port authorities and automobile importers in greater detail and show the consequences of differences in institutionalized relationships for regional development.

PART II

CASE STUDIES

Introduction to the Case Studies

Over the 1980s and 1990s, the automobile manufacturer Toyota maintained a substantial presence in both the Ports of Long Beach and Baltimore. There were subtle but important differences in the way in which the firm operated in each place, showing the influence of 'the region in the firm' (Schoenberger 1999). While the organization of ocean carriage, processing and inland distribution reflected Toyota's corporation-wide strategies there are important differences in labor relations, and in the points of intersection between the firm and the port authority in each case. Furthermore, in each port the process of mutual specialization for this firm has taken place in a very different context.

Whereas in Baltimore Toyota is but one of several automobile manufacturers shipping cars, it is today the only automobile manufacturer using the Port of Long Beach. Not only does Baltimore have more automobile shippers, it also accommodates the full spectrum of approaches to the shipment of automobiles. This was not always the case since before 1980 the Port of Long Beach also accommodated a range of shippers and their different approaches to handling automobile imports. How are we to explain these differences? What is the role of the port authority in each place in contributing to these differences?

If the history of public port performance in late 20th Century has been the history of containerization, then the two case studies that follow could not provide a starker comparison. Whereas the Port of Long Beach now vies with its neighbor, the Port of Los Angeles, for the status of largest US container port, the Port of Baltimore slipped from second place on the US East Coast container handling rankings in 1980, to seventh today. But the experience of containerization is not the only difference, and on just about every other point of comparison, the ports stand at the opposite end of the spectrum.

The Port of Baltimore is managed by the Maryland Port Administration, an agency of the State of Maryland, with an advisory commission and a tenuous connection to its host City. Since the mid-1980s, the Port has fared poorly in the intense competition among the numerous East Coast ports. While not really an operating port in the strict sense of the term, Baltimore contains a mixture of common user and private terminals. Conversely, the Port of Long Beach is a department of the City of Long Beach. Its relatively independent commission controls land assets and exercises planning powers vested in it by California State legislation. Located on the West Coast, it has participated in the massive growth in Asia-US trade and has been at the forefront of the trend to lease terminals directly to shipping lines. It has adopted the planning, financial, organizational and other institutional changes associated with this model of port management.

In short, the two port authorities are embedded in very different historical trajectories, in which containerization is both cause and outcome. This observation is no methodological defeat. On the contrary, to have reduced the point of comparison between these case studies to the impact of containerization, and to have imagined that all else could be held equal, would have missed the more fundamental point captured in the concept of a relational fix. It is this: the factors that mediate the relationships between port authorities and shippers are many, and they combine in complex and distinctive ways. In other words, we are less interested in comparing the outcomes with respect to containerization, than in exploring what the response of each port to the process of containerization tells us about institutions and institutional change.

Many things have changed since 1980 for both automobile manufacturers and port authorities. Chapter Seven reviews the variety of changes that automobile manufacturers have undergone. For foreign producers, the most important of these has been the rise of transplant production in the US. This has been associated with a greater degree of diversification in automobile model offerings and shipments, within the context of an overall decline in the number of imports. However, as shown in Chapter Three port rationalization patterns have varied considerably from firm to firm, depending on the degree of globalization and localization within the particular firm's overall distribution system. By comparing the trajectories of different automobile manufacturers, we have gained some insights into the different demands placed on port authorities by firms in this sector. But to leave it here would be to ignore the impact of the changes that port authorities themselves have experienced.

It must be asked whether we can explain differences in port usage by automobile manufacturers in terms of the containerization success in one port and failure in another? Could it simply be the case that the higher value land use crowded out the lower value one, that containers crowded out automobiles and other commodities? In what follows I will argue that institutional differences, revealed by studying the *process* of containerization, rather than to its *outcome*, provides a more accurate and useful account of how the current patterns of port usage by automobile firms evolved. I contend that attention to process provides a more *accurate* account because it can explain why particular manufacturers were more successful in negotiating the changes induced by containerization than others in precisely the same sector engaged in precisely the same activity. And, I contend that attention to process provides a more *useful* account for planning practice because it focuses our attention on how different actors, in particular port managers, took the decisions than influenced the eventual outcomes.

In the two port cases I discuss on how factors such as agency foundations, organizational structure, planning and financial policies, and the model of terminal operations mediate the ways in which the process of containerization was experienced in each Port. I argue that precisely because they started from such different points, the Ports of Long Beach and Baltimore responded in different ways. Institutional change in each Port varied in important ways, and thus, resulted in very different outcomes.

In examining the institutional differences between these ports, I will focus more on the intersection and combination of the various factors than on their distinctive and isolated contribution of each to the sum of parts. Thus, the case studies have been written with as much attention to what is unique and distinctive about each case, as to isolating the key points of comparison. Similarly, I give as much attention to informal institutions, norms and relationships as I do to formal organizational structures and rules, with the explicit intention of avoiding a reductionist explanation. This point is not simply methodological, but also has clear policy implications, which I return to in the concluding chapter.

Chapter 5

Choosing a partner: Toyota and the Port of Long Beach

Introduction

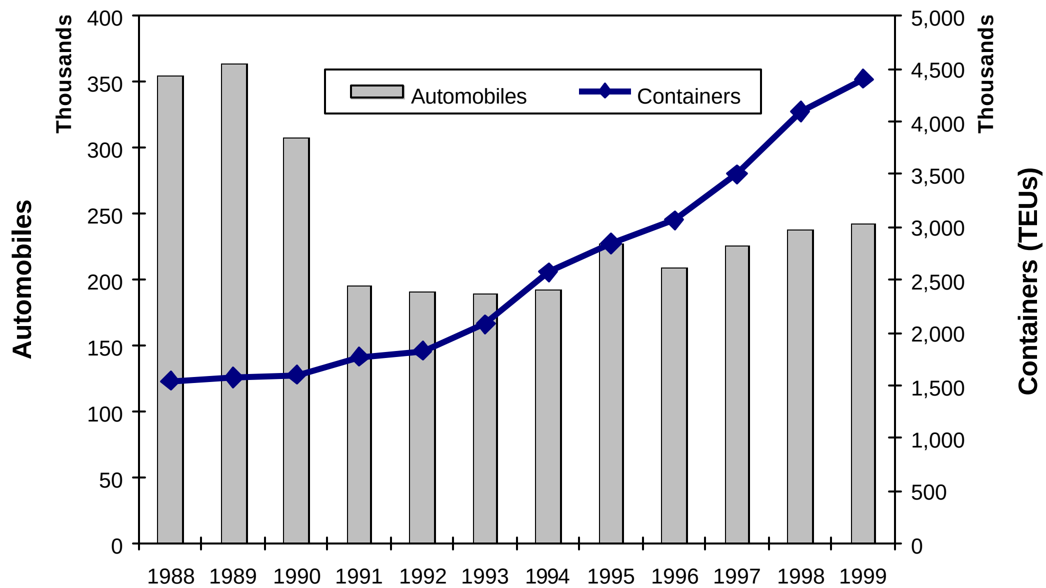
Recent commodity statistics for the Port of Long Beach indicate the extraordinary success of this port in attracting containers. The number of TEUs handled in the port rose from 1.1 million in the 1983-4 financial year, to 4.4 million in 1999 (see Figure 5.1). This made it the largest container port in the United States in that year, accounting for almost one-fifth (18%) of all loaded foreign TEUs. What differentiates this hub port, and hub ports of New York and Los Angeles, from other container ports is the fact that relatively large volumes of non-containerized commodities also move across its wharves (see Chapter 2). In 1999, the Port of Long Beach was the sixth most important automobile import port in the United States. These observations suggest the empirical question of how the port authority had been able to secure such apparent commodity diversity.

However, rather than maintain commodity diversity, the Port of Long Beach has experienced an intense and highly selective process of mutual specialization. Whereas in 1980, eight automobile importers had a significant presence in the port, by 2000 virtually all of the automobiles shipped through the Port of Long Beach were Toyotas.[1] This suggests a different empirical question; how is it that Toyota, as opposed to any other

[1] A tiny number of containerized automobiles are handled at the various container terminals of the port, accounting for less than 1% of imports. The Toyota terminal does periodically handle a few GM exports.

firm, was able to secure access to the Port of Long Beach? What is particular to the relational fix secured by this firm in this port, as opposed to others?

Figure 5.1 Long Beach: containers and automobiles, 1988-99



Source: Port of Long Beach. Includes full and empty containers, imported and exported.

I will argue that the answer lies somewhere between the conventional land economics and political-economy explanations, and show why an institutional analysis is central to understanding why it is Toyota that remains in the Port of Long Beach today. The land economics explanation is the more widely used (see for example, Mongeluzzo 1991). With containerization, port land became more valuable and somehow Toyota was able to out-compete the alternative users. There is no doubt that a major challenge, perhaps the central challenge, facing the Port of Long Beach since 1980 has been the shortage of land (Erie 1996). Non-containerized cargoes, including automobiles, do not command the same land rents in hub ports as do containers. In response to this challenge, the Port of

Long Beach and other ports like it have implemented terminal leasing and pricing policies that discourage lower value commodities. Indeed, it would not have been surprising if all automobile manufacturers had exited the port; however one firm remains.

The second possibility is that Toyota was able to exert political influence within the port in such a way as to influence decisions in its favor. There is no doubt that the automobile manufacturer enjoys a special status in the port. In a discussion of the sources of terminal delays in West Coast ports, Kagan (1990: 159) quotes a terminal operator thus: "The result is that the train left late. Toyota (in Kentucky) complains that their parts arrive late, screwing up the assembly line." The quote could have referred to any time-sensitive shipper, but it didn't. Similarly, when I questioned port officials about the apparent pre-eminence enjoyed by Toyota in port authority deliberations, one respondent pointed to the involvement of the company in the City of Long Beach. When pressed, they stated that "they (Toyota) sponsor the Grand Prix, there's a whole list of groups that they are involved with, and different corporate sponsorships they have throughout the city."

Crude versions of both the land-economy and political-economy accounts can be refuted. In 1990 a competitor to Toyota offered the port authority the same financial returns to continue operating in the port and still lost out, and there is no evidence of direct political suasion in any port decisions. However, both accounts do need to form part of a comprehensive understanding of events. The missing link is the role of the institutions that mediated the financial and political imperatives of both the firms and public authority involved. Furthermore, in order to understand the way in which automobile manufacturers have come to use the Port of Long Beach, we need to regard the public authority responsible for the port as an active participant in shaping this outcome.

I will show that the various institutional changes enacted by and through the Port of Long Beach in response to the containerization-induced land crunch were more favorable to the large, integrated, single-user terminal lease model pursued by Toyota, than the general cargo model pursued by other automobile manufacturing firms (most notable American Honda). The result is that today Toyota is the only automobile manufacturer shipping through this port. A similar process has occurred in the Port of Los Angeles. One outcome is that the ports of San Diego and Port Hueneme have absorbed much of the displaced business, resulting in a new geography of port specialization. First, however, to understand why the particular institutional choices were made, we need to understand the legacies of the entrepreneurial port.

Institutional legacies of the entrepreneurial port

In *Nature's Metropolis*, William Cronin shows us that the great city of Chicago is anything but what nature intended. So too is the urban conurbation of southern California. In 1888 Senator William Frye, Chairman of the Senate Commerce Committee and guest of the Los Angeles Chamber of Commerce, commented that Angelenos had "made a big mistake in the location of your city. You should have put it a point where a harbor already exists instead of calling on the government to give you what Nature refused" (cited in Queenan 1986: 51). His comments came at the end of tour of San Pedro Bay, arranged by local boosters seeking federal appropriations to finance various harbor improvements. At that time, the port lay on an exposed, shallow and muddy Bay. It was not at the mouth of some navigable river, and it was some 20 miles distant from the emerging City of Los Angeles. The alternatives Frye was referring to included both to the natural harbor at San Diego, and the more proximate Santa Monica Bay. But for the unlikely outcomes of two defining political contests, the largest container-port complex in the United States could well be at either of these locations today.

The first of these contests played out in the 1860s and 1870s, and concerned the location of the west coast outlet of the southern transcontinental railroad. During this period, local entreprenuer Phineas Banning was able to secure dredging by the Army Corp of Engineers over the objections of San Diego and Redondo Beach businessmen (Fogelson 1993; 108). The conflict between San Diego and Los Angeles was eventually resolved when Collis Huntington chose Los Angeles as the terminal of his Southern Pacific railroad (Fogelson 1993). The second of these contests again featured Huntington, this time on the losing side, punished one might argue for the heavy price he had earlier extracted for favoring the city over its southern rival. Huntington sought federal funding for harbor development at Santa Monica, site of the Southern Pacific railroad's Long Wharf and his own real estate investments, while a coalition of local businessmen and civic leaders favored San Pedro (Queenan 1986). Despite Frye's disparaging remarks, Huntington was eventually defeated in the Senate, and from 1899 to 1912, a breakwater was constructed across the mouth of San Pedro Bay.

In defeating their opponents, San Pedro's early civic boosters had articulated and begun implementing a vision of development that remains influential to this day. In his introduction to Fogelson's (1993) book on Los Angeles, Robert Fishman provides an opening to an understanding of the complex institutional and organizational dynamics unleashed through these political contests:

> "Precisely because Los Angeles lacked natural advantages and a dominant industry, its leaders realized that they would have to create these attributes themselves. Where other municipalities provided facilities in response to population growth and industrial expansion, the Los Angeles elite very early realized that their real business was growth itself. That is, they must invest to provide the essential infrastructure that the city lacked – water, power, a port, transportation – and then use this infrastructure to lure the new population and businesses which alone could justify the investments. Such investments were too large and too risky to be accomplished by private enterprise alone. The Los Angeles elite thus became experts in the use of public authority – especially the city's borrowing power – to fund urban expansion. Moreover, they formed key alliances at the federal level to gain the facilities (rail links, an artificial port) they could not create themselves." (Fishman 1993: xvi-xvii)

This (southern Californian) public-private entrepreneurial legacy was visible in 1909 when the electorate of Long Beach approved the first general obligation bond to purchase water frontage (POLB 1981b), and can be seen in the governance structure Port of Long Beach today. Three inter-locking institutional legacies distinguish the current port authority. First, the port authority is an autonomous department of the City of Long Beach, with a substantial degree of independence in decision-making. Second, it manages its primary resource, which are tideland and submerged lands, as a landlord. This has involved the piecemeal 'privatization' of terminal facilities, and the use of revenue bonds to undertake extensive physical development. And third, the particular economic actors to which it has transferred responsibility for day-to-day operations are carriers. Together these legacies have framed the planning, leasing and other institutional choices of the authority in the containerization era.

The city's port

Every action of the Port of Long Beach has regional consequences, and when necessary the Port is a consciously regional actor. For example, in collaboration with its neighbor, the Port of Los Angeles, the port authority has acted since the 1980s to address inland transportation bottlenecks by developing the Intermodal Container Transfer Facility (ICTF) and the Alameda Corridor. Officially however, the port is a department of the City of Long Beach, although by virtue of the Tidelands Trust it is also a creation of the State of California. Particular features of the governance of the City of Long Beach and the conditions of state Tidelands Trust legislation mean that this is an authority with substantial independence. And, as with working ports elsewhere, the authority has worked very hard to maintain this independence.

At first the port was administered as a department of the city, with no special independent status. In 1917, a Board of Harbor Commissioners was formed, but only in 1925 was the current five-member independent entity established (POLB 1981b). In 1931, the Long Beach City Charter was again amended to create a the 11.6 square mile Harbor District, with the Harbor Board of Commissioners and Harbor Department in control and management of the district (POLB 1980a and 2002).

Several features of the formal institutional arrangements contained in the City's Charter reinforce the authority's independence (Long Beach 2001a). The five harbor commissioners are appointed by the Mayor, subject to confirmation by a majority of the City Council. Prior to 1980, the Long Beach city manager appointed the Board (Boschken 1988), and despite this change, Long Beach's City Manager administrative model arguably reinforces the independence of the Harbor Department (Steve Erie, personal communication). Board members sit for up to two six-year terms, staggered for continuity. This too reinforces the independence of the Board, since the 6-year terms are longer than those allowed for any other City Commissioners. Members of the Board must be residents of the City of Long Beach, and there is a strong tradition of appointing local businesspeople to the Board.

The City does not review Commission decisions except the annual budget, sale of revenue bonds, and disposal of land. All revenues of the Harbor Department are deposited into the Harbor Revenue Fund, which is kept entirely separate from other City finances. Transfers of Harbor Revenue to the City of Long Beach may not exceed 10% of the annual net income of the Harbor Department, are subject to approval by the Commission, and they may not undermine harbor operations or debt repayment. Furthermore, the City is only allowed to use these transfers for operations, maintenance and development within the tidelands area (Long Beach 2001b). These provisions entrench the intentions of the Tidelands Trust, but have not eliminated periodic tension between the city and port over revenue transfers.[2] Although the Port of Long Beach does

[2] Similar conflicts have plagued other California ports, especially during the recession of the early 1990s. For example, in September 1992, SB844 permitted a one-off revenue transfer from five California ports to

not raise money for the General Fund of the City of Long Beach, port revenues have funded the Convention Center and other amenities along the Long Beach waterfront (POLB 2001).

The independence of the Harbor Department from the City is not only structural, but is also the result of ongoing action by Commissioners and port officials. Port officials *all* emphasize their independence from the City, often contrasting the Ports of Long Beach with Los Angeles on this point. In transferring revenues to the City, the port authority has actually bought further independence; port money has been used to reinforce the physical separation of the working port and waterfront.

The story of the tourist ship, the Queen Mary, is instructive in this regard. The retired ocean liner was permanently moored at a berth to the east of the working harbor at the mouth of the Los Angeles County Flood Control Canal as 'floating' hotel in 1967 (see Figure 5.2). As a hotel, the ship struggled to make money. Port officials actively resisted taking on responsibility for the hotel, and eventually transferred responsibility for the ship to the City in the late 1980s. At the same time they paid the City a $6m fee for deferred maintenance (thus establishing the Queen Mary Fund, another non-expendable trust fund of the city). The ship is a key element of the Queensway Bay Planning District in the Port Master Plan (see below). The District is designed to allow joint city-port planning and management of a waterfront recreation-commercial zone, although the

---

city general funds (Erie 1996). In 1997, the State Lands Commission (at the instigation of the Steamship Association of Southern California) filed a lawsuit against the City of Los Angeles. The conflict between ports and cities has since subsided, but may arise again in future. For more see Hall (1992), Wastler (1992) and Mongelluzzo (1996 and 1997).

unstated yet clear intent of port officials was to rid themselves of this non-cargo related distraction.

Indeed, the planning process itself reinforces the independence of the port from the city. The Long Beach Harbor is designated within the City of Long Beach General Plan as part of Land Use District 12. This is comprised of freeways, the harbor and the airport. The General Plan indicates that planning responsibility within the legal boundaries of the Harbor rest with the Board of Harbor Commissioners. In other words, the Port Master Plan is the General Plan element for the Harbor District. Contrast also the demands placed on the port with those placed on the airport in the city's recent strategic plan: "develop and lease port facilities that make efficient use of port land" implies a lot less public oversight and involvement than "develop a strategy for land use at the airport that maximizes the economic return for the community" (Long Beach 2001c: 22).

Perhaps the most important contributor to the de facto independence of the Harbor Department is its very healthy revenue position. Until 1965 harbor development was subsidized by Tidelands oil revenues (POLB 1976). In 1970, the port authority for the first time sold $30m of revenue bonds for the first Pier J development (POLB 1980a). Table 5.1 shows the operating finances of the Port of Long Beach for the period 1977 to 2001. During this period, the port never made an operating loss, and by September 30th, 2001, total retained earnings of the port were $1.367 billion dollars, allowing the port to service bonds and other long-term debt obligations of over $1.045 billion dollars (POLB 2001).

Table 5.1 Port of Long Beach Operating Finances ($millions, nominal)

Year ending June 30th / Sept. 30th (1)	Operating Income (2)	Operating Expenses (3)	Net Operating Income (Loss)	Other Income (Expense) (4)	Net Income (Expense)
1977	23.3	16.3	7.1	2.5	9.6
1978	27.9	17.0	10.9	2.3	13.2
1979	32.9	19.4	13.4	4.1	17.5
1980	38.9	27.0	11.8	5.8	17.6
1981	41.4	23.4	18.0	4.8	22.9
1982	46.1	30.5	15.6	8.8	24.4
1983	53.4	36.2	17.2	8.3	25.5
1984	61.9	44.6	17.3	3.8	21.1
1985	63.8	43.0	20.7	10.6	31.3
1986	73.6	43.3	30.3	9.9	40.2
1987	87.8	39.5	48.3	(4.0)	44.3
1988	89.9	43.7	46.2	1.1	47.3
1989	95.5	46.1	49.4	7.6	57.1
1990	101.5	46.6	54.9	13.4	68.4
1991	101.3	44.6	56.7	7.6	64.3
1992	111.8	50.5	61.3	7.5	68.9
1993 (4)	114.9	60.9	54.0	(27.3)	26.7
1994	128.8	55.6	73.2	(20.9)	52.3
1995	151.5	60.8	90.7	(41.9)	48.8
1996 (1)	*218.7*	*90.0*	*128.6*	*(37.9)*	*90.8*
1997	177.2	72.8	104.5	(29.1)	75.4
1998	188.6	83.8	104.8	(42.3)	62.4
1999	198.5	91.1	107.3	(45.8)	61.5
2000	225.5	98.0	127.5	(44.4)	83.1
2001	228.1	104.7	123.3	(36.6)	86.8

Source: McJunkin and Slavin (1986); POLB (various dates).

Notes:

1. Fiscal year was from July 1st to June 30th for years ending in 1995 and before, and from October 1st to September 30th for years ending 1997 and after. The figures for 1996 are for the 15 months ending September 30th of that year.
2. Operating income includes revenue from property leases, including berths and terminal facilities.
3. Operating expenses include maintenance and administrative expenses, depreciation and amortization.
4. Other income (expense) includes all interest income and expense, and extraordinary income, expenses and transfers. From 1993, this item includes transfers to the Tidelands Operating Fund and for Redevelopment Agency activities.

A final factor reinforcing the independence of the Port of Long Beach is the continuity and stability of its senior management (Boschken 1988: 141). The last three executive directors have all been long-time port authority employees, each serving relatively long terms.[3] Executive director Jim McJunkin did resign in 1988 in conflict with the Port Commission over the use of port revenues to finance the Long Beach Convention Center (Woodyard 1988; Mongelluzzo 1997), but this does not appear to have resulted in any substantial curtailment to the authority's independence.

In summary then, saying that the Port of Long Beach is the city's port is an implicit recognition that this authority is 'larger' than the polity to which it is supposedly accountable. Commissioners do inject some public concerns into port decisions, and have even come into conflict with port management over, for example, the question of revenue transfers. While the authority has substantial political independence, this does not free the authority from commitments to other parties. Walsh (1978) correctly notes that for many public authorities, "financial independence (from taxpayers) means, in effect, dependence on the bond market" (117). In the case of Long Beach, the port's tenants fulfill this role.

The landlord port

The Port of Long Beach is a landlord port, which means that it invests in providing facilities and infrastructure for use by tenants. This institutional legacy derives directly from the fact that the port lands are Sovereign Lands of the State of California, held in trust by the City of Long Beach. All the tidelands and submerged lands within the boundaries of the City of Long Beach were granted to the City under the California

[3] Jim McJunkin (Executive Director 1978-1988) was employed at the Port from 1963 to 1988. Steve Dillenbeck (Executive Director 1990-1997) was employed at the Port from 1987 to 1997, and at the Port of Los Angeles for 23 years before that. Current Executive Director (since 1997), Richard Steinke has been employed at the Port since 1990.

Tidelands Trust Act in 1911 (California 1911). The grant (and subsequent grants and amendments in 1925, 1935 and 1959) places certain restrictions on the usage and sale of the lands:

> "none of said lands shall be used or devoted to any purpose other than public park, highway, playground, the establishment, improvement and conduct of a harbor, and for the construction, maintenance and operation thereon of wharves, docks, piers, slips, quays and other utilities, structures and appliances necessary or convenient for the promotion and accommodation of commerce and navigation; and the City ... shall not, at any time, grant, convey, give or alien said lands or any part thereof to any individual, firm or corporation for any purpose whatsoever" (California 1935: Section 1(a)).

Two amendments to the grant bear further commentary. First, the 1925 Grant does expressly reserve to the people of California, the "absolute right to fish in the waters of the Pacific Ocean over said tidelands and submerged lands, with the right to convenient access to said waters over said lands for said purpose" (California 1925: Section1(d)). However, unlike the neighboring Port of Los Angeles, the Port of Long Beach has successfully separated fisheries and other non-commerce related land uses from the working harbor.

Second, and more important, the 1959 Grant contains what might be regarded as the 'commercial operating license' of the port. Section 2 of this grant explicitly encourages the port to act as a profit-maximizing entity and freed it to enter into long-term relationships with private firms. The Grant states that the City may, in fulfilling its previous Grant obligations, devote trust lands "to such further use and development as will, in its finding, yield maximum profits to be used by said city in the furtherance of the trust use and purposes" (California 1959: Section 2). This established the legislative basis for the current Harbor Fund, which is one of the non-expendable trust funds held by the City of Long Beach (Long Beach 2001b). In other words, the City is able to use the State Trust Lands to generate profits that must be reinvested in those lands.

The 1959 Grant also allowed a more permissive approach to leasing. While the 1935 Grant Amendment allowed "the granting or use of easements, franchises or leases for *limited periods*" (California 1935: Section 1(a); *emphasis added*), the 1959 Grant allowed leases of up to 50 years:

> "The City may ... enter into agreements, contracts or leases ... provided (1) that no such agreement, contract or lease shall be for a term exceeding 50 years, subject however to the right of renewal thereof by the city for a further term not to exceed 25 years; and (2) that all such agreements, contracts or leases shall be made upon competitive bids ... awarded to the person whose bid will yield the aforesaid maximum profits, taking into consideration the proposed term" (California 1959: Section 2).[4]

The conditions of the grant have underpinned the port's landlord mode of operating, and have exerted a powerful influence over the port's subsequent leasing policies. The port's landlord operation mode means that its direct and enduring relationships are first and foremost with terminal operators.

[4] I have not researched the reasons behind this change to the Grant in great detail, but it is likely that it is tied up with the problem of subsidence and the dispute between the City and the State over the disposal of revenues from oil. Oil was first discovered in the harbor in 1936, and in 1951, an amendment to the Tidelands Grant freed some of the considerable oil revenues for non-harbor uses. However, in 1955 the Supreme Court determined that these revenues belonged to the State, not the City. At the same time, oil extraction was causing substantial subsidence (of up to 24 feet in some places) within the harbor to the extent that in 1953, a water injection program was begun to combat the problem. With the problem worsening, the State and City agreed in 1956 to share tidelands oil revenues, and the set about combating the subsidence in earnest. By 1960 the subsidence had stabilized, although the problem is monitored to this day. Conflicts between the State and the City over subsidence were finally settled in 1982 when the State Lands Commission paid the Harbor Department $37m (Long Beach 1999). It is my understanding that the 1959 Grant was enacted to provide the City with greater latitude to raise revenue in the context of the context of the 1956 oil revenue agreement with the State. Since 1965, the port not used oil revenues to finance harbor development (POLB 1976). For partial accounts of these events, see Queenan (1986) and POLB (1981).

The internal structure of the port reflects and reinforces this bias.[5] Unlike a port such as Baltimore, the Port of Long Beach has no operations division.[6] Instead, the internal structure of the port authority provides tenants with several points of contact not available to other actors who depend on the port (i.e. shippers) or who are influenced by its decisions and actions (i.e. port labor, citizens).

A tenant will work directly with the property division when negotiating agreements, and with the engineering department over major improvements and installations. On day-to-day matters, the first point of contact between tenants and the authority are the wharfingers. Wharfingers are lower-level civil service employees, assigned to act as the first point of contact for tenants. They act as wharf managers, report damage to wharf and facilities. While they do ensure that wharfage statements get filed – the traditional role of wharfingers in the port industry – their clerical role has been reduced by the per container tariff implemented in the early 1990s. This has freed them to act more as property managers, ensuring that tenants are in compliance with lease and wharfage. Wharfingers refer problems to the appropriate department. Other points of day-to-day contact between tenants and the port authority include marketing, public relations and security.

[5] Ten departments are organized under three directors: (a) properties, planning and engineering report to the Managing Director, Development, (b) trade and maritime services, security and communications report to the Managing Director, Maritime Services, and (c) administration, finance, information management and maintenance report to the Assistant Executive Director.

[6] For an entirely unrelated set of historical precedents, the Port of Long Beach does not even employ port pilots (unlike its neighbor, the Port of Los Angeles). In Long Beach, pilots are employees of a private firm (Jacobsen Pilotage Service). This eliminates yet another arena in which the port authority may potentially become involved in day-to-day operations, although this issue is certainly tangential to the question of the relationships between shippers and the port authority.

Since the early 1980s, changes to the internal structure of the authority have intensified contacts between tenants and the authority to the exclusion of non-tenants, especially shippers. The business heart of the port authority, the Properties, Planning and Engineering Departments, have been consolidated under a Managing Director: Development. The Trade and Maritime Services Department, primarily responsible for contact with shippers, falls under the Managing Director: Maritime Services, who is also responsible for Communications and Security. As late as 1988, the Properties Division fell under the same Managing Director as Trade Development and Maritime Services.

It should be noted that the shift in organizational structure is not a decisive factor; the organizational structure of the Port of Long Beach is relatively flat, the staffing is much more modest than in equivalent ports, and communication at various levels between departments appears to be good. In principle at least, other actors besides tenants can gain access to information and decision-making processes. But the direction of change is clear; shippers have lost attention.

The carriers port

A landlord port that has no non-maritime related activities is, de facto, a carriers port. Officials in the Port of Long Beach see carriers as their partners:

> "The port has a unique relationship with most if our tenants, especially those involved with cargo handling terminals. Rather than a traditional landlord/tenant relationship, we are more on a partnership basis with our tenants. ... The tenants are considered to be 'operators' of our port-owned terminals and we support their business activities. From a leasing perspective, the more business our terminals conduct, the more revenue the Port receives". (Larsen 1995: 4)

Changes in the organization of the shipping industry have intensified the focus of the Port of Long Beach on carriers. The tenants of the Port of Long Beach are themselves increasingly closely tied to specific steamship lines. Each of the current container terminal operators in the port is either the direct subsidiary of a steamship line, or works closely with a small number of lines; Hanjin and Maersk-Sealand steamship lines have their own terminals, California United Terminals and the Long Beach Container Terminal are subsidiaries as Hyundai Merchant Marine and OOCL respectively. The two stevedore-operated terminals also cater to a limited number of primary clients; the Pacific Container Terminal (operated by stevedore SSA) caters primarily to Cosco, NYK and Zim-Lines and the International Transport Service terminal caters to K-Line and some smaller lines. This is a clear change from earlier times when terminals were operated by independent stevedoring companies (see Slack, McCalla and Comtois 2002).[7]

For a firm such as Toyota, which is directly involved in all steps in the logistics chain (see Chapters 4 and 7), the ports operations model provides multiple points of contact between the firm and the port authority. According to a leasing department official:

> "The Port has ten divisions and I would say that Toyota has a point of contact in virtually every division ... we have contact with Toyota in the Properties Division when it comes to negotiating rent or looking at any capital improvements ... The City Charter requires our leases to be renegotiated every five years ... So in the

[7] Independent terminal operators have also been squeezed out of some container ports, to the extent that in 1992, Edward DeNike, a senior vice-president of Stevedoring Services of America (SSA) was quoted voicing his concern "that the future of the independent stevedore contractor is in jeopardy" (Mongelluzo 1992). His comments should however be understood in the context of SSAs non-discrimination lawsuit (in terms of the 1984 Shipping Act) against the Port of Los Angeles in 1988. In a much-watched dispute, the Seattle-based firm alleged that the Port of Los Angeles was deliberately trying to exclude independent terminal operators when it had declined to renew SSAs lease for the Indies Terminal. The Port had planned to lease the Indies Terminal to steamship line OOCL. Although papers were filed before an administrative law judge of the Federal Maritime Commission, the suit ended with a settlement when OOCL decided not to take over the terminal (see Mongelluzzo 1988 and JOC 1989). SSA thus continues to operate in the Port of Los Angeles, yet the most recent and largest container terminal leases have been to carriers.

> case of Toyota, in looking long term at that terminal and possible re-configuration they'll deal with our planning division as well as with our properties division and our engineering division, all of whom they'll have input with. On day-to-day terminal maintenance issues they may have contact with both our engineering division and maintenance division. So from the executive down to the staff level and on almost every side of the business there's going to be contact".

And this is the same for every other terminal operator. It would not be true to say that the port authority has no contact with shippers, but there is now a decided bias towards the largest shippers, and contact with shippers generally only comes through the terminal leasing clients. For example, the large national retailers do interact directly with the steamship lines, conducting their own performance evaluations and holding regular client meetings, especially in the fall import period (i.e. before holiday season). Officials of the port are often involved in these meetings, and provide meeting rooms at the port authority building. [8] Small-volume shippers, which are less likely to have direct contact with lines, are thus also less likely to have direct contact with port officials.[9]

A final reflection of the port's bias towards carriers results from what might be called *commodity-blindness*. As more and more commodities have been placed in 'boxes', ports such as Long Beach have become increasingly blind to the precise commodities moving across their wharves. The result is that port authority now pays more attention to shipping firms (ie terminal operators, shipping lines and carriers, etc) than to shippers (ie those

---

[8] In September 2000, I attended one such meeting between the logistics planner of a major US retail chain and a major Asian steamship line. A senior Port of Long Beach official attended the meeting with the express purpose of re-assuring the shipper (the retailer) that the carrier's (the tenant) operations would not be disrupted by proposed habor developments.

[9] There was some direct marketing to shippers during in the recession of the early 1980s (POLB 1983). At that time, the Port Trade Development and Public Relations Division launched a program designed to reach out to existing and potential shippers. However, the bias towards big shippers was already visible; at the same time there was a program to award 'certificates' to major shippers. Among the recipients were Montgomery Ward, Target, the Quasar Company, K-Mart and Kenner Toys.

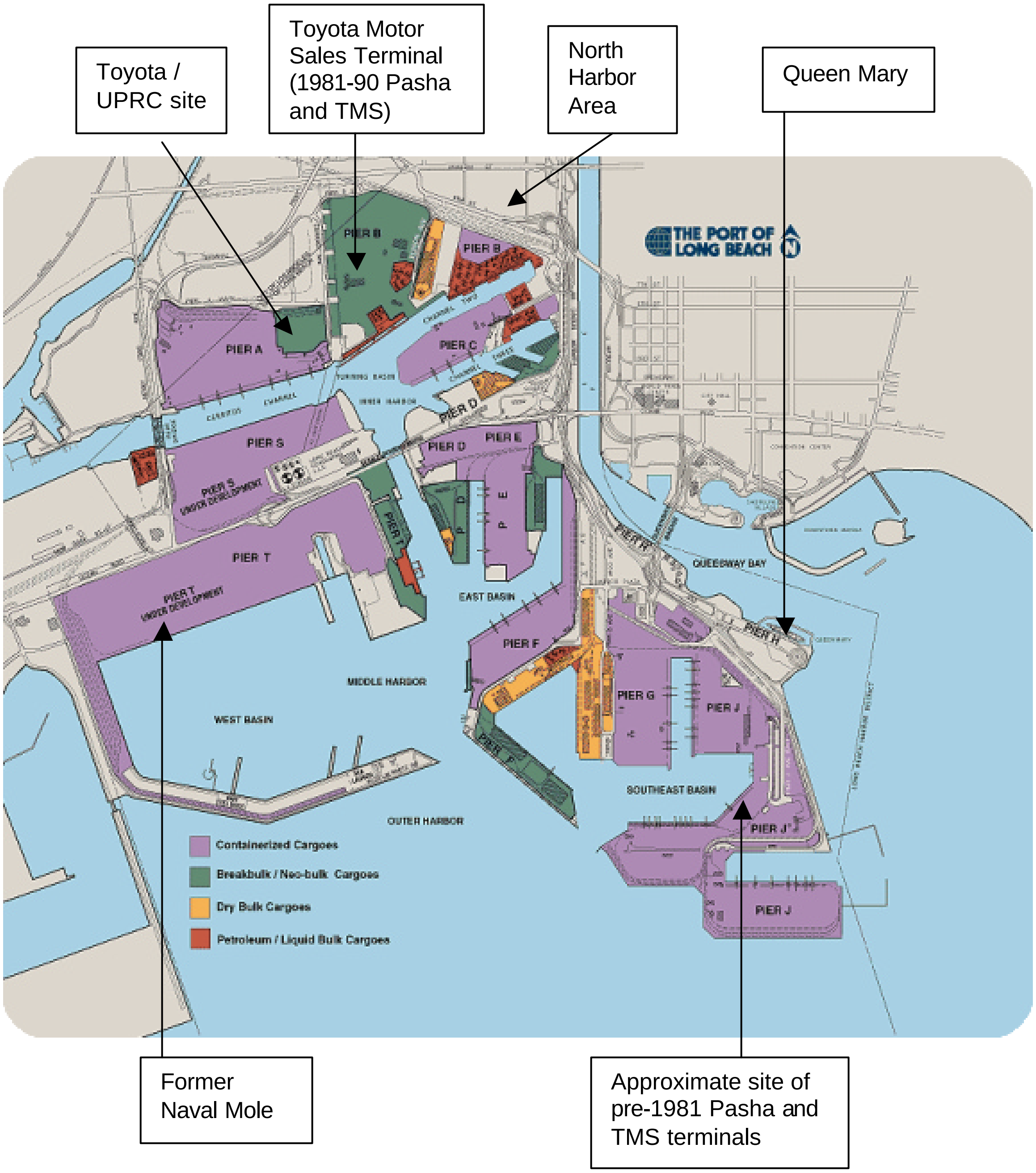
whose goods are actually moving through the port). This trend has become apparent in various aspects of port operations. Since 1996, the Port of Long Beach has charged tariffs on a per container basis.[10] This change received a mixed review from the container steamship lines – it saved them considerable administrative costs. However, at the same time as implementing the box tariff, port officials raised tariffs by approximately 5%, evoking some resistance (Mongelluzzo 1995).

According to one Long Beach official, "from the port's point of view, a box is a box regardless of what's in it. We do keep track generally of where its coming from and where its going to, but we don't any more track exactly what's in it. We do have some statistics on the number of cars in boxes, but we don't pay much attention to it.... our wharfage is per box – so we don't know immediately what's in the box. We no longer track that – this is something they changed about 5 years ago." The point about commodity-blindness is that it makes it harder for shippers to get direct access to port authority decision-making processes.

The institutional legacies discussed here exerted their influence as the port embraced phenomenal growth from the 1970s onwards. Financial and substantial political independence, a landlord mode of operating, and closeness to carriers contributed to planning, leasing and development policies that favored long-term leases of large-single user facilities. These policies were not neutral in their effects.

[10] Tariff No. 4 was amended from 1 January, 1996, in terms of Ordinance HD1681.

Figure 5.2: Terminals of the Port of Long Beach



Source: Port of Long Beach

Containers and the land crunch

It is against the background of these institutional legacies that we must understand the responses of the port to the phenomenal growth in container traffic through the port from the 1970s. Containerization reached Long Beach in 1962 when Sealand opened a container freight station at the port (POLB 1980a) and in 1995, Long Beach captured the title of number one container port in the United States (POLB 1995). The container revolution put enormous pressure on land within the port. The port cannot expand westwards into the Port of Los Angeles and it does not want to expand eastwards across the Queensway Bay into the Long Beach waterfront. Hence, expansion has consisted of landfill development to the south, and land purchases to the north. Landfill developments are costly, while the northwards/inland expansion of the port is constrained by a series of railheads and freeway connections. The result is that as container terminals of the port reached into the San Pedro Bay, the automobile terminals of the port were displaced inland. These physical developments have reflected and reinforced changes in planning and leasing policies.

Planning Policies

The port authority's first comprehensive planning effort was a Port Master Plan (PMP) prepared in terms of the California Coastal Act of 1976.[11] The plan was the work of the

[11] The PMP also provides conformity with the following legislation and regulations: the Coastal Zone Management Act, Federal Water Pollution Control Act (Clean Water Act), Federal Clean Air Act, California Clean Air Act, California Environmental Quality Act, Southern California Air Quality Management Plan and the City of Long Beach General Plan.

Port Planning Division, established in 1977 as the Environmental Affairs office (POLB, 1981c). In 1978, the PMP was approved by the California Coastal Commission. Since then, it has been amended and updated by the port, and supplemented by a series of facilities plans (see Table 5.2). Altogether the planning approaches of the port have increasingly emphasized consolidation of compatible uses, a focus on facilities plans to meet infrastructure 'gaps' identified through commodity forecasting, and a preference for large terminals. The planning policies of the port since 1978 represent an institutional change that contributes to the other biases of the port towards large single-purpose terminals favored by the container steamship lines and Toyota.

The 1978 PMP is a typical master or general planning document, with reviews of regulations and economic development trends, land use designations, goals, plan elements and district updates. The original plan divided the Harbor District into ten planning districts each designed to incorporate similar land uses and planning goals. This spatial division reflects the plans' first goal, which is to 'consolidate of similar and compatible land and water areas' (POLB 1978: I-5). For example, the plan objective for the North Harbor Area is to "promote growth in port-related industries and phase out non-port related activities" (POLB 1978: VI-3). Similarly, the Queensway Bay Planning District that acts as a buffer between the city and the working port, is the only district actively embracing non-port land uses.

Table 5.2 Long Beach Planning Documents

Date	Document	Comments
1978	Port Master Plan (PMP)	Comprehensive plan in conformity with California Coastal Act of 1976
1983	PMP Update	Adds risk management plan to PMP
1987	WEFA-Manalytics Cargo Forecast	The ‘2020 Plan’: cargo forecast and gap analysis (with Port of Los Angeles)
1988	Operations, Facilities Infrastructure (OFI) Requirements Study	
1990	PMP Update	Based on 2020 Plan
1993	Facilities Master Plan	Based on updated cargo forecast and gap analysis
1998	San Pedro Bay Long-term Cargo Forecast	Cargo forecast (with Port of Los Angeles)
2001	Facilities Master Plan	Based on 1998 Cargo Forecast

Source: POLB (1978 (1999), 1988, 1993, 1998a, 2001a).

From the mid-1980s, the Ports of Los Angeles and Long Beach co-operated in a series of joint planning efforts that came to be known as the 2020 Plan. The 2020 Plan entailed a series of ambitious dredging and landfill projects that would have resulted in container terminals covering much of the water between the existing port and the San Pedro Bay breakwater (POLB 1988). In 1991, the Port of Long Beach effectively withdrew from the 2020 Plan due to the high costs of the proposed expansions (see Erie 1996). In 1993, the Port issued its own Facilities Master Plan that emphasized terminal development in the Navy Mole and the Pier J expansion (POLB 1993). The port also resumed acquiring land in the inner harbor (see below).

Nevertheless, the approach to port planning formalized during the 2020 Plan was visible in the 1993 Plan and continues to exert its influence to this day. Indeed, the methods used in this exercise established what has become standard planning practice in many ports (not to mention the basis of some very successful consultancies). A port planner describes the process thus:

> "We have the facilities master plan that looks at the next 20 years. This walks through what facilities we have currently, and then using the market forecast that

> we update at least every two years, and then we do annual adjustments. The market forecast is for all commodity categories, meaning automobiles, dry-bulk, liquid-bulk, and containerized market. Within each of those categories we can also break out which specific commodity type. For example, in containers we would have main headings for each of the types of things that would go into a box and look at that from a macro-economic scale of how growth was going to occur in those market segments. So we don't just pull this out of thin air, and a lot of this is based on third party information. We do this jointly with the port of LA – its called the San Pedro Bay market forecast."

This approach to planning has various effects. The cargo forecasts are based on global trade models, and arguably reinforce commodity- and shipper blindness. In contrast, the gap analysis approach is necessarily incremental, in which planning becomes the identification of discrete physical development projects for particular (carrier) tenants. The result is that the port's most recent Facilities Master Plan identifies five 'mega-terminals' each exceeding 300acres (POLB 2001).[12] These will be consolidated out of the ports eight current container terminals, further entrenching the trend towards large single-user terminals.

Physical Development

The planning efforts described above are reflected in an ongoing program of physical development at the Port of Long Beach from 1970 to 2000. Table 5.3 lists the major terminal developments at the Port of Long Beach in the period 1970 to 2000. While the various Pier J developments involved a major landfill project, more recent terminal developments have concentrated upon land acquisitions. These allowed the development

[12] The port's first mega-terminal, the 375-acre Pier T facility, began handling cargo in August 2002. The terminal is built on the site of the former Long Beach Naval Station and Shipyard. Facilities include 50ft

of Pier A, as well as the current development of Pier T in the former Naval mole and of Pier S on former oilfields on Terminal Island (see Figure 5.2).

Table 5.3 Terminal development at Port of Long Beach, 1970-2000

	Type of development	Year of Completion
Toyota automobile terminal, Pier J, 55 acre	New	1971
ITS container Terminal, Pier J, 52 acre	New	1972
Sealand container terminal, Pier G, 95 acre	Expansion	1973
Pacific Container Terminal, Pier J, 34.5 acre	New	1974
Expansion of Pier J container terminals	Expansion	1975
Maersk Lines container terminal, Pier G, 29 acre	New	1978
California United Terminals, Pier E	Conversion	1979
Pasha / Toyota automobile terminal, Pier B	Relocation	1981/2
Long Beach Container Terminal, Pier F, 88 acre	New	1986
Maersk Line container terminal, Pier J, 54 acre	Relocation	1986
Sealand container terminal, Pier G	Expansion	1986
Intermodal Container Transfer Facility	New (with PLA)	1987
Toyota automobile terminal, Pier B, 144 acre	Expansion	1990
Hanjin Shipping container terminal, Pier C, 57 acre	New	1991
Maersk Line container terminal, Pier J, 107 acre	Expansion	1993
Pacific Container Terminal, Pier J, 74.5 acre	Expansion	1993
Hanjin Shipping container terminal, Pier A, 170 acre	Relocation	1997

Source: POLB (various dates).

After breaking with the 2020 Plan in 1991, the port undertook the largest land purchase in its history. A 725-acre site was acquired from the Union Pacific Resources Company (URPC) in 1994 for $405m (Miller 1994). Part of the UPRC land was developed into the 170 acre Pier A, occupied in 1997 by South Korean steamship line Hanjin (SCMP 1995). Hanjin had first moved its operations to the Port of Long Beach from Los Angeles in 1991 (Sutton 1992). The site also allowed for improved rail access to the Toyota terminal (see below).

berthing, 12 post-Panamax cranes, a 29-lane truck gate, and an on-dock rail facility. The terminal is leased to the Korean Hanjin line for 25 years with a $42m annual minimum guarantee.

The port also actively assembled land in the North Harbor Area from the mid-1980s (see Figure 5.2 and Table 5.4). This was not done with any specific development in mind. According to a port leasing official, "we realized 10 years ago that there would be a need for additional land in the port given the cargo forecasts and that that was the likely area where we could start to assemble property to create a larger parcel that could be used for port expansion. So the North Harbor acquisition program began in the mid-to late 1980s".

In early 1990, news of the increasing uneasiness about planning blight from residents and businesses in the North Harbor area reached the Port Commission. A Westside Project Action Committee was formed to represent local concerns, and with the support of City Councilors, a public hearing was held during the Commission meeting of April 16th, 1990. Active purchasing of land appears to have slowed in face of this resistance.

Table 5.4 North Harbor Land Acquisition Program (partial list)

Date	Property (and details)
April 28, 1986	1916 W Anaheim Str
Sept 2, 1986	Land at W Anaheim and Caspian (conveyed to Redevelopment Agency of Long Beach)
Oct 13, 1986	SW corner of 12th Street and Harbor Ave; NE corner of 11th and Harbor
Aug 24, 1987	1475 W 9th Str
Nov 23, 1987	1130 Santa Fe Ave
Jan 19, 1988	1348 W 11th Str; 1108 Caspian Ave.
April 25, 1988	1731 W 9th Str
May 2, 1988	9th Str
Sept 22, 1988	11th Str Wade P Hill property
Nov 28, 1988	Anaheim RS and CR Ferguson
Jan 17, 1989	SW corner of 9th and Edison
May 15, 1989	SE corner of Anaheim and Santa Fe (leased to Twin Wheels Restaurant)
Aug 21, 1989	1738 West12th Str
Sept 18, 1989	1550-1556 W 9th Str
Nov 27 1989	Southern Pacific Transportation Company property in North Harbor Area
Aug 13, 1990	1105 Caspian Ave
Dec 3, 1990	1315 W 11th Str

Source: Port of Long Beach Commission Minutes

It is worth noting that more recent container-related developments have focused less on acquiring land through purchase or landfill, and more on achieving greater efficiencies in terms of TEU throughput per acre, and in the inland distribution of containers. However, as a landlord port, Long Beach (and its neighbor, the Port of Los Angeles) has struggled for many years to increase the efficiency of terminal usage by, for example, discouraging the usage of terminal space to store containers. The chief policy mechanism for achieving this is the free time allowance, the amount of time a container can sit on the terminal before it incurs charges. Because these port authorities are landlords, with no direct operational involvement in terminal usage, this policy has proved very difficult to enforce.

The two ports have been more successful in their efforts to re-organize some elements of the regional transportation system. In the mid-1980s they cooperated to create the 150acre, $70m, Intermodal Container Transfer Facility (ICTF), something that arguably was critical to the ports capturing such a great share of land-bridged container traffic (McJunkin and Slavin 1986). Likewise, the ports achieved a long-term goal with the opening of the Alameda Corridor in April 2002.[13] To date however, efforts to reduce truck congestion on the region's freeways (most notably the Long Beach 710 Freeway) have thus far been less successful.

[13] The Alameda Corridor consolidates rail traffic moving along various branch and grade-level lines between the Los Angeles downtown and ports, into one single below-grade rail corridor. The resulting trench is 35ft deep and 50ft wide for 10 miles. It is wide enough for 3 rail lines, although only 2 lines have been laid initially. It is designed to handle 100 trains per day, and should reduce transfer times from 6-8 hours down to 45min. It is administered by the Alameda Corridor Transportation Authority (ACTA) formed 1989 as a joint powers authority of the Cities/Ports of Los Angeles and Long Beach. The project opened on time and within budget.

Leasing Policies[14]

The plans and resulting physical investments described above have involved substantial outlays of capital. Leases that could insulate the port (and revenue bond holders) against some of the risks associated with became more desirable. The current formal lease policy was put in place in 1990, after having become informal policy over the course of the 1980s. The policy reflects the institutional legacies of the landlord and carrier port. Formally, the leasing policy does not allow the port to discriminate in favor or against any client, and there is no provision for discounted leases. Indeed, the policy reflects the notion that each tenant within a particular commodity segment should be allowed to compete based on similar lease terms, and lease terms should neither benefit nor penalize direct competitors. However, this anonymous policy does favor tenants willing to enter into long-term arrangements and meet minimum annual guarantees.

Historically, Long Beach leased terminals to general cargo-handling stevedoring firms for fixed rentals based on land costs and the value of improvements. The port would also collect variable cargo- and vessel-related charges (wharfage, dockage, storage and demurrage) on all cargo moving across the wharf thus absorbing much of the risk associated with fluctuating trade levels. In terms of the CAPA[15] Cost Formula, variable

[14] Details in this section were obtained from the Port of Long Beach Leasing Policy and interviews with port officials. For background information on port leasing and pricing policies, see the discussion in Chapter 6 and Dowd (1987, 1988 and 1992).
[15] The 11 members of the CAPA (California Association of Port Authorities) function as a Marine Terminal Conference with anti-trust immunity to discuss and approve rates and tariffs. The body does still meet, although since the early 1990s various ports, including Long Beach, have set tariffs without collective approval (for example, see Hall 1993).

charges were expected to cover approximately 50% of the berth preparation and wharf apron costs (Amundsen 1978). This form of terminal lease and tariff-collection was employed in the 1980 Pasha contract, but not in the Toyota contract. Toyota's 1981 terminal contract with the port was effectively for a fixed rental, and more closely resembled the pattern of port leases that has emerged in the containerization process.

The current policy has two main features: leases are of long duration, and they involve a participatory lease structure with a Minimum Annual Guaranteed (MAG) rental and revenue-sharing above that level. The maximum term is 25 years, with level of investment determining lease length. This matches the terms of most of the revenue bonds of the port, but is less than the time permitted in the Tidelands Grant. Furthermore, compensation is re-negotiated every 5 years, in terms of a requirement enforced by the City of Long Beach. The port justifies longer lease terms because the costs of developing container terminals (i.e. wharf standards and pavement depth) are so great. Smaller (general cargo and bulk) terminals don't require such long leases.

The MAG and participatory lease structure (i.e. revenue-sharing), was according to a leasing official, in part a response to the unexpected growth in throughput:

> "the change to containers certainly helped the port understand that the throughput levels were going to change dramatically.... we see all of our leases more or less as a partnership with the terminals and with the participatory lease structure we say that when their business gets better our rent gets better".

In determining the level of the MAG, the port takes land values and the port tariff into account. The port values land at $12 per square foot less encumbrances. This is based on historic land values around the port. Improvements are valued at replacement cost. The port expects a 10% return on land value and 12% on improvements. This establishes what is regarded as the fair market rent, which in turn establishes the level of the MAG.

Container and bulk terminals are leased with a MAG of 100% of fair market rent, while general cargo terminals (including automobile terminals) are leased with a MAG of 50% of fair market rent. Actual payments are based on sharing of wharfage. Container terminals pay 50% of wharfage until the fair rent is met, then 25% of wharfage thereafter. General cargo terminals pay 100% of wharfage until 50% of fair rent is met, then 75% until 75% of fair rent is met, then 50% of wharfage thereafter. Bulk terminals pay 100% wharfage on all cargo.

In addition the lease policy also mandates that the port not grant first rights of refusal, and the lease may in no way restrict the ability of port to adjust the tariff. This last requirement is very advantageous to the port:

> "One extremely important feature of a tariff sharing scheme is that the Port directly controls the pricing and resultant rate of return. Any change in tariff rates automatically changes the revenue to the Port. Once a tenant is under a tariff sharing lease, the Port can increase its rate of return by raising the tariff rates. This is a very powerful position to be in as a landowner" (Larsen 1995: 3).

In general, container terminals exceed their MAGs, allowing the port authority to share in the revenues generated by the phenomenal growth in container traffic in 1990s. However, since most automobile terminals do not generate enough revenue to exceed their MAG, the rent for these terminal operators is effectively fixed. The net result of this contractual change for automobile terminal operators was that it has shifted the allocation of risk from the port authority to the terminal operator.

The incidence of this institutional change was not neutral among automobile importers. By virtue of its vertically integrated logistics chain, Toyota was more able to meet the large MAG than independent terminal operator, Pasha. This is because Pasha was acting behalf of other automobile importers, with contract terms that did not necessarily coincide with the ports' (see Chapter 4 for more on this issue). In other words, in addition to the close relationships with port officials enjoyed by 'Toyota the terminal operator', the firm was not subject to the risk of changes in the logistics chain of its 'client' in the same way that Pasha was.

What then were the combined effects of these institutional changes – planning and leasing policies – and physical developments enacted by port officials on the geography of automobile distribution?

Automobiles and the Port of Long Beach[16]

During the 1970s, various shipping industry firms moved automobiles through the Port of Long Beach, including various general cargo stevedoring firms, the privately owned

[16] Most of the evidence presented in this section is taken from correspondence, contracts, minutes of meetings and other documents found in the Port of Long Beach archive. Owing to the sensitive nature of some of the material, many respondents were unwilling to be quoted and hence corroborating evidence from interviews is incomplete.

Pasha Group and Toyota Motor Sales USA (Toyota).[17] In 1980 and 1981 respectively, both Pasha and Toyota were awarded 10-year terminal leases for the handling and storing of automobiles. The new automobile facilities were located in the inner harbor of the port, since their existing deep-water berths in the outer harbor were required for container terminal expansion (see Figure 5.2). The inland migration of automobile terminals mirrors moves in other hub ports.[18] Toyota's lease was for a dedicated terminal, while Pasha was awarded a lease to operate a public automobile terminal. While there were some differences in the structure of their respective lease contracts, there were not any major differences in the levels of revenue collected from each tenant.

When these leases came up for re-negotiation, Toyota was awarded the entire terminal and storage space, without outbidding the opposition in strictly financial terms. Despite some resistance, Pasha was forced to stop operating at the Port of Long Beach. For most of the decade of the 1990s, Pasha operated through the Port of Los Angeles, but today it has consolidated its Southern California activities in the Port of San Diego. American Honda has followed Pasha to San Diego, and Volkswagen has centralized all its West Coast import and export activities at this port. Toyota has maintained its operations in the Port of Long Beach, and looks set to stay there for the foreseeable future.

---

[17] Foreign automobile manufacturers were actually preceded by domestic firms in their use of West Coast ports. With the creation of the River Rouge plant in 1916, Ford's Los Angeles assembly plant moved from downtown to the Port of Long Beach to be near the water-borne supply of early completely-knocked down (CKD) assembly kits (see Morales 1986; Wolff et al 1995).

[18] The most recent Port of New York long-range planning proposals envisage moving some of the current automobile terminals inland (see PNYNJ 2000). In Los Angeles, "late 1986 saw the opening of the new Distribution and Auto Services (DAS) terminal in an area formerly used for passenger vessels. The terminal will be used exclusively for Nissan products, the single largest auto importer through Los Angeles. This 83-acre terminal at Berths 195-199 was built at a cost of $16m. The property vacated by DAS at Berths 136-139 will by mid-1987 be the first exclusive US container terminal for Mitsui-OSK Lines in joint service with East Asian Company." (PLA 1986)

For Toyota, staying in Long Beach was no mean feat; no other automobile manufacturer ships motor vehicles through this port today, and a similar displacement process has occurred at the Port of Los Angeles. And so to the empirical question: why is it that Toyota USA has stayed as a tenant in the Port of Long Beach, while other automobile importers have seen their activities displaced by containers?

There is no doubt that Toyota values its relationship with the Port of Long Beach. Long Beach itself may be so important to Toyota because the firm is invested in the southern California region in multiple ways. As with most other Japanese automobile manufacturers, Toyota's North American distribution headquarters are in the region. Not only is the region an important market in its own right; the Calty Design Center in Newport Beach and Toyota Technical Center in Gardena are located here precisely to ensure that the firm stays abreast of market information (for more on these points, see Chapter 7). But this is only part of the story; simply because Toyota values the relationship does not tell us why it was successful where others failed. For a more satisfying answer to why Toyota has been able to stay in the Port of Long Beach we need to look at the relationship between the two more closely.

Evolution of Automobile Leases at Long Beach

Toyota has been using the Port of Long Beach since first entering the US market in 1957, whereas Pasha, an independent processor, handled automobile imports through Long

Beach from 1970. By the early 1980s, Pasha was handling imports for Volvo, BMW, Mercedes-Benz, Saab and Isuzu, and exports for Ford, GM and Chrysler (POLB 1979, 1980, 1982). Both Toyota and Pasha occupied space on the then outer harbor Piers C and J (see Figure 5.2).

In July 1976, Pasha (operating then as Canal Industrial Park), had had signed a Berth Assignment Agreement for Pier C, Berth 26 and the northern half of Berth C-25. This was a standard 10-year preferential berthing assignment of the time. At the same time, Pasha obtained various Area Assignments in the vicinity of Harbor Scenic Way for automobile storage as and when required. In other words, the Pasha lease was similar to those found in other common user port environments, with the desirable properties of storage flexibility (see Chapters 4 and 5 for more on this point). Similarly, in 1978, Pasha agreed to vacate some space to allow containers to relieve congestion at Berths 245-7 (the then Pacific Container Terminal). In October 1978, the Pasha operation moved to a preferential berthing assignment on Terminal J-244, next to the Toyota facility.

After operating at Pier J for several years using a standard 10-year preferential berthing assignment, in December 1980 Toyota and the Port of Long Beach entered a 3-year lease of Pier J, Terminal 243. This lease was in anticipation of the new facility development in the inner harbor, and was prematurely terminated in January 1983 by mutual agreement. This brief lease was associated with some problems over security. However, when a car was stolen from the Toyota facility in July 1981, the authority acted quickly to erect a barrier between Toyota the adjacent Pacific Coast Container facility. It seems reasonable to assume that Toyota's specific desires for a separation of uses, sketched in principle in the 1978 Master Plan, now enjoyed greater prominence within the authority. The intense, multi-level interaction between port and Toyota employees to address this problem signified the close relationship that was developing between the two parties.

Over the course of 1981 and 1982, both Pasha and Toyota relocated to the new automobile terminal at Berths 82 and 83 on the Cerritos Channel in the inner harbor. The fact that both moved at approximately the same time is important; the fact of containerization did not, at least in the first instance imply that only one of these firms could stay as tenants of the port. At the time, the 140 acre facility was one of the world's largest automobile processing facilities, with direct rail access and adjacent to the Long Beach and San Diego freeways. The total cost of the project was approximately $42 million.[19] The project was the largest item to be funded out of an $85m revenue bond issued in the 1980 (POLB 1980a).

The Pasha lease, signed June 12th, 1980, assigned Berth 82 and the adjacent facility to Canal Industrial Park as operator on a preferential basis for a period of 10 years.[20] The lease gave Pasha the exclusive right to operate a multi-user facility for automobile imports, although operators of other (general cargo) terminals were allowed to handle miscellaneous volumes of automobiles. The lease also explicitly permitted the establishment of proprietary automobile terminals in the port. In line with the goal of

[19] An artists rendering of the new automobile terminal in the Port's Harbor Highlights magazine shows two car carrying vessels at berth in the upper background, off-loading autos for Pasha Industries terminal at the upper right and Toyota Motor Sales USA in the foreground. Interestingly, the vessel shown off-loading at the Pasha dock is marked *Honda* (POLB 1981a).

providing a multi-use facility, Pasha was not allowed to dictate which stevedoring firm a visiting steamship line had to use. As a multi-use facility, no automobile importer had a direct relationship with the port authority (see Chapter 4). Pasha's clients at this facility included Honda, Volvo, Sterling, Isuzu and Daihatsu.

Apart from the multi-use nature of the facility, the other main difference between the Pasha and Toyota agreements were the financial terms. The Pasha lease was a pure revenue sharing agreement; although the City share was 75%, this effectively transferred all the financial risks associated with the lease to the City. In other words, this was a revenue-sharing agreement in which Pasha was under no obligation to meet a MAG. The Toyota lease contained both fixed rental (i.e. an effective MAG) and revenue-sharing elements. The ports' 1990 formal lease policy eliminated such discrepancies.

The 75-acre Toyota facility was apparently the subject of considerable interest within the firm. In 1980, two senior delegations from Toyota's Tokyo headquarters visited the site of the new facility, including Eiji Toyoda, then President of Toyota Motor Company (POLB 1980). The details of the lease agreement between the City of Long Beach and Toyota Motor Sales, USA Inc, signed on November 19th, 1981, differ in small but important ways from the lease signed by Pasha.[21]

---

[20] Agreement for the Operation of a Public Automobile Terminal, June 12th, 1980 (City of Long Beach, Ordinance HD-3196).

[21] Lease Agreement between the City of Long Beach and Toyota Motor Sales, November 19th, 1981 (City of Long Beach, Ordinance HD3422).

The Toyota lease was for a term of 10 years, with a 5-year renewal option. Toyota received preferential berthing assignments for Berths 83 and 84, and tertiary berthing rights to Berth 82 (behind Pasha and oil tankers). The lease provided an option for expansion of the facility onto some adjacent parcels within 5 years of signing, with first right of refusal during this period if the port authority wanted to lease these parcels for more than one year.

Clause 9 of the contract (Maintenance and Repair) created several opportunities for regular technical contact between port officials and Toyota. Toyota was responsible for maintenance resulting from wear and tear, and acts of god, whereas the port was responsible for foundations, subsidence, wharf, bulkhead, and fender, unless this resulted from negligence by Toyota personnel. These arrangements, including a specific contractual arrangement for periodic inspections, provide many opportunities for close contact. The archives of the Port of Long Beach contain correspondence confirming that there was regular interaction over technical issues throughout 1980s between the port authority and Toyota personnel.[22] There are fewer archived examples of such interaction between Pasha and the port, but this is not really the point; the point is that it was direct Toyota employees that developed the direct relationships with port officials.

As a terminal lessee and operator, Toyota Motor Sales USA enjoyed contact with the port at numerous levels. For example, Toyota employees were (and still are) in daily contact with port wharfingers who check cargo manifests and report damage to the Terminal

[22] For example, letters from Toyota Motor Sales to the Port's Engineering Department dated January 17 and August 1, 1983, concerning operational matters at the new Toyota facility.

Maintenance and Engineering Departments. During the planning and construction phases, contact at a managerial level was also constant. Given the ongoing changes and improvements that Toyota brought to its facilities over the 1980s, such contact was constant in the period leading up to 1990.

The contact between the firm and authority was not necessarily conflict-free. For example, in June 1984 Toyota Motor Sales discovered that an underground solvent tank at its facility was leaking. The Port of Long Beach initially denied the claim, and after correcting the problem at its own expense, Toyota sued the port in the Los Angeles County Superior Court. The matter was settled in July 1986 when the port agreed to pay Toyota $1.3m (see Settlement, Agreement, Assignment and Release, City of Long Beach Document HD-4178). It seems reasonable to argue that the successful resolution of this conflict may in fact have strengthened relationships and the ability to avoid such problems in future.[23]

Although there is evidence that Toyota sustained a higher level of contact with the port than Pasha over the relevant period, it was Toyota's vertically integrated logistics activities that provided the additional advantage. All of these contacts were with the automobile manufacturer directly and not through an intermediary as in the case of Honda and the other automobile firms using the Pasha public automobile terminal.

[23] Similarly, Toyota and Pasha together raised concerns about damage to vehicles from emissions from the adjacent MC Carbon coke calcining facility. They were able to insist on a monitoring and abatement program in the Coastal Development Permit granted to MC Carbon in 1981 (and later, to Arco in 1987).

Soon after moving Toyota began to outgrow the new terminal. Toyota imports fared particularly well in the recession years of the early 1980s, and import volumes continued to expand into the mid-1980s before transplant production reached significant volumes in the late 1980s (see Chapter 7 for more on Toyota). In a 1988 Amendment, Toyota exercised its rights to an adjacent 46,000 sq ft parcel of land, and throughout the late 1980s, the firm leased storage space at various locations in the port.[24]

At an even earlier date, it had become clear that a more permanent solution was required. Apparently Toyota employees met with port officials, including the then Director of the Port of Long Beach Jim McJunkin, in late 1984. In follow-up correspondence dated January 15, 1985, Barry Williams, Port Operations Field Manager at Toyota Motor Sales stated that "(T)o reiterate out projected needs, we believe that 130 acres would meet our operational requirements for the next ten years and possibly to the end of the century". Recall that the entire Toyota-Pasha automobile facility was some 140 acres in extent. The meeting, which apparently took place on Toyota's initiative, resulted memorandum from the Port Director requesting staff to conduct an Auto Terminal Expansion Study.

Why is Toyota still in Long Beach?

In 1990, Pasha's lease expired, and despite various urgent appeals and threats of legal action from company founder and CEO, George Pasha, the lease was not renewed.

[24] Some temporary leases were substantial. From April 1989 to January 1991, Toyota leased the 553,000 sq ft site at 420 South Pier E for $71,877 per month. At the middle of 1989 the firm was also leasing a further four parcels of between 50,000 and 120,000 sq ft on a month-to month basis. Pasha also leased additional space from 1985 to 1989.

Instead, Toyota Motor Sales took over the entire Terminal 82 in a new lease dated January 1st, 1990.[25] Why did Toyota win out over Pasha? Land economics and political-economy alone cannot provide a complete answer.

Pasha certainly did not leave voluntarily, and made several unsuccessful attempts in 1984 and 1986/7 to extend its lease for 10 years. Correspondence from Pasha President George W Pasha to Port Director James McJunkin during this period signals that a lease extension was increasingly important for Pasha's attempts to attract and retain clients. In a letter dated May 10, 1984, Pasha wrote that a 10-year extension "will be crucial in our joint marketing and planning for the automotive import and export industry".

When rebuffed, Pasha's tone became more threatening. In a July 7, 1987 letter George Pasha wrote that "no decision is a message to all auto manufacturers that the concept (of a public automobile terminal) is dead and that new alternatives must now be found. Three years is necessary to locate and build a suitable relocation site in another Port in Southern California". Pasha apparently began negotiating with the Port of Los Angeles about opening an automobile terminal there, although it is unclear to what extent this was simply to obtain bargaining leverage. Later in 1987, with the intervention of a Port Commissioner (Hauser), Pasha and the port authority again attempted to reach agreement on a new lease. This attempt also failed, apparently because of Pasha's unwillingness to accept a $2.8m minimum annual guarantee.

[25] January 1st, 1990 (City of Long Beach Ordinance, HD1544).

As the end date of the 1980 lease approached, Pasha's clients themselves started shopping around for alternatives. Honda, for example, began negotiating with the Port of Los Angeles about leasing a terminal there. No doubt anxious to avoid the uncertainties it was facing in Long Beach, in this instance the automobile importer contemplated being the primary leaseholder. Hondas moves were communicated to Port of Long Beach officials by George Pasha (in a letter dated January 26, 1990), and were later reported in the trade press (see Evans and Fiore 1990).

It seems unlikely that Honda was contemplating a facility as extensive as Toyota's, but it is not surprising that they were rebuffed – they lacked the direct, close relationships with port officials that Toyota had been building since the 1960s. When Honda did announce that they were re-locating their operations to Los Angeles, Long Beach officials simply shrugged their shoulders:

> "'Its unfortunate. We'd be sad to see them go,' said Steve Dillenbeck, (then) acting executive director at the Long Beach port. '(But) we will have a customer to fill that space if they leave'.... Dillenbeck said Honda, which imports 70,000 cars a year to Long Beach, wants a terminal of its own – something Long Beach is not prepared to give" (Evans and Fiore 1990).

Toyota, of course, did not remain silent through this period. With active prompting from Toyota, the port authority did not hold an open auction for the site. Apparently Toyota Group Vice President H. Imai wrote to Port Commissioner Talin on February 1, 1990, expressing Toyota's interest in additional land for processing. In a letter Steve Dillenbeck (Port Managing Director) replied; "it is not our desire, nor has it been our desire, to bid the *former* Pasha property between various possible users, especially Toyota" (emphasis added). In his reply dated February 16, 1990, Imai wrote that "as indicated in my letter to

(Port Commissioner) Talin, Toyota is against an auction approach. We continue, however, to have an interest in the Pasha property".

As the 'bidding' intensified, the minimum guarantee required by the port rose even further.[26] The Port requested proposals for the Pasha terminal from at least three potential customers – Toyota, Pasha and the Vancouver (Canada)-based Annacis Terminals. The Annacis proposal was for a relatively low minimum annual guarantee of $2m, and no revenue-sharing agreement (i.e. Annacis would pay the full tariff for wharfage, dockage and storage). Their proposal was clearly against the port's new leasing policy.

There is no formal proposal from Pasha in the port archives. Official notification of the termination of the Pasha lease is dated March 22, 1990, with operations to cease on November 30 of that year. In subsequent correspondence and formal claim of damages against the City of Long Beach (which apparently did not result in a lawsuit), Pasha claimed that it offered the port the same minimum annual guarantee as Toyota.

Internal financial records of the port authority show that port revenues from the automobile terminal actually fell slightly, at least in the short run, following the departure of Pasha (see Table 5.5). The point is that for the port authority, the identity of the client made *no financial difference*. Effectively, Toyota had secured the entire automobile terminal of the Port of Long Beach without directly out-bidding its rivals. Although conflated with the recession of the early 1990s, the number of automobiles handled by the port fell sharply, from over 350,000 per year in 1988-89, to under 200,000 per year in the early 1990s (see Figure 5.1).

Table 5.5 Operating Revenue from Port of Long Beach Automobile Terminals

Financial Year (1)	Toyota (3)	Canal Ind Park/Pasha (3)	Total (3)
7-1-85 to 6-30-86 (2)	$3,789,000	4,241,000	8,030,000
7-1-86 to 6-30-87	4,638,000	4,867,000	9,505,000
7-1-87 to 6-30-88	4,568,000	4,850,000	9,418,000
7-1-88 to 6-30-89	3,950,000	4,305,000	8,255,000
7-1-89 to 6-30-90	4,725,000	4,611,000	9,336,000
7-1-90 to 6-30-91	6,110,000	1,122,000	7,231,000
7-1-91 to 6-30-92	7,231,000	-	7,231,000
7-1-92 to 6-30-93	7,989,000	-	7,989,000

Source: Port of Long Beach Commission Archive.
Notes:

1. All figures have been rounded to nearest $1000.
2. 1986 Financial year reports operating income, thereafter operating revenue.
3. North Harbor Area Piers Only (ie does not include rental activity elsewhere in port).

Toyota's new contract was very similar to previous (1981) agreements, except for the policy changes reflected in the port's new leasing policies. The 16-year lease included a minimum annual guarantee of just over $7m in the first year and $7.9m thereafter until the end of 1995. There is a provision for revenue-sharing above this level, but Toyota has not exceeded its MAG. Rent adjustment agreements were required to commence Jan 1st, 1996 and 2001. The 1996 negotiations were resolved late in that year, but without legal action. The minimum annual guarantee was increased to $9.4m (City of Long Beach Ordinance HD1752), a return on investment consistent with port leasing policy.

[26] Port Managing Director, Steve Dillenbeck, indicated in a letter rejecting a Pasha offer dated December 13, 1989 that a minimum annual guarantee of approximately $5.675m would be required for an extension of the 65-acre Pasha lease.

The Future for Toyota in Long Beach

Toyota's current lease expires in 2006, but port officials have expressed their desire to renegotiate the lease before it expires. This is because Toyota, in addition to the 144acre automobile terminal site, has also leased a 31acre site immediately to the west (see Toyota/URPC site on Figure 5.2). This was part of the 725acre site acquired by the port from the Union Pacific railroad in 1994. The site provides Toyota with access to a Union Pacific railhead (SCMP 1992). Toyota had leased this site from the Union Pacific Resources Company before the port purchased the land. In terms of the sale, Toyota's lease was transferred to the city/port, and this lease is also only set to expire in 2006.

However, the railhead is also central to the port's plans to redevelop Pier A (for SSA, currently at Piers C and J) when the current tenant, Hanjin, relocates to the new 370acre Pier T. In theory the port owns all the rail lines on its land, but is unwilling to exercise this right unilaterally, especially in light of the close working relationship between Toyota and Union Pacific Railroad (see Chapter 4).

Hence, port planners have been contemplating how to allow the displaced portions of the Toyota operation to expand onto land acquired in the north Harbor area (see Figure 5.2). As already noted, this land was not acquired with the express intention of accommodating Toyota. However, a 1998 study concluded that this would be the best use of the land (POLB 1998a), and these proposals are reflected in the recent Facilities Master Plan

(POLB 2001a). In effect, what this means is that Toyota will be a direct beneficiary of the ports' main land acquisition program.

The responses of a port planner to questions as to why so much effort was apparently being exerted on Toyota's behalf reveals much about the way in which the close relationship between the firm and the authority continues to exert an influence on port land use decisions:

> "we took a look at the (north harbor) land to decide what we could do with it .... there were some transportation issues ... we also needed to be courteous other users, environmental issues, and so on. Anyway, we decided the highest and best use would be to tie it back to the Toyota Operations..... We would thus be able to expand the pier A container terminal and keep the Toyota operation whole using grade separations at the terminal and over the future B street rail yard….
>
> Now Toyota didn't like some of the suggestions and they couldn't see how it would work at first. But it is something we are now working on together – it wasn't a case of here it is, take it or leave it. We're working on a Request for Proposals for a consultant to look at a number of issues. The first thing is the existing conditions – how do they currently use the land, how much square footage do they need for paint shops, maintenance facilities, storage facilities and dwell times, etc. Toyota have a pretty good handle on it, but they'd like to have a better understanding. This is a co-operative effort on both parts – we get to see how they operate and they get to see if there are any additional ways they can improve things. Its quite exciting really."

In summary, as part and parcel of the process of containerization, a series of institutional changes enacted by and through the port authority had a decisive impact on port-industry relationships. Toyota was able to successfully negotiate these institutional changes because of the pre-existing and re-enacted relationships it had developed with the port. In other words, Toyota chose, and equally importantly, was able, to maintain its position in the Port of Long Beach because of the way in which it was interpenetrated with this local public authority. This relationship evolved over the 1980s, leading up to the 1990 decision by the port to award Toyota the only automobile terminal lease. The established relational fix looks secure.

Beyond Long Beach: the emergence of the Southern California niche ports

The niche ports of San Diego and Port Hueneme have been the main beneficiaries of the selective displacement of automobile importers from the Ports of Long Beach and Los Angeles. Independent processor, Pasha, and Wallenius-Wilhelmsen Lines subsidiary, Pacific Vehicle Processors have established successful operations in these locations. The result has been the redistribution of reasonably well-paying automobile processing jobs to these extra-metropolitan locations.

Port Hueneme

Port Hueneme is an independent special district created in 1937 and governed in terms of state legislation (California 2002). The port is governed by a Board of five directly elected commissioners, and the district includes the Cities of Oxnard and Port Hueneme and some unincorporated beach areas. The port was initially formed to assist local farmers with exports. After the Second World War, the port primarily served as a supply base for off shore oil facilities, and some fishing. These industries declined into the 1980s. However, a particularly active management, with the prompting and support of local longshoremen (long directly represented on the Board), has successfully courted deep-draft customers (Apodaca 1994).

Today automobiles and fruit comprise almost all the cargo handled by this niche port. Automobiles were first imported through the port from 1972, when Mazda established a facility at the port. Today BMW also imports and processes vehicles in Port Hueneme, while Wallenius-Wilhelmsen Lines (WWL) imports and processes (at its Pacific Vehicle Processors facility) for Volvo, Jaguar, Land Rover, Saab, Mitsubishi, Suzuki, and Daewoo (for more on WWL, see Chapter 4). Del Monte started importing bananas, melons, and tropical fruit in 1979. Today Sunkist/Cool Carriers also handles citrus products at the port.

Specialization in these two commodities is complementary. The port is a small multi-use facility, with a tariff-based pricing structure. The dominant clients do have cargo agreements that provide for revenue-sharing above minimum guarantees. Although in formal terms, no user enjoys preferential rights, local practices have resulted in a grandfathering effect. Ships carrying fruit berth Monday-Wednesday since imports later in the week would not reach market before the weekend. Car carriers use the same limited berth spaces on Thursday-Friday.

The steamship line, WWL chose Port Hueneme as its Pacific Coast processing location for various reasons, including the established relationships reflected in the grandfathered berthing allocation arrangements. WWL vessels had been calling at Port Hueneme regularly since 1988, when BMW opened its processing operation there (Apodaca 1994). At the same time, WWL was calling at San Pedro Bay, but in the words of one WWL official "we were calling at Los Angeles and Long Beach in-bound with cars from Europe to 3 or 4 different berths”. When Jaguar consolidated its distribution operations, WWL was provided with an opportunity to start its processing operation, Pacific Vehicle Processors.

Port Hueneme was chosen as the site, partly due to

> “proximity to the market where most of the cars were going - Southern California – yet is was dis-associated from the hustle-bustle, crowded container ports of Los Angeles and Long Beach.... also you have 6000 longshoremen plus in LA-Long Beach who don’t care about one piece of cargo versus another, we have 100 here who were real hungry to get the business .... the Port of Hueneme-Oxnard Harbor District worked very closely with us to bring the business here ... we were able to put a comprehensive package together both on the ocean side and on the inland processing side, achieve the best cost savings, have access to the land we needed, good labor force, clean environment, no congestion”.

However, the established relationships and track record at Port Hueneme, were important too:

> “If we had to start from scratch, I think we would have seen Port Hueneme and inevitably or eventually have selected Port Hueneme, but the process of making that selection would have been a lot longer process. Because when we first started sending ships here to BMW, there were studies that had to be done to approve that the ships were capable of entering the port ... berthing, entrance channel ... there was a lot of leg-work that we had to do to say yes to BMW. The fact that Mazda was already here helped convince the powers that be that yes, this kind of ship could come here. Then we go to know the labor, the workforce at that same time. If we had to work from scratch it would have been a much more protracted period of study to see that the labor was good ... An extra 6 months of study would have been involved.”

In other words, it wasn’t so much the case that someone in WWL lobbied for Port Hueneme, but that the established, institutionalized, relationships reduced the time to required to generate *credible* information about the port.

San Diego

The Port of San Diego was created in 1962 as a Unified Special District (Public Benefit Corporation) representing the cities of Chula Vista, Coronado, Imperial Beach, National City and San Diego. It consists of three divisions, in which the Maritime Division is very definitely the step-child. The Aviation Division generates most revenue, while the Real Estate Division has an expansive empire that includes the waterfront, tourism, convention center, and other commercial properties. The Maritime Division used to form part of the Real Estate Division, but was established separately in 1997. In part, this reflects the rapid growth in automobile handling since 1990 (Cantwell 1992). Other maritime operations include small volumes of exports of soda ash, frozen fruit, and imports of cement, cotton-seed, sand, newsprint, fertilizer, lumber and steel. An earlier attempt by the port authority to attract container traffic failed, and the ports straddle crane stands idle above the automobile imports and exports.

Automobile processor, Pasha, first moved to San Diego in 1990 with American Isuzu Motors as its only client. After trying for several years to convince them to move (see Brenner 1987), in 1991 Volkswagen moved its operation from Los Angeles (Cantwell 1992), and has since consolidating all its West Coast business in the port. Today Pasha's largest client is American Honda Motors, which moved its Los Angeles import operations there in 1999 (see Chapter 7 for more). Other clients include Mitsubishi-Fuso trucks, Hino and Isuzu Diesel, and Audi. Exports include right-hand drive Isuzu vehicles made in Indiana being shipped to Australia / Taiwan / Japan.

As in Port Hueneme, the processor found strong support from the port authorities and labor for their move. Pasha has a 15-year revenue-sharing agreement with the port, and the port made some infrastructural improvements. The most important of these were a series of improvements to the rail connection (see Chapter 4). Support from the City of National City was especially strong because of the employment impacts. There are approximately 200 jobs within Pasha, as well as ILWU, rail, trucking and ancillary jobs. The relationship with the ILWU is apparently particularly good, partly because Pasha is one of relatively few terminal operators at San Diego. With the increase in business, the ILWU has had to call in workers from other ports to help occasionally.

Conclusion

In summary, I have argued that an institutional analysis adds some critical understandings to the conventional land economics and political-economy accounts of patters of regional development. The various institutional changes enacted by and through the Port of Long Beach over the 1980s, were more favorable to the large, integrated, single-user terminal lease model pursued by Toyota, than the general cargo model pursued by other terminal operators, including Pasha and the automobile manufacturers it represented. This was less because of the financial advantages they provided some port users, than because of the closer and deeper relationship they afforded some users and not others. These institutional changes reflected, and built upon, the three inter-connected institutional legacies of the city-, landlord- and carriers port.

Toyota was able to negotiate these changes more successfully than its competitors because of the nature of its pre-existing contractual and other relationships with the port. While the changes in port organization resulted in less emphasis on marketing to final shippers and more attention to shipping firms, Toyota was able to maintain 'voice' by virtue of its terminal-operator status, and its visible corporate presence in the Port and City of Long Beach.

The institutional analysis suggests that this was not a one-way process; neither Toyota, nor any other single actor was able unilaterally to create the port authority it wanted. Indeed, if anything Toyota has had to tie itself more tightly to the Port and City of Long Beach in order to secure its position. I take this issue up in the following chapter. The economic geography of automobile distribution is best understood as the cumulative result of a series of strategic choices; the securing of a particular relational fix in Long Beach by one firm, and the selective displacement of other firms to more remote locations in southern California.

Finally, the events in Long Beach had a small but measurable impact on the distribution of employment within the region. Table 5.6 shows relative employment growth in Southern California in cargo-handling and automobile-related sectors and sub-sectors. The impacts of massive cargo growth in the narrowly defined Los Angeles County are visible – over 6% relative employment growth in marine terminal (ie longshoring) employment. However, employment in the automobile distribution sector declined in this region, a result of the redistribution of automobile import and processing operations to the north and south. Although Ventura and San Diego County's overall cargo-handling relative employment growth was negative, automobile distribution employment grew in Ventura over the entire period. In San Diego, although growth from 1980-2000 was negative overall, the relative sectoral decline of –1.5% in the 1980s was reversed into a 0.8% increase in the 1990s (see Appendix A, Table A5.1).

Table 5.6 Relative Sectoral Employment Growth (1) in Southern California

	Los Angeles			San Diego
	Broad (LA-Riverside-Orange)	Narrow (Ventura County – Port Hueneme)	Narrow (Los Angeles County – LA/LB)	
	1980-98			
Marine Terminals	5.9%	.	6.7%	-3.5%
Freight Transport	0.9%	-3.9%	0.7%	1.5%
Water Transport	5.2%	-2.6%	6.0%	-1.4%
All Transport	0.8%	-3.0%	1.1%	-2.2%
Auto Assembly	-1.2%	-4.6%	-4.4%	-3.0%
Auto Parts	0.4%	15.9%	-0.5%	3.4%
All Manufacturing	0.3%	1.7%	0.2%	0.6%
Auto Distribution and Retail	0.3%	0.4%	-0.3%	-0.5%
All Distribution and Retail	0.0%	-0.3%	0.0%	-0.5%

(1) Relative Employment Growth is second difference of sectoral employment growth in region with regional and sectoral effects removed. Employment figures from analysis of County Business Patterns. See Chapter 2 (footnote 18) and Appendix B for details.

Chapter 6

Failed intentions and unintended successes:

Cars, containers and the Maryland Port Administration

Introduction

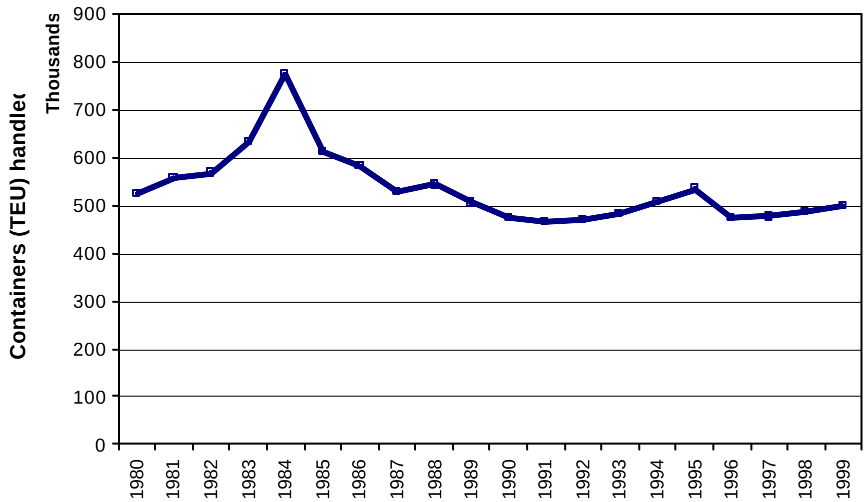
In July 1996, the Maryland Port Administration (MPA) issued a concise new Strategic Plan (MPA 1996). While all bets were appropriately hedged, in this document the public authority responsible for the Port of Baltimore implicitly conceded that it was unlikely to become the next container hub port on the US East Coast[1]. Throughout the 1980s, and particularly under the administration of Governor Schaeffer (1987-95), the MPA had enjoyed considerable support from the Maryland State Legislature as it sought to attract more containerized cargo. But by 1990 there was little doubt that despite this support, the Port had not succeeded in this endeavor (Starr 1991).

In 1984, the Port of Baltimore handled approximately three-quarters of a million containers with a foreign origin or destination, and looked set for considerable future growth (see Figure 6.1). However, deregulation in the shipping industry that year consigned the port to a secondary role in the container trade. Since then, the port has only handled about a half million containers in any given year, and from 1989 to 1991, the port authority made an operating loss. In many ways then, the Strategic Plan was hardly

[1] The stated goal of the strategic plan (MPA 1996) is to "sustain and grow the container business commensurate with the growth in the North Atlantic container market" (p10), which derives from the concession that "events in 1995 and 1996 signaled important industry changes which may limit our ability to increase share" (p2).

that surprising. Its political capital expended, the MPA had no alternative but to change course.

Figure 6.1 Baltimore's container fortunes declined after 1984



Source: Port of Baltimore and Containerization International.
Note: Includes full and empty containers, imported and exported. Figures up to 1984 are from Containerization International; thereafter from the Port of Baltimore. These sources may not be strictly compatible but the trends do match.

However, just two years after the publication of the Strategic Plan, the MPA was again able to secure considerable political and financial support in its quest to become a container hub. This time it was in the authority's bid to become a hub for that giant of container lines, Maersk. In preparation for its merger with US shipping line Sealand in 1999, Maersk proposed consolidating its operations in one hub port on the north-eastern range. Ports were invited to submit bids and much to the surprise of many in the industry, Baltimore was selected as one of two finalists. The MPA submission included a considerable financial commitment by the state, and concessions from the railways, longshoremen and other port users. In the end, the Port Authority of New York and New Jersey won the Maersk contract, although some uncertainty about the final shape of the deal remains. Today, members of the Baltimore port community reflect on the Maersk episode in one of two ways.

The more negative view argues that the port never had a chance, and that Maersk simply used Baltimore's superior channel depth to extract dredging concessions from New York. The more positive spin is that Baltimore played valiantly in a bidding game that showed other potential users that this was a port worthy of consideration[2]. Either way, an apparent contradiction remains. Despite accepting that Baltimore was not the right location for a container hub in the 1996 Strategic Plan, the port community responded enthusiastically to this possibility in 1998. The episode reminds us that under-estimating the attractiveness of gaining "hub status" to just about any port community, and particularly to state and local politicians, would be grossly inaccurate. If the 1996 Plan had been a rational, albeit late, choice to abandon containerization, how could these same rational actors get it so wrong just two years later?

An important clue to answering this question lies in the fact that the Strategic Plan dealt with much more than containers. With a remarkable degree of clarity, the Plan lists ambitious targets for a range of specific non-containerized commodities - automobiles, ro-ro cargoes, forest products, refrigerated goods and steel. These targets have, for the most part, been successfully met. As is surely the case with all strategic plans, this was as much a forward-looking statement imagining a desired future for the organization as it was a confirmation of trends that were already in place. In this chapter I will argue that

Baltimore's Strategic Plan is very likely to be fulfilled, precisely because it formalized a development path already in place and that was deeply entrenched in the institutional structure of the port. In other words, I will argue that an historical institutional analysis provides a compelling account of why the MPA is today a largely successful diversified general cargo port, handling automobiles for a variety of manufacturers.

The perspective on the MPA advanced in this chapter, and on other local public agencies facing similar challenges, is essentially sympathetic. I will show how port managers, faced with declining port performance in attracting containers, engaged in multiple rounds of information gathering, strategic planning, policy experimentation, infrastructure investment and even legislative reform. When compared against their conscious intent, these actions failed to secure the desired increase in container traffic. My purpose is however not to dwell on failure, but rather to argue that the efforts were what we might reasonably expect from any such authority given the uncertainties involved. And more importantly, the interventions of the port managers unintentionally left in place the possibility for success in the handling of a range of non-containerized commodities, including automobiles.

I will argue that the possibility for success in automobiles can be traced to the circumstances surrounding the formation of the authority responsible for the Port, the Maryland Port Administration (MPA). Three features of the formative period that persist to this day are the attention of port to shippers, the state-level focus of its resource-

[2] The titles of articles in the *Baltimore Business Journal* by Ben Werner are revealing: "Port makes valuable contacts through bid" (Werner, 1999a) and "Port seeks solace in entry of CSX rival" (Werner,

dependency, and its maintenance of common user operating principles. These institutional features embody a set of practices that have proved highly compatible with the business models of shippers of automobile, ro-ro and other non-containerized cargoes. Note that these founding legacies were influential in the ongoing strategic deliberations of port managers, but did not alone determine the eventual outcome.

After discussing the founding legacies, I will turn to the period after 1980 to show how these institutional features of the port were related to, and conditioning of, the responses of port personnel and local politicians to the declining fortunes of the port. The conscious planning and marketing activities of the MPA since 1980 have been dominated by the authority's attempts to reverse the lack of success in the container market. I review the various policy experiments of the port in this regard, arguing that despite their failure, they left in place the potential for success in other cargoes, specifically the automobile trade. I discuss various aspects of the experience in this trade, including one particular manifestation of institutional compatibility, a program known as the QChat that provides a forum for automobile shippers in the port.

Founding institutional legacies

Three inter-penetrating founding legacies continue to exert a powerful influence over the actions of Baltimore's public port managers. These legacies are institutional in the sense that they provide a taken for granted set of rules, norms and practices that promote information sharing between port officials and shippers. While these are not fully

---

1999b).

determining of the response of an individual port manager to a given situation, they exert their influence in decision-making and action. The effects of this institutional legacy are reflected in various rounds of strategic planning and organizational restructuring, influencing the development trajectory in an incremental yet persistent fashion.

First, in accordance with its founder's intentions, and reinforced by legislation and organizational structure and culture, the Port of Baltimore is a shipper's port[3]. Thus, for example, when faced by declining cargo volumes in the 1980s, MPA officials looked first to shippers as opposed to carriers to attract cargo through the port. Second, the Port of Baltimore is a creation of the State of Maryland, and looks to the State Legislature for finance, political support and leadership. One implication of this legacy is that the Port was able to devote considerable resources to its unsuccessful attempt to become a container hub. Third, the Port of Baltimore has maintained a common user principle in its provision of public terminals since formation. In various decisions relating to terminal leasing and operating policy, MPA officials sought first and foremost to protect this principle.

The Shipper's Port

When the Maryland Port Authority (later the Administration) was formed in 1956 at the instigation of various Baltimore business-people, it was with the explicit goal of being a shipper's port. Until that time, Baltimore had been a "railroad port", and in the opinion of influential locals, it had ceased serving local economic interests. That founding intention remains deeply embedded in the structure of the organization and in the consciousness of its personnel. On his retirement in 1978 after 22 years as the first Maryland Port Administrator, Joe Stanton, restated the goal in the following terms:

> "Very early in the operation of the Maryland Port Authority we adopted the guiding philosophy that Baltimore was to be a shipper's port. It was not to be a railroad port, it was not to be a trucker's port, it was not to be a steamship port. It was to be a port that catered to the needs of the shipper. The shipper, after all, pays the freight. This philosophy guided us in our operations of the Maryland Port Authority and in more recent years as the Maryland Port Administration. We believe this is the most successful guideline for a port such as Baltimore" (POB January 1978; 17).

At one level, this statement was the parting shot of a departing executive, one whose business model was being fundamentally questioned by the proposed deregulation in the railroad and shipping industries. However this interpretation would under-estimate the depth of support for the "shipper port" model employed within the MPA.

While the 1956 legislation that formally created the MPA was based on the recommendations of a Joint Port Commission appointed by the Mayor of Baltimore (D'Alesandro) and the Governor of the Maryland (McKeldin), it reflected years of lobbying by local business interests. In 1955, the Greater Baltimore Committee (GBC), a body representing the most significant commercial interests in Baltimore, had formed its own Port Development Subcommittee to work in parallel with the official Commission. These business interests, better described as representing Maryland as opposed to narrowly Baltimore concerns, did not include the major shipping lines or the railroads.

---

[3] I would remind the reader that shippers are the owners of the cargo, be they producers or distributors. They are distinct from carriers who actually transport the cargo, be they shipping lines, railways or

The final report of this subcommittee provides one indication of the how closely the MPA matched their requirements: “our Subcommittee is unanimously of the opinion that the Greater Baltimore Committee and all other segments of our civic and state leadership should energetically support the formation of a Port Authority for the Baltimore area” (GBC 1956:3).

The work of the GBC had been preceded by earlier rounds of advocacy work. Faced with a decline in port commerce following World War II, various local actors sought solutions. In 1949, and again in 1954, surveys by an engineering firm, Knappen, Tippetts and Abbett, recommended the formation of a Port District Commission (BAC 1954). Proposals for public involvement in port development did run into initial opposition, both from Anne Arundel County (immediately south of Baltimore) where residents resisted the granting of condemnation powers to what was perceived as a Baltimore organization, as well as from the railroads that owned most of the existing terminals. The second Knappen et al, survey thus recommended a somewhat limited role for the proposed port Authority; limited to “co-ordinating”, marketing and only owning and operating facilities if private business was unwilling or unable to do so (BAC 1954).

A marketing role for the proposed port authority had particularly deep support. In 1953, the Baltimore Junior Association of Commerce (BJAC 1953) had prepared a “Report on the scope and efficacy of the present efforts to promote the Port of Baltimore”. The report begins by noting that there were no locally owned and controlled steamship lines, with the result that there was little local money for promotional purposes. Furthermore, the

truckers.

major pier facilities were owned by the railroads and the bulk cargoes that gave them most traffic did not "require large-scale promotion campaigns and widespread solicitation" (p1). The relative decline of the port – in terms of exports through east and gulf coast ports, from second only to New York in 1940 to fourth place by 1951 – was blamed on this lack of promotional activity.

The authors of the BJAC report then asked "whether or not a completely integrated program of public relations, advertising and solicitation would materially increase the volume and value of overseas commerce of this Port?" (1953: 1). The remainder of their report argued the affirmative, and recommended a substantial promotion program. The proposed promotional program would include offices in New York, Pittsburgh, Chicago and other mid-Western centers, Europe and Latin America and a variety of research and advertising activities. All of these elements have remained at the core of the MPA's promotional activities to this day. The BJAC report suggests that the home for all these activities would be the existing Export and Import Bureau (a program of the Association of Commerce), or if the Bureau was unable to adopt the program, then it should be housed at the Port of Baltimore Commission.

The Junior Association report was followed by a more detailed survey of "Port Promotion. Protection and Administration" by the Baltimore Association of Commerce staff in 1954 (BAC 1954). This report laments the high levels of promotional spending undertaken by Baltimore's competitor ports, from Boston to New Orleans:

> "Where does the money come from which some Port Authorities are spending so freely? As stated earlier, it includes sources other than port and maritime

> operations, such as bridges, tunnels, airports and the gasoline tax. …the large amounts which competing ports now have available for implementing and expanding their promotional and protective activities presents a difficult problem for Baltimore. … A realistic appraisal of the competition indicates that Baltimore should have more funds for promotion, whether expended by the Association of Commerce or by a public port agency. … (A)mong the possible sources of additional revenue for port promotion which might merit study is a dedication to this use of a portion of the City's share of the State Gasoline tax" (BAC 1954:8-9)

After some consideration of using bridge tolls to finance port capital expenditures, state legislators eventually decided to dedicate a 0.5% state-wide tax on corporate income for this purpose (Maryland 1956). Thus, the argument for a publicly funded port authority in Baltimore was framed as much around the need for co-ordination as around the desire for public subsidization of promotional activities. The need for physical terminal development, which had apparently motivated the formation of many of the southern port authorities, was less central in the Baltimore case[4]. This reliance on state financing highlights the second major feature of the port: that the Port of Baltimore is the state's port, not the city's.

The MPA's focus on marketing directly to shippers remains one of its most prominent points of 'corporate' identity. The function of the marketing department has undergone some change over the years, but essential elements have persisted from the formation of the MPA to this day. The most obvious of these is the extensive network of Trade Development Offices that the MPA established, first within North America, and later across the world. The aim of this network is to get cargo routed through the port, by maintaining close contact with shippers, forwarders and receivers, as well as maintaining

[4] According to one port manager the reason why southern public ports are more likely to be port operators was because these Authorities were often created to reconstruct facilities damaged during the Civil War.

links with shipping lines. Table 6.1 below traces the opening and closing of MPA Trade Offices. The international sales force was rationalized and partially privatized sometime just before 1995. Since 1996, the MPA has sub-contracted overseas marketing activities to agents in Hong Kong, Tokyo, Haifa, London and Taipei. However the domestic trade development offices have remained fully within the organization.

Table 6.1 Port of Baltimore: Trade Development / International Sales Offices

City	Year opened	Notes
Baltimore	1956	
New York	1956	
Chicago	1956	
Pittsburgh	1956	
Brussels	1958	In 1986 became joint sales and promotion office with Maryland Dept of Economic and Community Development. Brussels office now closed.
London	1961	Birmingham branch opened 1973 and subsequently closed.
Tokyo	1968	
Hong Kong	1973	Expanded coverage 1990
Latin America	1986	Based in Baltimore
Cincinnati	1990	
Haifa	1995 approx.	
Taipei	1995 approx.	
Detroit	1999	

Source: Metro News (1975) and POB (various dates).

Many other US public port authorities have representatives in other cities. However, the MPA's marketing model differs from that of many other US ports, reflecting the shipper focus. About half of all trade offices are within the US, staffed by employees of the MPA and tasked with liasing between the shippers and carriers. Other port authorities have generally not opened offices within the US, and contract with agents in major overseas port cities. These agents act more as representatives to carriers than as marketers to shippers. For example, the Port of Long Beach has representatives in ten Pacific-Rim cities, of which only Beijing is not a major port city.

The recent opening of a trade office in Detroit illustrates the rationale guiding MPA promotional activities (POB June 1999). That the Detroit office was opened in 1999 was no accident. Following the break-up of Conrail in the same year, the CSX and Norfolk Southern railroads commenced full-scale intermodal operations in Baltimore at this time. The new office in Detroit was justified by Tom Howe, manager of the Detroit office, as follows: “this whole expansion in the Midwest is based on the fact that we’re getting new and improved service from there to the Port of Baltimore” (POB June 1999). Unlike its competitor ports, MPA officials would not leave it to the railroad firms or carriers to undertake the marketing directly.

This approach contradicts much of the conventional wisdom on port marketing. The deregulation in the shipping industry that allowed carriers to quote through rates shifted the locus of decision-making about port usage for many cargoes from shippers to carriers (see Shashikumar and Schatz 2000). Officials in the MPA have been grappling with these trends since the early 1980s; nevertheless the marketing thrust towards shippers as opposed to carriers has remained remarkably persistent. Certainly direct contact with shippers has proved important for commodities such as automobiles where some manufacturers (ie shippers) are more directly involved in ocean carriage, processing and landside distribution (see Chapter 4).

When asked why the approach to marketing had not changed substantially, a senior port marketing manager described the hesitant evolution of the marketing department thus:

> “We used to send people out to meet with big shippers, asking them to use the Port of Baltimore. But the shippers would tell us that they didn’t choose which

> port to use: 'I just make a deal with the steamship line for a year or two at a time and its up to them to choose which port they use'. So even though we were calling on the right people from a commodity standpoint, the answers weren't what we wanted to hear – they told us to go see the steamship lines. So we realized we had to use those people differently …. We gave them some meat to work with. We let the customers know what the port can do for them, we act as a liaison between the shippers and the different firms that operate in the port. We know what is on offer in the port."

The meat that this respondent described here was, in part, the focus on specific commodities, following the 1996 Strategic Plan. Following this plan, the MPA formally implemented what might be described as a "line of business approach". This entails dedicating staff to deal with specific cargoes. However the formalization of this approach to marketing reflects what was already by then accepted informal practice in the automobile 'division' within the MPA.

Another way of grasping (or measuring) how much importance the MPA places on shippers is a content analysis of the MPA's own publicity materials. One regular feature of the MPA's Port of Baltimore Bulletin that has been published monthly since 1956, is particularly striking. In addition to the regular features on the local coast guard, tugs, pilots, chandlers, surveyors, forwarders, and steamship lines, that can be found in the promotional magazines of just about any public port authority, the Bulletin includes various "company profiles". Although these shipper profiles certainly do mention the reasons why the shipper has chosen the Port of Baltimore, they go well beyond this. They generally entail at least a full page narrative with pictures, profiling the firm and its key local representatives. Over the years, the automobile industry has been particularly prominent; automobile manufacturers Toyota, Chrysler, Jaguar and Datsun / Nissan, parts suppliers Goodyear, Firestone, and AMES, agricultural equipment suppliers John Deere and New, Holland Thomas Built Buses, and the military vehicle manufacturer Napco Industries, have all been the subject of this feature.

Yet another indication of the MPAs orientation towards shippers is the Annual Trade Reception in New York. While these receptions were oriented towards attracting steamship lines to Baltimore, the events have always included shippers. The receptions were most actively reported upon in the Port of Baltimore Bulletin in the late 1980s and early 1990s when Governor Schaeffer attended the reception each year. This points us towards the second important feature of the MPA: its orientation more towards the State of Maryland than to the City of Baltimore.

Various aspects of the MPA organizational culture have been strongly oriented towards shippers, as opposed to shipping lines and other transportation providers. It would be wrong to suggest that this orientation is determinative of all actions by the authority, since the MPA continues to act on behalf of the various transportation firms carrying goods through the port. However, this orientation towards shippers is part of what makes the Port of Baltimore so attractive to automobile manufacturers.

The State's Port

With the formation of the Maryland Port Authority in 1956, the Port of Baltimore ceased to be a 'city port'. Prior to this the port had been administered by the Bureau of Harbors of the City of Baltimore, while a short-lived Port of Baltimore Commission was responsible for development (Fair 1954).[5] Apparently the backers of the new authority were concerned about being dominated by 'city' interests as much as by the railways. So, from 1956 until 1970, the port was governed by an appointed 5-member commission representing (1) the City and (2) County of Baltimore, (3) Anne Arundal County, and the (4) Western and (5) Eastern shores of the State of Maryland.

The arms-length relationship between the port and City Hall was quickly given physical expression in the MPA's first significant development action. At formation, waterfront properties owned by the city and some private terminals were transferred to the MPA (Rukert 1982). However, these inner harbor properties did not represent the future of the working port. Rather, it was the 1959 purchase of the municipal airport, Harbor Field, to the east of the city that signaled both the start of serious terminal development by the MPA and cemented its physical separation from the city. Harbor Field is now known as the Dundalk Marine Terminal. Further developments have continued this trend – especially in the case of the Fairfield Automobile Terminal and the Seagirt Container Terminal, both of which lie outside the Harbor Tunnel (ie well outside the Inner Harbor area; see Figure 6.2).

---

[5] The only reference to the Port of Baltimore Commission I have found is in Fair (1954). He mentions that the Commission was formed in the summer of 1951, and functioned "largely as a development agency" alongside the City Bureau of Harbors (p64). Representation on the Port of Baltimore Commission was on a constituency basis, unlike the 1956 Maryland Port Authority with its geographic basis of representation. The Baltimore Port Commission consisted of seven members, appointed by the mayor from one nomination each from labor, the motor trade industry, the Baltimore Association of Commerce, the Steamship Trade Association of Baltimore, the railroads, and the Governor of the State of Maryland. The seventh ex officio member was the Director of Public Works for the City of Baltimore. Fair is critical of this constituency-

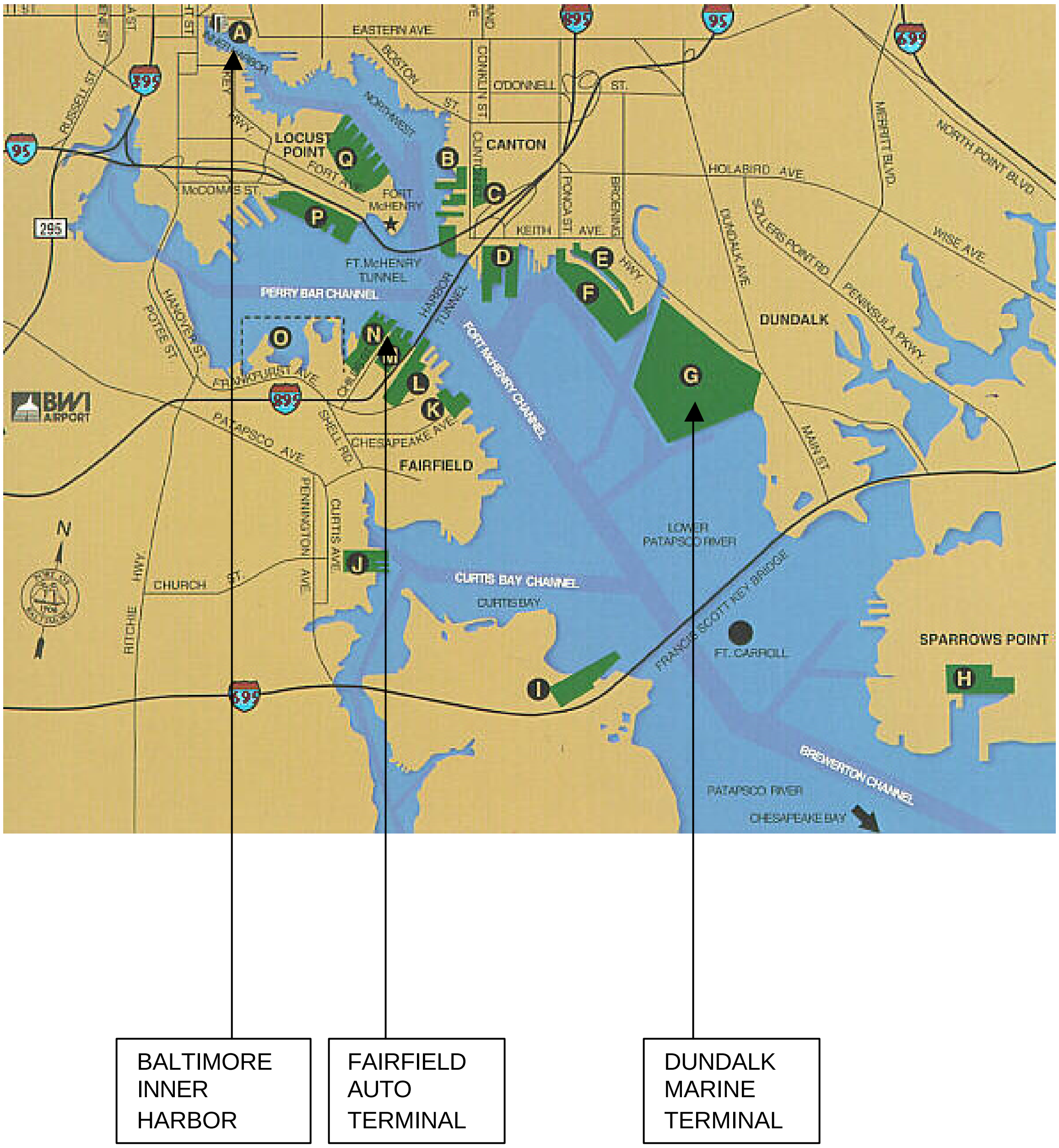
Successive institutional reforms - generally revolving around the question of financial autonomy – have not brought the port closer to the city in any organizational sense. This is not to say that the relationship between the city and the port is necessarily full of conflict. The point is that the MPA looks to the towards the state legislature for political leadership and legitimacy, since at the end of the day, this is the body that holds the purse-strings.

The first major institutional reform was the 1970 incorporation of the MPA('authority') into the new intermodal state Department of Transportation (Maryland, 1970). The new MPA('administration') had no Commission, and the chief executive reported directly to the Maryland Secretary of Transportation. The new intermodal authority had five line departments - motor vehicles, highways, mass transit, aviation and ports. The move also created a single transportation fund for the state, providing greater bonding capacity based on the statewide gas taxes, tolls and other transportation-based revenue sources. It also created the possibility for redistribution across modes. The port's chief executive at the time, Joseph L Stanton, had his title changed from Port Authority Executive Director to Maryland Port Administrator.

---

based Commission. Given the lack of reporting elsewhere on the Port of Baltimore Commission, it seems reasonable to assume that it was not an influential body.

Figure 6.2: Terminals of the Port of Baltimore



Source: Maryland Port Administration.

While the eventual nature of the formal institutional change was primarily the result of a state-wide reorganization of the transportation administration, controversy about the autonomous nature of the Authority preceded the re-organization. Following reports of financial mismanagement, the state Legislative Council in 1969 authorized an investigation of the authority. Said one state senator of the MPA:

> "This agency is so autonomous that it is almost incredible. They don't even have to include their budget in the budget book. And they've been doing that the last few years out of the kindness of their heart … even their fiscal year is different than the state's" (Sen. Harry Hughes, reported in *Baltimore Sun* July 17, 1969).

In later hearings, the Port's administrator, Joe Stanton, argued against the proposal using the language of progressivism: "If you want to take away our limited fiscal independence, you don't want a semi-autonomous authority, free of politics and run like a business. What you want is a typical state agency" (*Baltimore Sun* Aug 20 1969). Fiery stuff, but in the end the legislators got their way. A later change to the legislation governing the port – the formation of an advisory Port Commission in 1988 – did address some of the concerns raised by port administrator in 1970. However since 1970 the port authority has remained firmly within the state realm.

The effect of this formal institutional orientation is that the MPA turns to the Secretary of Transportation and the Legislature of the State of Maryland for overall approval of its annual budget and primary political support for large capital expenditures. Notwithstanding the tensions over the formation of the Port Administration in 1970, in the 1980s and 1990s, the MPA was able to rely on considerable political and financial support from the legislature. This support is often directly associated with the governorship of William Schaeffer, the former mayor of Baltimore. Elected in 1986, Governor Schaeffer found he could add the state's resources to the redevelopment project he had begun as mayor (see Levine 1987), as well as his time. In January 1988, the Port Bulletin headlined one story thus: "Fulfilling a campaign pledge, Governor William Donald Schaefer became actively involved in marketing the Port of Baltimore in 1987, meeting with key customers in the United States and overseas" (POB January 1988).

Another illustration of this point is the relative success that the MPA has had with its legislative agenda. For example, the 1999 session included no significant failures and the following successes for the MPA:

- House Bill 468 created 'shuttle permits' to make it easier to shuttle automobiles to off-terminal processors;
- House Bill 82 extended job tax credits to developments within the Port Land Use Development Zone;
- Senate Bill 42 raised the Commercial Vehicle Containerized Cargo Weight limit lifted from 40 to 44 thousand pounds;
- House Bill 1191 created the Maersk-Sealand Procurement Exception aimed at reducing the time to solicit design and construction bids from 52 to 17 weeks. The House and Senate also passed resolutions supporting the MPA's bid to Maersk-Sealand.
- 10 bills that would have restricted dredging disposal were defeated.

While this was an unusually active and successful legislative season for the MPA, the relationship between the port and the legislature has been very supportive. At the current time, MPA officials do not feel particularly hamstrung by regulations imposed by the state.

Discussions in a meeting of the QChat (discussed more fully below) afforded some insights into this issue. One of the stevedores reported that vans shuttling longshoremen around Dundalk Marine Terminal were being stopped by the police for not being registered. Efficient shuttling of workers between the vessel and first point of rest is particularly important in automobile discharges. The possibility of changing the state traffic code to allow unregistered vehicles on the terminal was raised without any fanfare, and apparently is being addressed by the MPA legal department. The point is that employees of the MPA and members of the port community have some confidence in their ability to pursue their legislative agenda in both small and large matters.

Furthermore, the Legislature appears to have acted with considerable restraint when exercising control over the activities of the MPA. Certainly in the mid-1980s there were various committee reports enquiring into the activities of the port, but these had more of a tone of concern than of critique. For example, a report critiquing the port's unsuccessful drayage subsidy scheme was nevertheless supportive of other efforts by the MPA to attract containerized cargo (State of Maryland 1987b). Similarly, the 1988 legislation that created the advisory Port Commission enjoyed almost unanimous support.

While informal mechanisms of control and influence are harder to discern, one indication of the legislature attempting to control port activities are the conditions that it attaches to the annual appropriations of the MPA. An examination of the annual appropriations of the MPA for the period 1984 to 2000, reveals the low level of oversight by the Legislature (see Table 6.2).

Table 6.2 Maryland Port Administration: Annual Appropriations

Year Ending June 30	Operating	Capital	Other [1]	Conditions imposed by Legislature
1984	33,172,853	81,570,000	1,246,800	Expenditure limits (drayage subsidy) [2]
1985	30,809,137	33,661,000	1,200,000	Expenditure limits (drayage subsidy) [3]
1986	26,339,672	17,765,000	1,499,075	
1987	24,760,934	20,042,000	1,632,488	
1988	32,859,242	48,872,000	1,820,692	Expenditure limits ($2m capital spending) [4]
1989	33,541,342	39,140,224	(HM) 2,095,671 (CF) 500,000	
1990	35,322,953	20,445,330	500,000	Performance bonuses (2% cargo growth)
1991	47,757,955	7,406,029	470,450	Public-private partnerships (all capital spending) [5]
1992	44,932,304	19,157,933	100,000	Public-private partnerships (all capital spending) [5]
1993	45,706,643	31,198,918	100,000	
1994	47,196,294	23,201,232	50,000	
1995	49,710,790	56,239,177	50,000	Performance bonuses (1% increase in N Atlantic share) Public-private partnerships (Cruise Terminal)
1996	50,324,279	77,338,182	50,000	Performance bonuses (subject to review) Environmental (dredging plan) Public-private partnerships (warehouse)
1997	46,954,341	50,048,585		Performance bonuses (subject to review) Public-private partnerships (refrigerated warehouse)
1998	63,136,215	62,031,680		Public-private partnerships (Masonville) [5]
1999	74,292,048	73,621,682		
2000	76,119,719	95,126,777		Public-private partnerships (refrigerated warehouse) Environmental (dredging)

SOURCE: Laws of Maryland 1984-2000.

Notes:

1. From 1984 to 1989, HM funds were set aside for dredging operations (the Hart-Miller Operations Special Fund Appropriation). From 1989 to 1994, CF funds were set aside for use at the discretion of the Commission (Contingency Fund Special Appropriation).
2. Drayage subsidy scheme must show 5% increase in import/export containers moved by rail market share relative to Ports of Virginia.
3. Drayage subsidy scheme subject to approval after analysis by Maryland Legislature Fiscal Services.
4. $2m of capital budget tied to 4% cargo tonnage growth at Dundalk Marine Terminal.
5. No rehabilitation, renovation, upgrading or expansion unless these are to attain or retain commitments from shippers, maintenance and repair excepted.
6. Capital expenditure on Masonville Automobile Facility contingent upon securing a commitment from a private automobile processing firm.

In the 1980s, expenditure limits were used on only three occasions. In 1984 and 1985, these conditions tied expenditure on the $1.5m drayage subsidy scheme to a favorable review of that program. In 1988, a small portion ($2m) of the capital expenditure budget was tied to an increase in cargo throughput. These conditions were imposed in the context of extreme uncertainty about what measures might most effectively reverse the decline of the port. They were also extremely modest, since at the time the MPA was busy constructing the Seagirt Container Terminal and in 1986 began dredging the main approach channel to 50 feet. Given the uncertainties at the time and the range of options under experimentation, such limited review by the legislature seems entirely reasonable.

A similar type of condition – performance bonuses for MPA employees linked to handling targets – was used in the 1990s. This was linked to the formation of the Port Commission and the introduction of 'incentives' in management rewards. However, these conditions specified results, rather than trying to dictate a particular approach to the management and operation of the authority.

During the recession of early 1990s, the legislature did for the first time attach conditions aimed at directly influencing the activities of the authority. The capital expenditure budget was drastically reduced in 1991 and 1992, and was only to be spent on rehabilitation, renovation, upgrading or expansion if the investment was supported by utilization guarantees from shippers. We can regard this type of condition as a form of public-private partnership (PPP) because it requires risk-sharing between the public and private sectors. Such arrangements have become widespread throughout the US port industry (see Hershman and Kory 1988). In Baltimore, public-private partnerships have been used, without legislative decree, to develop the Fairfield Auto Terminal in Baltimore, and were implicit in the MPA's Maersk bid proposal.

However, the Legislature has only actively stopped the MPA from implementing projects by attaching a PPP condition to the appropriation on two occasions. These are a refrigerated warehouse that has been on the drawing boards since the mid-1990s, and a proposed cruise terminal in the Baltimore Inner Harbor. A similar condition was attached to the appropriation for the Masonville Automobile Facility, and this was opened in 1999 under a long-term contract with ATC Logistics of Maryland (Watson 1998). Lastly, environmental conditions have been imposed by the legislature on the MPA appropriation in the late 1990s. These have generally been tied to the controversy over the disposal of maintenance dredging material in Chesapeake Bay.

Thus, the most important point to emphasize about the MPA's connections to the state legislature is that relatively few constraints are placed on the authority through this relationship, while the budgetary benefits have been considerable. By virtue of its status as an modal authority of the state's Department of Transportation (MDOT), the MPA has enjoyed access to capital that it probably would not be able to raise itself.

Today the Maryland Department of Transportation (MDOT) consists of six modal agencies, namely the Motor Vehicle Administration, Maryland Aviation Administration, Mass Transit Agency, Washington Area Metropolitan Transit, the State Highway Administration and MPA. The MDOT agencies are all funded out of a common Transportation Trust Fund that combines the state gas tax, some corporate tax, tolls and transportation-related user fees. Agencies participate in a budgeting cycle that takes up to

18 months from when agencies submit draft budgets, to when the relevant fiscal year begins. Allocations are guided by a six-year budget program that is updated annually. Agencies compete for capital expenditure allocations from the Trust Fund[6].

All revenues of the MPA are transferred to the Trust Fund on an annual basis, and there is no direct relationship between operating profit and revenue, or for that matter, the return on capital expenditure. In the mid-1980s, and again since the end of the recession in the early 1990s, the MPA has thus enjoyed access to a very soft financing source. With a stable and guaranteed funding source (i.e. the gas tax), the Trust Fund enjoys a very favorable revenue bond rating, certainly better than what the MPA would be able to secure alone[7].

Effectively thus, the budgetary constraints on the MPA have been political. Except during the recession of 1990-91, the Legislature has been rather unwilling to curtail capital spending by the authority. However, from 1989 to 1992 the MPA did make an operating loss (see Table 6.3), and apparently came under some pressure to reduce operating expenses. This included a hiring freeze under the Governor's Cost Containment Program (MPC 1992) and a 15% reduction in the MPA staff in 1991 (POB October, 1991).

---

[6] Federal highways, transit and aviation funds are reported in the budget program, but are handled separately from the Trust (MDOT 2001).

[7] The MPA has never actually sought a rating since it does not have bond-issuing authority (Code of Maryland, Section 6-409 (b), 2000).

Table 6.3 MPA Operating Finances ($millions, nominal)

Year ending June 30th	Operating Revenue	Operating Expenses	Profit (Loss)
1988	35.7	35.5	0.2
1989	31.5	35.5	(3.9)
1990	35.0	36.5	(1.4)
1991	36.8	39.6	(2.8)
1992	39.2	37.8	1.4
1993	39.3	36.9	2.4
1994	41.9	38.5	3.3
1995	45.3	41.8	3.5
1996	44.6	42.3	2.3
1997	46.0	45.4	0.6
1998	63.4	62.5	0.9
1999	67.4	63.5	3.9

Source: MPC (various dates) and Maryland (various dates). From 1995 Operating Expenses are estimated by subtracting the profit reported by MPC (1996-2000) from the Operating Revenues reported by Maryland (1996-2000).

In its 1996 Strategic Plan, the MPA (1996) committed itself to a $1m annual operating profit. The selection of this target is revealing, reflecting a compromise between showing some sort of return on capital invested through the Trust Fund, and not sending a message to the private sector operators in the port that they are being 'taxed' in some way. In the words of a twenty-year veteran of the MPA, this is "enough not to get into trouble with the Legislature, but not enough to concern the industry". The $1m target is of course entirely arbitrary, since it bears no relation to the level of capital invested in port facilities.

MPA officials have thus had very little to complain about in terms of their fiduciary relationship with the state. However, the length of the budget cycle has been a perennial concern of the MPA, and the authority has attempted, without success, to shorten the cycle. However, the MPA has been able to secure procurement exemptions and in the early 1990s did establish a contingency fund to allow it to respond more rapidly to requests for proposals.

The MPA's connections to the other modal agencies through MDOT raises the possibility of improved co-ordination in infrastructure planning and investment. There is only one example of extraordinarily proactive co-ordination – the usage of dredging materials from the Harbor Tunnel to provide the landfill for the Seagirt terminal. However, the counter-factual evidence of co-operative planning is fairly convincing. The only major surface transportation bottlenecks facing the Port of Baltimore have been limited to rail. Since these are beyond the scope of the MDOT agencies, this suggests that the MPA's state connections have indeed allowed it to avoid various intermodal transportation problems. There is circulation of staff between the modal agencies, and modal partner planners within MDOT do provide a mechanism for sharing ideas and improving co-ordination.

Similarly, the MPA's status as a state authority has probably also supported its connections to the state's economic development authority. The Maryland Department of Business and Economic Development oversees a variety of financial incentives design to attract and retain business in the state. In 1986, the MPA made its Brussels office available to this authority for its European business promotion activities. The Department maintains a Manufacturing, Transportation and Distribution Division, staffed in its Baltimore office by the wife of a Port Commissioner (POB, September 2000). Most port-related businesses qualify for assistance on the grounds that the port falls entirely within the 'distressed' County of Baltimore, and because warehousing is a targeted sector. One such beneficiary was the automobile processing firm, Amports. In response to job creation guarantees, Amports received a $400,000 incentive package for its 1998 expansions at its Atlantic Terminal (pers comm, Frances Reaves). In summary then, the MPA's status as the state's port appears to have provided it with a range of resources, contacts and opportunities that might otherwise not have presented themselves.

What about the ports relationship with the City of Baltimore? Perhaps the most important reflection and result of the institutional separation of the port from the city has been the tendency for MPA officials to avoid involvement in non-cargo related activities. The only exceptions to this principle were the construction of the World Trade Center, and a proposal in the late 1980s to build a cruise terminal. The World Trade Center is an important piece of the much-touted inner harbor development, and houses the headquarters of the MPA. Despite some growth in the cruise liner business in the early 1990s (POB March 1992), the proposal to build a cruise terminal has never been implemented. Thus the MPA's focus on maritime commerce has not been diluted by the real estate and airport development concerns that now dominate port authorities such as Boston, San Francisco, and San Diego.

In various interviews port officials stated that the deciding factor in any port land use decision was whether there was a *prior or subsequent waterborne usage*. This norm has gained institutional status in the sense that most MPA officials take it for granted when making decisions. Two stories illustrate the point. The first concerns the case of a boat named *The Sanctuary*. In 2000, the MPA lost its suit to have the boat removed from its mooring at the North Locust Point terminal (Shatzkin 2000). The former naval vessel, no longer sea-worthy, is used to house women recovering from drug addictions. In somewhat colorful language, several respondents argued that this kind of activity had no place in a working port.

The second illustration concerns land use planning along Baltimore's waterfront. In response to Governor Schaeffer's concerns about unused waterfront land, a Port Land Use Task Force was established and in 1996 prepared an inventory of vacant and under-utilized land. Following this, in 1998, a Port Land Use Advisory Committee (PLUAC) was established in terms of the legislation governing the MPA. The PLUAC was tasked with developing a plan for these sites (see LDR International 2000) and identifying developers to implement these plans (see State of Maryland Code, Section 5). However, the PLUAC is staffed by a Port Land Use Development Office that is housed within MDOT. An MPA official does attend the committee meetings, but it was clear that MPA involvement in the PLUAC is limited to ensuring that long-term terminal development plans are not disrupted.

In other words, MPA officials have acted consciously to maintain a separation between themselves and the city, and apparently this separation is recognized and implicitly endorsed within MDOT. This is not to suggest that the relationship between City and Port officials necessarily entails conflict. The point of relating these stories is to argue that MPA officials do not see themselves as working for the City of Baltimore. It could hardly be so; the MPA is the state authority responsible for the state's port.

The common user port

The third institutional legacy of the Port of Baltimore is not inscribed in formal organizational structure in the same way as the MPA's connections with shippers and the State are, and yet it is no less important or influential. In part this is because as a principle of port operation, the notion of 'common use' is not a fixed or written rule. In almost every port, there are some facilities that are in common use, dredged approach channels being the most obvious example. In its most narrow meaning, the term 'common use' is only applied to a terminal or a shared wharf facility with no priority rights of use. Usage of the facility is thus allocated on a first come, first served basis. The Port of Baltimore contains both common and exclusive use terminals.

The MPA is a common user port in the sense that a wider set of norms and practices influence the decisions and actions of the port authority officials both with respect to the operation of its marine terminals and in other aspects of port management. At key moments, for example when considering leasing and pricing policies in the mid 1980s, officials in the authority re-enacted the institution of common use by using it to defend management decisions.

The conceptual confusion is in no small part due to artificially rigid distinctions drawn between public and private goods, and between the public and private sectors. In the port industry, a distinction is typically drawn between landlord ports – those that develop and lease terminal facilities to private operators, and operating ports – those in which the public port authority is both the developer and manager of terminal facilities. In general, landlord ports are more likely to contain exclusive use terminals, while operating ports are more likely to contain common use facilities, but this need not be so. While in strict terms the MPA is a landlord port authority, in reality it combines elements of both landlord and operator. Indeed, the landlord-operator dichotomy diverts attention from the actual practices of facility operation, which range along a continuum from exclusive to common use.[8]

Exclusive use port facilities are commonly associated with the handling of bulk goods in vertically integrated production processes (Sommer 1999). In these cases, exclusive use may be enforced by private ownership of the whole facility, or by the presence of specialized equipment (e.g. a coal loader) that precludes use of the wharf for other purposes. Increasingly, container terminals are exclusive use facilities operated by, or on behalf of, individual steamship lines or carrier alliances (Slack et al 2002). Here exclusive use is enforced through private ownership of the facility, or if it is leased, through a preferential use agreement. However, some lease-holding terminal operators, typically stevedoring firms, provide common use facilities.

The point is that there is a continuum from accepting all comers to accepting only certain users at a given port facility. The consequences are not trivial. There is some evidence

[8] Baird (1997) (cited in Cullinane, Song and Gray 2001) presents a far richer classification of ports according to which of the functions of regulation, land ownership and operations are public responsibilities. In combination, this results in four types of port administration: (1) *PUBLIC* ports where the public sector is responsible for all functions – this is closest to the notion used here of an *operating port*; (2) *PUBLIC/private* ports in which only operations are controlled by the private sector – this is closest to the notion used here of a *landlord port*; (3) *PRIVATE/public* ports in which only regulation remains within the public sector; and (4) *PRIVATE* ports in which all functions are privately controlled.

that common-user seaports perform better than ports comprised only of dedicated or exclusive use terminals. In a simulation study using data for the Port of Seattle, Turner (2000) argued that common-user seaports, where all users have equal access to all terminals, could reduce total vessel time in port by 17.1% without reducing container throughput. This is because common user seaports pool demand for terminal space, hence increasing the productivity of high-capacity terminals and releasing low-capacity terminals for alternative uses. Of course, the potential benefits to the collective action solution need not be evenly distributed.[9] Thus, an individual user may, in principle at least, be better off with exclusive use of a dedicated terminal on which they can deploy firm-specific equipment and systems.

To understand why the MPA embodies a set of institutions at the common user end of the common-exclusive use continuum, we need understand the history of the particular mix of facilities that comprise the Port of Baltimore. While the MPA was initially established to develop and manage Baltimore's public port facilities, a mix of public and private terminals remains in the port to this day (see Table 2.7). For example, only two of five breakbulk terminals in the port are public facilities (North and South Locust Point), and the port community includes several private terminal operators and stevedoring firms. Unlike many of the public port authorities in the south, when the MPA was formed it did not take on the formal role of 'operating' port; that is, it did not attempt to offer stevedoring and terminal operations services directly to carriers and shippers.

[9] Cullinane, Song and Gray (2001) provide some support, but no definitive evidence, for the notion that privately operated terminals or deregulated ports may be more productively (but not necessarily allocatively) efficient than those that are publicly operated or regulated. However, they draw no distinction between ports and terminals in their analysis of 15 Asian container ports / terminals from 1989 to 1998, and

However, unlike landlord ports elsewhere, the MPA has remained actively involved in terminal operations. In part this is a result of the port's early experiences of containerization. The Port of Baltimore had not been at all slow to get into the container business. The first container ship to visit Baltimore, SeaLand's SS Mobile, arrived in Baltimore on April 9, 1963, and by 1965, SeaLand was constructing its own container terminal in collaboration with the Canton Company, a local private terminal operator (POB March 1973). In response, the MPA adjusted its development plans for the Dundalk Marine Terminal (acquired in 1959 from the City of Baltimore) and in 1967 opened its own public container terminal at Dundalk. Since then, the MPA has ensured that container facilities in the port are operated under a common use philosophy. Indeed, all the public container terminals of the MPA are common use facilities, even though some are leased in whole to terminal operating firms.

The operation of the MPA's largest terminal, the Dundalk Marine Terminal, illustrates the active involvement by officials in the Terminal Operations Department in the day-to-day re-enactment of common-use practices. The 170 acre facility has thirteen berths, and direct rail access. Container cranes on the terminal are owned and maintained by the MPA. Berthing is allocated on a first-come first-served basis with no steamship line enjoying preferential rights, although some ocean carriers are guaranteed a berth with a crane or some other specific equipment. There is little congestion at the terminal,

---

conclude that "the most persuasive inference to be drawn from the analysis is the consistency with which large throughput operations appear to outperform their smaller counterparts in terms of efficiency" (760).

although the MPA does facilitate meetings with steamship lines to find mutually acceptable solutions when there is berth congestion.

Carriers and/or stevedores using the terminal generally hold some sort of ground lease for a small portion of the terminal to provide the first point of rest, an on-site office, and secure storage for equipment. The ground lease may be as short as a month in duration, thus providing carriers with substantial flexibility in the use of the terminal. This is an especially important factor in automobile imports (for more on this point, see Chapter Four). However, in order to qualify for cargo guarantee incentives (see below), most carriers do lease a few acres for periods of up to 10 years.

The Terminal Operations Department of the MPA allocates space for ground leases, and is actively involved in ensuring free movement of goods around the terminal. The "eyes and ears" of the Terminal Operations Department are the "yard masters". These officials are in attendance at docking and sailing, recording information for billing, checking the wharf for debris and damage, and maintaining close contact with carriers, stevedores and other terminal users. Carriers and stevedores will often approach these officials first when they require additional storage space. The common use practices of the port thus place officials in direct and close contact with these port users on a daily basis over operational matters.

The close contact between the Terminal Operations Department and various port users, suggests that the access to the executive and other internal resources enjoyed by officials in this department may be an important factor influencing the ability of the MPA as a whole to collect the information required to meet the needs of port users. The Department benefited in two rounds of organizational restructuring in 1986 and 1995, and now occupies a bureaucratic location from which it can surely lobby for the continuation of common use practices in the port.

In 1986, an organizational restructuring in the lead-up to the formation of the Maryland Port Commission in 1988 resulted in the creation of four new Associate Port Administrator positions. These executive positions concerned the Operations, Development, Administration and Trade and Promotion divisions respectively (POB March 1986). In addition to Terminal Operations, the operations division included vessel operations, the MPA Police and the management of the World Trade Center.

The operations function was further strengthened when terminal and vessel operations were combined with tenant services in the same department in 1995 (POB December 1995). The department was placed in the same division as engineering, facility and equipment maintenance, properties and port police, under the responsibility of a Director: Operations. The then operations director, Jim White, was also appointed Deputy Executive Director, and went on to become Executive Director in 1999.

Lastly, it is worth repeating that the MPA has been drawn into labor relations issues, by virtue of its management of terminal operations, without being a direct employer of longshoremen. For example, in 1979 the MPA, in collaboration with the Baltimore

Steamship Trade Association (STA), launched a crane training program for International Longshoremen's Association (ILA) members (POB 1979). This was the first formal training for longshoremen in the port and certification in crane usage from MPA Safety Department signaled the application of contemporary handling technology on the docks (see Chapter Four for more).

The long involvement by MPA officials in terminal operations have established a set of common user norms and practices, as well as various constituencies both within and without the authority with interests in seeing them maintained. This common user principle has combined with an orientation towards shippers and the State of Maryland to create a distinctive institutional legacy. This institutional legacy influences decision-making because of the particular relationships and information sharing it privileges, and helps us understand the attempts by the authority to attract containers after 1984.

Containing failure

The pre-planned history of the authority responsible for the Port of Baltimore in the 1980s, the Maryland Port Administration, is one of failure. Since the mid-1960s, the MPA like many other ports worldwide, has tried to become a dominant hub in the container business, a trade that it was believed would necessarily concentrate in a few privileged places (Hayut 1981). Despite infrastructure spending, direct subsidies and more, Baltimore has not attracted large volumes of containers and has instead lagged behind other east coast ports.

The efforts by the MPA to succeed in containerization reveal an organization struggling to determine how transportation deregulation would influence it, and how to respond to this challenge. Notwithstanding the efforts of individual staff members to sustain the automobile business, formal recognition of the importance of non-containerized cargo was surprisingly mute until the late 1980s. As it turns out, this was not necessarily a problem. The unsuccessful formal planning and marketing efforts aimed at attracting containers left in place precisely the institutions that today allow the MPA to achieve compatibility with various automobile shippers.

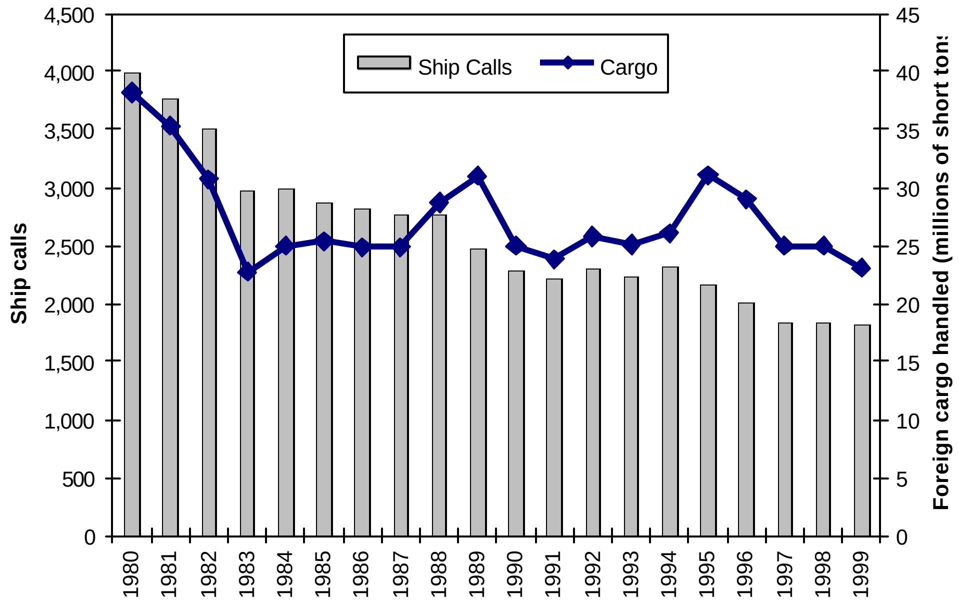
Up to 1980, officials in the MPA had relatively few reasons to be concerned about the future of the port as a container hub. Baltimore had been the second public port on the US East Coast to develop a container terminal, and Hayut (1981) suggests that by 1973, Baltimore – along with its neighbor and competitor, Hampton Roads - was one of only six US load center ports (a load center being defined by Hayut as a port handling more than more than 250,000 TEUs annually). The March 1980 Port Bulletin reports that 1979 was an "excellent year for the Port of Baltimore" (POB March 1980; 17). The port was the fastest growing in terms of tonnage handled on the US East Coast, out-performing Philadelphia, New York and Norfolk. And in January 1981, a relatively unknown Danish shipping line, Maersk, opened a 12-acre container terminal facility at Dundalk Marine Terminal.

MPA officials had apparently done enough to accommodate the physical growth. In 1973, Baltimore had 2nd highest container handling capacity of all US East Coast ports. By 1982, almost $150m (nominal prices) had been invested in the Dundalk Marine Terminal (MPA-TSC 1983). In May 1978, the MPA had acquired the Masonville site on the south side of the harbor with the intention of expanding the port of Baltimore's container facilities[10]. Although this was still considered a future container terminal site as recently as the mid-1980s, today it is only partially developed. It is now the site of the port's newest automobile terminal, and current environmental regulations and policies make it unlikely that further development will occur here.

If the future looked secure before 1980, this comfort was not to last long. After reaching a high of three-quarters of a million containers in 1984, the number of containers declined rapidly to about a half million by the late 1980s, a level it has not surpassed since then (see Figure 6.3). The timing of the turn in fortunes is important. In 1984 container throughput in the Port of Baltimore reached a peak, and despite moments of growth associated with the trade cycle, the overall trend since then has been downward. With declining container volumes, ship calls have also declined. To add insult to injury, ship calls were increasingly replaced by visiting barges that fed Baltimore with containers from its increasingly successful southern neighbor, the Virginia Ports of Hampton Roads-Norfolk-Newport News (Starr 1994). How are we to account for this dramatic decline? And more importantly, how did members of the port community account for the decline as it was happening?

[10] The 215-acre Masonville site was purchased for $6m. The site consists of 174 acres of dry land and 41 acres of wetland. It was bought it was to meet the projected container berthing needs of the year 1990.

Figure 6.3 Declining ship calls and foreign cargo at the Port of Baltimore



Source: Port of Baltimore, Baltimore Steamship Trade Association.

In his study of various West Coast ports during the early years of the container revolution, Boschken (1988) argues that successful container ports, amongst other things, engaged in strategic planning activities early in the container revolution. It is certainly possible to criticize the strategic planning record of the MPA during the early 1990s. During the period 1990-95, the annual 'strategic plan' of the MPA consisted of a summary and consolidation of the plans of individual departments within the organization (see Table 6.4 below). The two officials responsible for strategic planning during this period worked in the Executive Directors' (ie the Maryland Port Administrators') Office. In 1993/4 one of these officials conducted a survey of managers perceptions of the planning process, and found considerable uncertainty about the direction of the organization at that time[11]. However, this state of affairs existed long after the decline in the port's fortunes had already begun. Thus, if anything, it reflected rather than contributed to the decline.

Table 6.4 MPA Planning Documents and Approaches

Date	Document	Planning approach
1967-77	"Decade for Progress"	10-year vision with facilities plans
1985	"Master Plan to Legislature"	Strategic review and facilities plans
1987	"Strategic Plan"	Strategic goals with thematic strategies and action plans
1990-95		Composite Annual Plans
1996	"Strategic Plan"	Strategic goals with cargo targets
1998-2001		Facilities master plan

Source: MPA (1966, 1985, 1987, 1996).

Although a formal 'strategic planning' function was only created within the MPA in 1986, the MPA was not slow to discover planning. In 1966, the MPA had published a ten-year development plan for general cargo facilities (MPA 1966). This was the first time the MPA had examined its future development options in a systematic fashion. The plan was framed around the challenges of railroad mergers, containerization and inter-port competition. It contained ambitious proposals for terminal development at 11 sites, including all six of the terminals currently operated or leased by the MPA. Note however that the 1966 plan did not distinguish between containerized and non-containerized general cargoes. In other words, it does not designate particular terminals for containers or automobiles or steel or some other particular commodity. Thus, in 1966, MPA officials were not yet committed to the separation of uses that have become more common in the terminal development proposals of today. This reflects, in part, a commitment to the general user principle.

[11] The process of preparing the 1996 Strategic Plan did lay the basis for the current location of the MPAs

Progress on implementing the 1966 plan in the 1970s was perhaps slow, but by the turn of the decade developments at various existing terminals (ie Dundalk and the North and South Locust Point Terminals). Construction of the Seagirt dedicated container terminal was to begin in 1982.

The MPA's next major strategic planning effort occurred in the mid-1980s. Faced with questions in the legislature about its declining fortunes, the MPA prepared a Master Development Plan for General Cargo Terminals in 1985 (MPA 1985). This document restates and updates much of the physical development proposals spelt out in the 1966 plan. The key difference is that by 1985, the term 'general cargo' had come to imply containerized cargo only. The plan makes no reference to non-containerized cargos, except to note that alternative sites for automobiles would be sought.

Strategic planning received a considerable boost in 1986 with the formation of a Directorate of Planning and Research, created within the Development Department which at that time was also responsible for engineering and harbor development (JOC 1986; POB December 1986). The next plan of the MPA was however to have less of a physical development / facilities character. In 1987, the legislation governing the MPA was amended and an advisory port commission was (re)created. This move was associated with considerable rhetoric about inserting 'private sector principles' into the management of the MPA.

strategic planning function within the Planning and Business Development Department.

In content and tone, the 1987 Strategic Plan reflects this trend. For example, in a statement of the modus operandi of the MPA, we are told that the authority will ‘operate in an effective and businesslike manner” (MPA 1987: 14). Certainly, this was the most wide-ranging plan of the authority up to that date, looking well beyond the previous more narrow concern with facilities (ie terminal) development. The plan lists strategies and action plans for labor, marketing, administration, inland transportation, operations, facilities, information systems and finances. The plan does contain a commitment to attracting automobiles and to servicing the needs of shippers of specific non-containerized cargoes. This is hardly surprising since the MPA was constructing a dedicated terminal for Toyota at the same time.

However, in 1987 the MPA was still forcefully re-stating its desire to attract containerised cargo. And despite the recognition that non-containerized commodities were important, containers were the true heart’s desire. For example, four of seven key actions identified in the plan summary concerned containers exclusively, while only one had nothing to do with containers[12]. The point of this brief review is that we cannot blame the Port’s failure in containerisation on a lack of strategic planning.

A more compelling account of Baltimore’s decline after 1984 has gained wide acceptance amongst observers and members of the port community. Writing about the first decades of containerization, Hayut notes that the “Port of Baltimore, for example, enjoys a

[12] Key actions concerned exclusively with containers were development of an Intermodal Container Transfer Facility, establishment of a double-stacked rail link with the west coast, implementing a rail brokerage program to assist small shippers to obtain volume discounts and installing a new container crane on the Seagirt Terminal. The key action that nothing to do with containers was a proposed cruise terminal

location as a large North Atlantic port closest to the midwestern United States industrial complex" (Hayut 1981; 171). Within a couple of years, this geographic advantage came to be seen as one of the ports most important disadvantages.

The Port of Baltimore was particularly negatively impacted by deregulation in the road, rail and shipping industries in the early 1980s[13]. Deregulation in the road and rail transportation industries eliminated the inland location advantage of the port by removing the fixed transportation rates per mile (see Starr 1991 and 1994). Although the surface transportation providers were slow to make use of this opportunity, the ocean carriers were not. In particular, the Shipping Act of 1984 allowed carriers to file rates that included the inland leg of a door-to-door delivery service. Thus, the combination of these acts encouraged ocean carriers to select ports that reduced ocean shipping costs relative to surface transportation costs. For a port such as Baltimore, several hours sailing up the Chesapeake Bay, the regulatory change was deadly. The port was now increasingly likely to be by-passed in favor of Norfolk, precisely because of its favorable inland location.

The merits of this account, which certainly makes eminent sense, are however not central to this discussion. Rather, we are more concerned with the fact that this explanation is today used by almost all members of the port community to account for Baltimore's decline.[14] However, there is a paradox associated with this piece of hindsight. While this view may indirectly inform current policy choices, it does not dominate them. For

---

facility. Other key actions of relevance to all cargoes were re-organization of the Trade and Promotion Division and targeting cargo movements to augment ILA man-hours.

[13] The relevant legislation includes the 1980 Staggers Rail Act, the 1980 Motor Carriers Act and the 1984 Shipping Act. For more see Shashikumar and Schatz (2000).

example, when confronted with the opportunity to bid for the Maersk hub in 1998, Baltimore's port managers did not say "sorry we are a location unfavorable to container shipping" and decline to submit a bid. In other words, even though port managers, and the wider community to which they relate, have developed some common understanding of the limitations on container development, this common understanding does not necessarily limit imagining alternative possibilities.

If such optimism was possible after a decade and a half of hard knocks, what does this suggest about the period of most intense uncertainty in the early and mid-1980s when the impacts of regulatory change were still being revealed? In other words, if the actions of port managers today convey that they don't really believe that physical location is destiny, then surely they would have felt themselves even freer of such deterministic notions in the earlier period?

For this reason, while 'location' is surely one objective factor determining Baltimore's fortunes as a port, it cannot provide a sufficient account of development trajectory. This is not because the predictions based on this deregulation-location explanation might be wrong; in general they are correct. Rather, it is because the post hoc explanation does not help us understand how the changing regulatory context was revealed to the port mangers, why they tried the programs, plans and policies they did, and thus how they may have influenced the development trajectory of the port in intentional and unintentional ways. It is only once we understand these actions in context that we can

[14] "We are", I was repeatedly told during my fieldwork, "a location".

understand why the port developed in a way that remained highly compatible with automobile shipping.

Identifying the source of the problem

In order to understand the actions of port managers and others in the Baltimore port community, we have to understand how they experienced the decline of the 1980s as it was happening. To start, it is important to emphasize the uncertainty generated by the transportation deregulation of the early 1980s, and the considerable efforts by port managers to understand the emerging trends. It is not so much the case that it took port managers a long time to understand the source of the problem, but rather that it took several years of experimenting with responses to determine that the decline was more than a passing phase. The responses to the decline in container handling, and their implications for non-containerized cargos remain the central concern.

One of the first signs of concern within the MPA about the impact of deregulation can be found in a series of short articles entitled *Trade Topics* that appeared in the monthly Port Bulletin magazine from 1981. The mere existence of these commentaries reflects the considerable uncertainties facing the MPA in the early 1980s. The first *Trade Topics* opens as follows:

> "Beginning this month, the Maryland Port Administration Office of Tariffs and National Port Affairs will present in the Port of Baltimore magazine commentaries concerning transportation issues which affect the port of Baltimore. These articles, appearing regularly, will discuss a variety of issues, including federal or state legislation, regulatory activities of the Federal Maritime

> Commission or the Interstate Commerce Commission and the activities of individual carriers of rate bureaus” (POB May 1981: 21).

The first commentary reports that the MPA had filed papers with the ICC in response to the application by N&W and Southern Railway companies to merge under the 1980 Staggers Act. The MPA was requesting, through the rules of discovery, information with which they might evaluate the impact of the merger on the Port. This reflects an old concern among managers of the port of Baltimore that consolidated rail companies would by-pass the port.[15]

In subsequent *Trade Topics* we are provided more insights into the attempts by MPA officials to understand the implications of the changed regulatory environment. Subsequent commentaries dealt with rail charges (POB July 1981), differences between US and Canadian rates (POB October 1981), local cost recovery for dredging (POB January 1982), implications of surface transportation deregulation for shippers (POB April 1982), exemptions for boxcar freight (POB July 1982), and the likely impacts of the 1984 Shipping Act (POB July 1984).

The March 1983 *Trade Topics* is particularly interesting because it tackles the question of Baltimore’s inland location most directly. In a piece titled “Rail Equalization Exaggerated”, the MPAs Traffic Manager at the time argues that surface transport rates between the US Midwest and various north-east coast ports had not been equalized by the various transportation reforms. At the time of writing, this was a reasonable position –

remember that surface transport firms were slow to adopt intermodalism (Shashikumar and Schatz 2000), and that it was only following the 1984 Shipping Act that surface transportation rates were combined with ocean freight tariffs to provide single through rates. However, what is interesting about the piece is the way location is again used to justify the perspective:

> "Deregulation has brought many changes to the transportation industry and, certainly, more changes will come. But a basic characteristic of real estate is its fixity of location; it can't be moved. Baltimore's position as the port of the Midwest has not been artificially moved. And claims to the contrary are highly exaggerated" (POB March 1983: 26).

When it later became clear that deregulation would indeed have a profoundly negative impact on the port, it was perhaps not surprising that members of the port community would re-conceive of the ports greatest asset as its most damaging millstone!

Notwithstanding such pronouncements, what the *Trade Topics* show us is that the managers of the port continued to ask questions about the implications of the deregulation, and used this information to inform various experiments with policies, plans and investments aimed at reversing the decline. This review of the responses of the MPA to the decline in container business starts with a discussion of the ports tariff and leasing policies, before moving on to the subsidy, infrastructure and legislative responses to the decline.

---

[15] The 1966 ten-year development plan identifies rail consolidation as one of three challenges facing the port, and devotes considerably more attention to this issue that to the other 'development challenges', namely containerization and inter-port competition (MPA 1966).

Tariff and leasing policy

On a semi-annual basis, a committee of MPA officials would meet to advise the port on its tariff policies[16]. The Tariff Study Committee prepared a report which it submitted to the Executive. Based on this report, the MPA would publish a proposed tariff schedule for comments by shippers, carriers and other members of the port community. The end product of these deliberations are changes in the port pricing schedule (Table 6.6 summarizes the Port's tariff history). The committee reports contain valuable insights into the strategic deliberations of senior port officials. In other words, the purview of these committees is broad enough to afford us an understanding of more than simply the published tariff:

> "The MPA Tariff Study Committee had the 'main problem' of port tariffs before it every session the Committee held – i.e., determining the proper 'relation' between our tariff and customers' rates. This relationship of port tariff and port customers takes many forms – tariff adjustment procedures, lease length and acreage cost, tariff charges for the account of the vessel, tariff billing procedures, the role of port agents and *other facets of our role as a governmental port body charged with the promotion and protection of our State's most important economic asset*" (MPA-TSC 1983; emphasis added).

For this reason, reviewing the Tariff Study Committee reports in the 1980s and 1990s also helps us understand the changing concerns of MPA officials. The intention here is to understand how port managers thought about the problems facing the port, and how this translated into changing tariff and leasing policy.

---

[16] Port tariffs are essentially price lists that encompass all the services and facilities provided by a port. Depending on the scope of port activities, they typically consist of charges for wharfage (the cost of moving cargo across the wharf), dockage (the cost of occupying berthing space), charges for terminal leases, various fees for cargo handling (drayage, stacking etc), equipment leasing (eg crane fees) and services for ships (tugs, fresh water, bunkers, etc). With the advent of containerisation and terminal leasing, published port tariffs have been drastically simplified, and actual charges are more likely to be the subject of negotiation. For more, see Dowd (1988).

The 1983 Tariff Study Report is framed by the same concerns being voiced through the *Trade Topics* articles. For the first time in port history, the committee considered the pricing policies of ports on the US West Coast, recognizing that land-bridging activities had brought these ports into competition with ports on the east coast. In particular, the committee paid considerable attention to policy innovations at the Port of Oakland, policies that have today been adopted in several US West Coast ports, and some East Coast ports. In 1983, the MPA implemented some aspects of these policies, and rejected others.

Concerned that shipping lines would stop calling, in 1982 the Port of Oakland offered terminal leases to stevedoring firms, and volume discounts for carriers in exchange for guaranteeing that they would continue to visit the port for 5 years. While recognizing the need to experiment with some of the ideas contained in the Oakland policy (eg the crane leasing arrangements), the MPA tariff committee report details several arguments why the main features of the Oakland policy were inappropriate for Baltimore. The tariff committee initially recommended rejecting both volume discounts and terminal leases, but volume discounts were included in the draft tariff published for comment later in the year.

The committee felt, and apparently was supported by the executive, that dedicated terminal leases would violate the MPAs commitment to maintain its terminals as common user facilities. These arguments relate directly to the institutional legacies discussed above (especially the common user principle). Faith in location also featured explicitly in the argument:

> "There is no need for discount leases at the Port of Baltimore since the presence of cargo in Baltimore, due to our midwest proximity, ameliorates one of the major Oakland considerations for introducing the new leases – i.e., the desire to receive a 'commitment' from various carriers" (MPA-TSC 1983, 29).

The 1983 Tariff Report also signals increasing awareness and concern within the MPA that the Virginia Ports Authority – the authority responsible for Baltimore's southern arch-rival – might have an operating model more appropriate to the container age. Later, these concerns were to inform the formation of Maryland International Terminals (MIT) in 1990. In any event in 1983, the Committee recommended against a per box tariff[17], something that had been implemented in Virginia at the time. The reason given for not implementing a box tariff is revealing.

Because the Maryland Port Administration was not a port operator at that time, it did not have a pricing schedule for drayage, grounding, stacking and other services provided by private stevedoring firms. These services were, and still are, priced in the Baltimore Marine Terminal Association (BMTA) tariff, while the MPA tariff deals with terminal ground leases, wharfage and dockage. Adopting a per box tariff would have necessitated a re-organization of this division of work. The committee balked at this prospect: "such a single charge approach could cause repercussions in the area of ocean carrier-stevedore contracts and upset the tariff payment process" (MPA-TSC 1983; 18). An even more extensive review by the 1985/6 Tariff Study Committee again recommended against implementing a box tariff (MPA-TSC 1985/6), and the matter has apparently not received serious attention since then.

It should also be noted that the 1983 tariff recommendations were the first to be distributed for public comment. One of the responses relates directly to automobile shipments. Wallenius Lines requested that the dockage tariff for car carriers be based on length rather than tonnage. Although the request was rejected, it does signal the increasing openness of the MPA to private sector input in decision-making.

It is impossible to say with certainty how subsequent events might have been different if the tariff committee had recommended differently in these two instances in 1983. Certainly terminal leases and box rates have become widely accepted in the industry, and by 1990 the MPA had implemented important aspects of both these policies. However, the deliberations of the tariff committee are of relevance to this discussion because of they tell us about the decision-making process within the MPA at the time. It is clear that the officials of the MPA did engage in a serious reflection on their operating environment and, in particular, the actions of their competitor ports. Based on these deliberations, they did implement some of the ideas being tried elsewhere. However, in those cases where the committee chose not to recommend changes, it fell back on existing common user operating practices and its commitment to shippers, in order to justify the no-change decision.

---

[17] The per box tariff attaches a single charge for all port handling fees, rather than charging separately for drayage, grounding, stacking, inspection and wharfage. This has become an increasingly popular form of

Despite the recommendation of the committee against volume discounts, the final 1983 Tariff did introduce Wharfage Volume Discounts – the more containers per vessel call, the greater the discount possible. In the 1984 round of tariff adjustments, this policy was reviewed and amended in a fashion that again reveals the MPAs commitment to a diversity of shippers, carriers and other port users. The volume discount was criticised for discriminating against small steamship companies, vessels carrying a mix of containerized and non-containerized cargoes (ie combo vessels), and lines not active in vessel sharing arrangements[18].

These arguments contributed to two changes in the 1984 Tariff. The first change was relatively simple; the volume discount was extended from containers to all other cargos. The second change was more complicated. In the space of a year, the committees'[19] view of the Oakland lease arrangements – or what were by now being called "California-type leases" (MPA-TSC 1984) – had changed. Although they were still unwilling to forgo the common user principle at the Dundalk Marine Terminal, the committee did recognize the value of leases as opposed to tariffs as providing a forum for deepening the relationship between the public authority and carriers:

> "In examining the broader question of the MPA tariff vs the lease, the Committee recognized that we are perhaps at the limit of the tariff's flexibility as far as new innovations or incorporation of 'specific incentive' features for special customers. In short, the tariff while being very flexible, can never replace direct MPA-party negotiations and contracts when specific demands are made" (MPA-TSC 1984: 10).

---

tariff since it eliminates administrative expenses.

[18] These arguments were detailed in an inter-office memorandum dated March 22, 1984, from Theodore Sanderson of Terminal Operations to Ronald Shock, the Director of Leasing and Insurance and Robert McLaughlin, Financial Analyst. The memorandum formed part of the Tariff Committee deliberations of that year, and contains the outline of a proposal that became the Acreage Utilization Incentive Program.

[19] The 1983 and 1984 tariff committees consisted of precisely the same members, except for one change, namely that the Deputy Director of Terminal Operations sat in place of the Director in 1983.

In other words, the committee was conceding that the direct relationships between port authorities and carriers and other port users afforded by such agreements, were more likely to provide opportunities for information sharing and responsiveness than the anonymous, one-size-fits-all tariff.

However, at the same time as recognizing the value of leases over tariffs in the continainerization era, the MPA was not about to abandon the common user principle completely nor make a change in favor of carriers over shippers. The compromise result was the Acreage Utilization Incentive Program (AUIP), implemented in the 1985 Tariff. The AUIP provided a variable discount of up to 12% on the terminal leases of shipping lines, according to the number of containers they moved per acre per time period. In this way, the MPA took a first hesitant step towards negotiated terminal leases, but did so in a way that avoided the wholesale ‘privatization’ of terminals.

In order to implement this program, the MPA began negotiating and signing long-term leases with shipping lines. Note however that in Baltimore, these long-term leases were generally renewable 3 year leases, certainly nothing like the 20 to 25 year leases that have been widely used on the US West Coast. The first to sign, in April 1986, was shipping line Maersk. Shortly thereafter, a deal was signed with a terminal operator, Maher Terminals, with the express intention of extending the benefits of the discounts to smaller carriers that did not want to lease terminal space directly. Most of these leases were for space at the common user Dundalk Marine Terminal. However, the policy was also used to provide incentives in the long-term single user leases to stevedore / terminal operators Ceres and ITO at the North and South Locust Point terminals (see Table 6.6).

Table 6.6 Leases signed under the Acreage Utilization Incentive Program, MPA

Line / Operator	Date	Details
Maersk Line	April 1986	22.6 acres, 100 vessel calls, 300,000 tons cargo for 3 years.
	March 1988	31.4 acres, 150 vessel calls, 500,000 tons per annum
Atlantic Container Line	May 1986	18.9 acres, 400,000 tons for 3 years
Polish Overseas Line	August 1986	150,000 tons
Hapag-Lloyd Line	August 1986	200,000 tons
Evergreen Line	April 1987	20.2 acres, 300,000 tons
Seapac (OOCL, K-Line and Neptune Orient)	September 1987	100 calls, 200,000 tons
Maher Terminals	Sept 1986	47 acres, 102 vessel calls, 365,000 tons for 3 years
Clark Maryland Terminals	March 1988	22 acres, 200 vessel calls, 350,000 tons for 3 years
Puerto Rico Maritime Shipping Authority	August 1988	52 vessel calls, 275,000 tons for 2 years
Ceres Terminals	October 1986	North Locust Point lease, 3-year
International Terminal Operators	July 1987	South Locust Point lease, 5-year

Source: POB (various dates).

As the problems of the MPA persisted into the late 1980s, the lease agreements became increasingly generous[20]. For example, in exchange for a 3-year lease of 4 acres plus a shed and exclusive use of 3 berths and option to use fourth when unoccupied at the North Locust Point terminal, the stevedoring firm, Ceres, guaranteed 300,000 tons per year for a 10% discount, and 400,000 for a 20% discount. This was hardly a strict threshold, since in the year before the deal was signed the terminal had handled 783,000 tons of cargo (POB October, 1986).

[20] In an act of particular desperation, from May to December 1990, the MPA actually offered discounts on the published tariff. The discounts, against wharfage charges, included a reduction of $3 per container and of $0.40 per ton for ro-ro cargo (POB May 1990). The discount was not applicable to cargo carried on barges, or in other words, transshipped from Norfolk.

The AUIP is no longer published in the official MPA tariff, but the policy instrument is still used in negotiations with steamship lines. For example, in 1991 and 1992, Universal Maritime (a close associate of Maersk Line) and Ceres, respectively signed long term deals to lease portions of the Dundalk Marine Terminal, again without compromising the common user aspects of these terminals.[21]

The AUIP mechanism was also used in a recent deal between the MPA and Wilhemlsen-Wallenius Lines (WWL), one of the world's largest automobile and ro-ro cargo carriers. In early 2001, in a much-heralded deal, WWL secured usage of a large portion of the Dundalk Marine Terminal in exchange for guarantees of 600,000 tons per year and 3,000 ship calls over the next 20 years. The deal can be extended to 35 years. Because of who is involved, the deal has the potential to fundamentally reshape the operational environment and the business practices of the port, and eventually its institutions. Having secured terminal space, WWL may choose to implement the business model it has been experimenting with at Brunswick, Georgia and Port Hueneme, California. In both these places, subsidiaries of WWL offer processing services, and apparently this shipping line is looking to offer an inclusive door-to-door (ie factory to dealer) service for automobile manufacturers. It is also clear that WWLs Baltimore lease is a small but definite experiment with a hub-and-spoke distribution system for automobile shipments (for more on WWL, see Chapter 4).

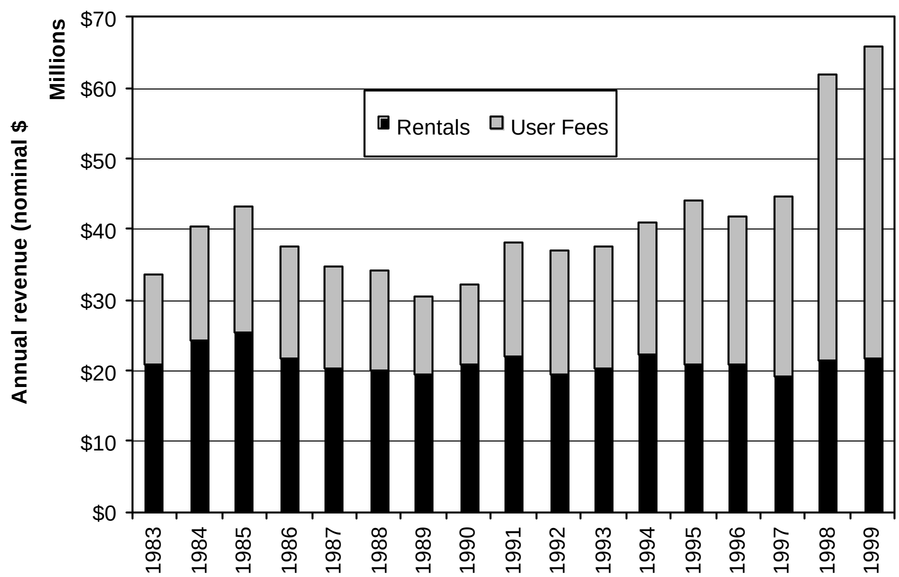
[21] This lease has been the subject of a protracted suit between the MPA and Ceres. The matter is still sub judice; see US (1998).

The tariff study reports in the late 1980s reflect the increasing financial problems within the MPA and pessimism about the possibilities for reversing the fortunes of the port by changing leasing and pricing policy. After the flurry of activity associated with the 1982-84 tariffs and changes to the leasing arrangements, very little has changed (see Table 6.5 at the end of the chapter). The last tariff change was in 1995; since then the MPA tariff has essentially ceased to be an active policy instrument of the authority.

The clearest result of the tariff policy development described here is that the MPA, unlike the truly landlord ports on the US West Coast, continues to rely on variable user fees rather than on fixed rental income (see Figure 6.4). In the period 1983 to 1999, there has been no growth in rental income (in nominal terms), while revenues from user fees have increased four-fold. Reliance on user fees, a potentially less stable source of revenue than lease revenue, may be regarded as undesirable for many reasons. However, while the tariff and leasing changes implemented in the early 1980s created the possibility for long-term discounted terminal leases, they also kept open the option of common user terminals serving a variety of carriers and shippers.

Thus, it was entirely possible for Toyota to enter into a long term lease for a dedicated terminal in 1988, while at the same time the option for the short-term, multi-user leases that are so highly prized by automobile processing firms acting on behalf of manufacturers, was also in place. How important was the 'inability' of the MPA to convert fully to the tariff and leasing model associated with container ports such as Long Beach, in explaining why it failed in the container trade? This question cannot be answered conclusively, but it highly seems unlikely that even the ‘best’ institutional changes would have reversed the ports’ decline. Instead, the central point here is that the fact that particular institutional changes were not made, is one of the key factors in explaining the current success of the Port of Baltimore in the automobile trade.

Figure 6.4 Nominal revenue of the Maryland Port Administration



Source: Laws of the State of Maryland, annual financial statements.
Note: For reporting, ground lease and tariff components are separated regardless of contractual details (in case of single rate leases).

Subsidies and Services

Closely related to changes in tariffs and leasing policies were a series of direct subsidies offered by the MPA in the mid-1980s. The most important and controversial of these was a drayage subsidy program established in the fall of 1985 (State of Maryland 1987b). In 1984, the Norfolk Southern railway company lowered its rates from the mid-West to the Port of Hampton Roads (Norfolk). Baltimore’s main rail carrier, CSX, did not respond.

The growing rail rate differential was exacerbated by the fact that the CSX railhead was some distance from the terminal in Baltimore. These resulted in significant fees for moving containers from the railhead to the terminal, known as drayage costs.

Under the drayage subsidy scheme, CSX (also known as Chessie at this time) would reduce rail freight rates between the port and the mid-West, in exchange for a $50 per container drayage subsidy. The agreement apparently reduced rail costs by some $100 or 20% per container (State of Maryland 1985). However, the program did not have the desired effect. A 1987 evaluation prepared by the State's Department of Fiscal Services found that, "although it is possible to infer that the program has prevented further deterioration of rail traffic volume, the data fail to indicate a consistent strong, positive impact" (State of Maryland 1987b).

By 1987, thus, it had become clear just how much had changed with deregulation, in particular, the extent to which container routing decisions had shifted from shippers to steamship lines. The Department of Fiscal Services authors noted that "a recent Port Administration study of container movements through the port to the midwest on CSX revealed that only some consignees are shippers paying the published rates affected by the program. Other consignees are major steamship lines and shipment consolidators who negotiate shipping rates directly with the railroads, published rates notwithstanding. The rail rates influenced by the program, therefore, affect the transportation costs of only some of those using CSX through the port" (State of Maryland 1987b: 3).

Faced with such an unfavorable evaluation, the drayage subsidy program was duly discontinued. However this was not the end of the direct subsidies at the Port of Baltimore. The authors of the Fiscal Services report go on to review the impact of the Acreage Utilization Incentive Program, giving it a hesitantly positive review. They were however much more enthusiastic about a proposal more in keeping with MPA's emphasis on shippers.

The idea was that the MPA would establish a "rail brokerage program to provide medium steamship lines and shippers with access to lower rail prices" (State of Maryland 1987b: 4). The proposal had first been mooted in the MPAs 1987 Strategic Plan, published some months before the Fiscal Services evaluation. The MPA went on to establish such a consolidation service in 1988 called the Baltimore Port Link (POB September 1988). This service was allowed small and medium sized shippers and shipping lines to derive some of the volume discounts being enjoyed by large carriers that were negotiating service contracts with the railroads. The MPA also purchased a pool of 200 chassis for draying containers in and around the terminal. These could be leased by small shipping lines for $8 a day.

The MPA still offers the consolidation service and chassis pool, and presumably these programs have some marginal positive impact. While they certainly have not reversed the decline in the container fortunes of the port, they do reflect the ongoing commitment of the MPA to a range of users, and to shippers in particular.

Infrastructure Spending

The MPA's infrastructure spending response to the decline in container volumes was through three major projects, namely the construction of a dedicated container terminal, channel dredging and the construction of an intermodal rail yard. Although the implications of these investments for automobile shipment were indirect, the reason for reviewing them here is that they absorbed a lot of the attention of MPA officials in the late 1980s.

It would be incorrect to argue that MPA officials saw infrastructure spending as a magic solution to the problems facing the port in the 1980s, but it was certainly viewed as a key component. In its 1985 Master Development Plan for General Cargo Terminals, the MPA re-stated many of the objectives of the 1966 plan. The plan makes a strong case for additional capacity; "in spite of the increased competition and the changing industry environment, latest projections indicate that container trade through the Port of Baltimore will continue to grow as world trade expands. To maintain its competitive position as a more stable industry evolves from the recent turmoil, the Port of Baltimore must provide modern, cost efficient facilities that increase the Port's ability to meet demand, retain shipping lines and attract new services" (MPA 1985: 5).

Central to this assertion was the assumption that the ports dedicated Seagirt container terminal, then under construction, would meet demand only to the mid-1990s. The possibility of a dedicated MPA container terminal had first been identified in the 1966

Strategic Plan, and construction at the Seagirt site began in 1982. The timing of the ground-breaking (or rather, ground-filling) was a result of an agreement between the MPA and its sister agencies in the Maryland Department of Transportation to use dig material from the Harbor Tunnel project as fill for the new container terminal. The first phase of the Seagirt project was completed in 1989, with the first lease signed with the Mediterranean Shipping Company in 1990. At opening, the $250m, 262 acre facility had 3 berths, 7 cranes and a 14-lane gate (POB October 1989).

The new Seagirt container terminal was directly linked to a new intermodal rail yard, the ICTF (Intermodal Container Transfer Facility). Built by the MPA, the ICTF opened in phases in 1988-9 at a cost of $16.5m. The 70acre site eliminated a local drayage haul of 7 miles to an existing ramp in Dundalk. Access to the ICTF was over tracks owned by the Canton Railroad Company (which the Maryland Transportation Authority had bought in 1986). The opening of the ICTF did herald some improvements in the relationship between the MPA and the major rail carriers. CSX-Intermodal signed a 15-year lease to use the ICTF in 1989, and shortly thereafter, MPA and CSX officials were making joint sales calls to advertise the new facility. In 1992, CSX added Cincinnati, and in 1993 Louisville, to the list of cities served daily from Baltimore (POB April 1992).

Indirectly, the ICTF facility also assisted automobile shippers. In 1994, another CSX subsidiary, Total Distribution Services Inc, negotiated a multi-year lease from MPA for 2.6 acres of land at the Canton Warehouse complex. This allowed CSX to provide the same rail service for automobiles on the north side, as was available on the south side of

Patapsco River, namely a 5-day a week service with 60,000 vehicle per year capacity (POB March 1994).

If the Seagirt-ICTF investments provided some indirect benefits to automobile shippers, the project that probably absorbed the most of the media attention about the port during the 1980s was entirely irrelevant to them. This was the project to dredge the main Fort McHenry and Brewerton channels of the Chesapeake Bay from 42 to 50 feet. Controversy surrounded two aspects of the dredging project; concerns about the environment and about who would pay. With the controversies came delays, and in both cases the MPA had to employ its connections to the Maryland Legislature to resolve the difficulties.

Concerns about dredging disposal had delayed the initial proposal to dredge the channel since 1966. However, after considering 70 potential sites and a lengthy lawsuit, the MPA finally went ahead with the construction of a disposal site at the Hart-Miller Island in north Baltimore County (State of Maryland 1987a). Construction of the disposal site was completed in 1984, and the delay was to prove costly.

Prior to the passage of the 1986 Water Resources Development Act (WRDA), harbor dredging in the US has been undertaken by the Army Corp of Engineers, and paid for by the federal government (see Hershman and Kory 1988). However, the WRDA requires cost sharing between federal and state/local government to pay for dredging projects. State officials had been lobbying federal officials hard for the Chesapeake Bay dredging project in the early 1980s, but were unable to push through an agreement in advance of the WRDA.

Under the new cost-sharing arrangement, the project required state matching funds that were by no means guaranteed. Remember that in the 1980s, dredging projects of this depth were aimed more at attracting bulk vessels carrying such cargoes as grain and coal, and less at container ships as is the case today. This apparently led “some port businessmen to question the wisdom of the state’s emphasis on the 50-foot channel” (Maguire 1985).

In the end, the Maryland Legislature did agree to the new terms. When the dredging project was completed in the summer of 1991, it was the first and largest cost-shared navigational project done under the WRDA. The project cost $227m, 43% of which was funded by the State (POB August 1991). This expenditure is reflected in the high capital expenditure appropriations in the annual MPA budget in the late 1980s (see Table 6.2).

Bad timing was again to afflict the dredging project, since its completion coincided with a substantial downturn in world bulk commodity markets (Starr 1994). Baltimore’s channel depth may yet prove to be a valuable asset, but it is unlikely that it has yet to delivered the 5:1 benefit to cost ratio promised in 1986 (POB August 1986). In any event, channel depth is generally not a concern to car carriers.

Since 1990, the MPA has not undertaken any major new infrastructure developments, spending only on maintenance and equipment upgrading (MPC various years). Major infrastructure spending by the MPA was severely curtailed in the early 1990s as a result of the economy-wide recession, and the Maryland Legislature has required that major infrastructure spending be in the context of a public-private partnership since then. This is hardly surprising since the MPA terminals did not experience the congestion from containers forecast in the 1985 Facilities Master Plan (MPA 1985). Indeed, a new Facilities Master Plan which has been in preparation since 1998 – it was put on hold while the Maersk bid was being prepared – looks set to recommend a reduction in container handling at the Dundalk Marine Terminal (Dwyer 2000).

The infrastructure spending of the MPA in response to the decline in containers was relatively modest. Although the budget constraints on the MPA up to 1990 were relatively soft, following the completion of the Seagirt terminal and the 50-foot dredging, the authority cannot be accused of trying to build its way out of the problem. Furthermore, various infrastructure-spending decisions of the 1980s and 1990s accommodated automobile shipments indirectly in three ways. First, the opening of the Seagirt container terminal did relieve some of the pressure on automobile shipments in the Dundalk terminal. Second, while the cranes were upgraded and new gate was installed at the Dundalk Marine Terminal, there was no wholesale re-organization of operations here. Thus, the MPA maintained an operations model at this terminal that has been able accommodate a variety of cargo types. Third, the proposed container terminal at Masonville was not pursued, leaving this site on the south side of the Patapsco River for automobiles.

Legislative Reform and Blurring the Public-Private Divide

The final set of responses to the declining fortunes of the port involved a series of actions aimed at incorporating the private sector into the decision-making processes within the MPA. This response is associated with the election of Governor Schaeffer in 1987 who took to his new job many of the development philosophies he had deployed as Mayor of Baltimore (see Levine 1987). The changes involved the formation of a Port Commission and a series of committees, and legislative reform. However, despite much rhetoric concerning the application of 'private sector principles' within the MPA, these changes appear to have had surprisingly little impact on the authority. While the formation of the MPAs operating arm, Maryland International Terminals (MIT), did shore up container business at the new Seagirt container terminal, the consensus amongst responding MPA officials was that these changes were really "no big deal".

The first moves towards incorporating the 'port industry'[22] in MPA decision-making reflected the perennial concern that the port might be over-emphasising shippers' needs in relation to those of carriers. In its 1985 report to the Maryland General Assembly, the Joint Committee on Ports reports on the formation of a Private Sector Port Committee:

[22] The term 'port industry' is generally used to refer to a sub-set of 'the carrier industry'. Most narrowly defined, this group includes terminal operators, stevedoring firms, longshoremen's unions and the employers negotiating body, and short-haul transportation firms. However since railroad firms and shipping lines often provide these services in-house or through subsidiaries, the distinction between the port industry

> “Representatives of the private maritime community include: labor, bay pilots, stevedores, terminal operators, truckers, railroads, banks, service companies and others. Today with growing competition, Port interests are looking to the MPA to modify its pricing mechanisms, operations and procedures while continuing to support the industry through major capital investments ... All facets of Port operations and Port planning are subject to review and discussion by this committee” (JCP 1985).

The formation of the PSPC represented a potentially important shift from the MPAs emphasis on the needs of shippers to the needs of carriers. The PSPC could have heralded a fundamental shift in the political-economy of the port, but instead it appears to have had a relatively small impact. There is no evidence that the PSPC was able, or indeed tried, to shift the orientation of the MPA away from its focus on shippers towards carriers.

The PSPC was rapidly overtaken by the legislative reforms of 1988 and 1989 which respectively created the Maryland Port Commission and allowed the MPA to act as a port operator. The formation of the Commission provided a alternative mechanism for private sector voice within the authority. Similarly, the ability of the MPA to act as an operator implied that the port authority was now able to intervene directly to offer services that otherwise would be provided by various members of the PSPC, rather than relying on cajoling them.

In any event, by June 1989, the MPA’s own publicity magazine was writing about the ‘newly revitalized PSPC’ (POB June 1989: 12), hardly a ringing endorsement of this body’s first five years. The PSPC does still exist and does play a role in resolving day-to-day operational concerns. For example, one official who had worked previously in the

---

and carriers has ceased to have much meaning. The key point for this discussion is that the ‘industry’ is port industry noted the role of the PSPC in improving customer service attitudes amongst MPA staff. However the strategic role of this body, and of carriers in general, remains marginal. One MPA official reflected on the supportive as opposed to leading role of PSPC as follows: "They add legitimacy to the strategic plan when you take it to the Legislature and whoever else you need to get a rubber stamp. Many of the people on the PSPC also testify on behalf of the port to the Public Works Committee and so on".

One of Governor Schaeffer's first actions was to appoint a Special Committee on the Port of Baltimore, "charged with 'investigating the administrative procedures of the Maryland Port Administration' and 'recommending necessary changes' to improve the Port's competitive posture, including changes in the agency's status and structure" (Cole 1987: 1). The Committee's report is in the form of a letter that suggests an additional explanation for the port's failings in the container industry, namely that "many of the MPAs competitors do operate with substantially more flexibility" (p3). As examples of this disadvantage, the Committee pointed to the speedier procurement policies and private sector remuneration packages enjoyed by public ports in states such as Virginia, Georgia and South Carolina. However, the Committee also noted that ties to the state provided the MPA with a substantial advantage in access to capital financing.

Informed by this analysis, the recommendations reflect a compromise between maintaining access to state resources while freeing the authority from 'unnecessary' controls. The Committee's report was quickly transformed into law. House Bill 692 of 1988 passed with no opposing votes in the House and only two opposing votes in the

distinct from shippers, the owners of the cargo be they manufacturers or distributors.

Senate. Testimony during hearings on the bill was overwhelmingly positive. Supporters included the Maryland Department of Economic and Employment Development, the Baltimore County Chamber of Commerce, the Maryland Maritime Association, the Baltimore Steamship Trade Association, the Greater Baltimore Committee, and Maryland Economic Growth Associates. The only record of opposition to the bill are some letters and a petition signed by a few employees of the MPA concerned about job security.

The Committee recommended a small Commission with geographical representation similar to the original 1956-70 Commission. Geographic representation was diluted in the final legislation; this is now merely a consideration when the Governor makes his/her appointments. The Chairman of the Commission is the Secretary of Transportation, and all decisions of the Commission that affect the Transportation Trust Fund are subject to review by MDOT. With such financial controls, the Commission remains essentially advisory.

The composition of the Commission bears commentary. The final legislation expressly precluded persons who were employed by an entity whose principal activities are ports-related from sitting on the Commission (Maryland Code, 6-201 d(iii)). In this way, the influence of carriers in general and the port industry in particular within the MPA was limited. The tenure of each Commissioner was originally limited to two 3-year terms, but in 1994 this restriction was dropped (Laws of Maryland, 1994: Ch 420). Of the original six Commissioners, four are still serving. They are a banker (J Owen Cole), an automotive parts distributor (Thomas T Koch), an international marketer (Fred

Windeland) and a real estate developer (Milton H Miller). While they have been joined by a former shipping line executive (Calvin E Drummond), there should be no doubt that the Commission represents an entrenching of the state-wide, shipper focus of the MPA.

Schaeffer's 1987 Committee also recommended procurement reform and changes to the MPA personnel system. The 1988 legislative change did provide for limited procurement reform; the MPA gained the ability to purchase supplies, engineering services and some construction services without external review. Furthermore, the Committee recommended the creation of a Contingency Fund, and this was funded in the annual appropriations of the MPA from 1989 to 1996 (see Table 6.2). However procurement reform has not resulted in complete spending flexibility for the MPA. Capital expenditures are still tied to the Transportation Trust Fund planning and appropriation cycle, and all major projects are subject to approval by the state Public Works Commission.

In terms of personnel matters, the 1988 Legislation did empower the Maryland Port Commission to design and implement its own personnel system, while protecting the existing rights of employees not wishing to transfer to the new system (Laws of Maryland, Ch 541, 1988 - House Bill 692, 6-201.2 (b)). By the end of 1989, all but 12 of 443 employees had transferred to the new system (POB January 1990). The new system did allow the MPA to reduce staffing levels in 1991.

In summary, the 1988 legislative changes did not in any substantial way loosen the links between the MPA and its funder (ie MDOT and the Maryland legislature). And they certainly did not represent a shift in institutional orientation away from shippers towards carriers. On the contrary, in 1989 a further legislative change actually brought the MPA into competition with some members of the port industry.

The Governor's Special Committee on the Port of Baltimore had again drawn attention to the question of whether the MPA should, like its southern competitor in Norfolk, be involved in port operations. Recall that when the Tariff Study Committee rejected the concept of a box rate in 1983, it did so because the MPA was not a terminal operator. By the end of the decade the box rate had been adopted in many ports. With the Seagirt container terminal due to open in 1989, it was believed that this piece of administrative flexibility – giving the shipping lines what they wanted – was required.

So, in 1989, the legislation governing the MPA was again amended to allow the formation of Maryland International Terminals (MIT) in 1990 (Laws of Maryland 1989, HB 880). MIT is a non-profit subsidiary of the MPA authorised to operate public port facilities. In the words of one MPA official, it "gave us some ability to deal directly with labor and to quote rates directly to carriers". The MIT has chosen to sub-contract stevedoring and terminal operation services, and thus the formation of the MIT has not eliminated the separate MPA and BMTA tariffs. However, from the point of view of a steamship line, the MPA is now able to quote a single box tariff. More recently, this arrangement has brought the MIT into implicit competition with the stevedoring firms[23].

How big of a change was the formation of MIT? In reality this was a really rather marginal change, especially when compared to the alternative of leasing whole terminals to steamship lines, stevedoring firms or terminal operators. This kind of privatisation of terminals within public ports has occurred elsewhere in the port industry. It is arguable whether any private firm would have been prepared to take on the risks that this would have entailed in Baltimore, but this is beside the point.

It bears repeating that the solutions worked out to the problems of administrative or operational 'flexibility' ultimately all reflected the institutional legacies of the MPA. The connections between the port and the state were not substantially weakened, the focus on shippers was not diluted, and the common user principle was left substantially intact. Unlike so many other public ports, in Baltimore there was no privatization of port terminals. Rather, a more complex interpenetration of public and private sectors has occurred. This has left in place the institutional heterogeneity that creates the possibility of compatibility between the MPA and a range of automobile shippers.

Consequences of Decline

What can we say about the decline, and the responses of MPA officials? First, it bears repeating that the managers of the Port of Baltimore tried just about everything in their power to reverse the decline. In various planning documents, strategy papers and annual reviews, we find attempts to reflect critically upon the changing circumstances. In the

[23] In response to concessions offered to Maersk in 1998, the stevedoring firm, Ceres, brought suit against the MPA and ceased operations at the Dundalk Marine Terminal. MIT took over from Ceres as terminal

face of considerable uncertainty, the MPA experimented with all the formal policies, investment decisions and marketing efforts that were being prescribed elsewhere at the time. This included dredging, targeted subsidies, investments in equipment, changing leasing policies and so on. Nothing worked. It is in fact surprising how much attention the MPA was able to direct at this project. It is also surprising how often the port turned to shippers to try to resolve the problems, when in fact it was the carriers that were abandoning the port.

Second, we shouldn't underestimate the impact of the decline on the port community in general, and the MPA in particular. The attempts to reorient the organization were disruptive, to say the least. For example, the late 1980s and early 1990s were a period of very rapid turnover in the leadership of the organization (see Table 6.7). Whereas the first two port CEOs served for 22 and 8 years respectively, the following five served less than 3 years each.

The tenure of each new CEO was associated with a particular strategic thrust in the quest to secure container traffic. For example, David Wagner, a Maryland Department of Transportation insider, was responsible for implementing the 1988 and 1989 legislative reforms. Brendan O'Malley's short tenure was associated with an aggressive but short-lived marketing effort. He was promptly followed by Adrian Teel whose appointment was based on his success in turning around a deficit in Anne Arundel County. Under his watch MPA staff were retrenched as the state confronted the recession of the early 1990s. In 1991, an unnamed MPA official was quoted in the trade press as saying: "The port has

operator (with P&O Ports sub-contracted as stevedore) to ensure that ship calls would not be reduced.

become very politicized. It's like trench warfare. People don't know what the next phone call will hold" (DiBenedetto 1991).

Table 6.7 MPA Chiefs

Name	Tenure	Background of Chief
Joseph Stanton	1956-1978	
W Gregory Halpin	1978-1986	ex MPA senior official
David A Wagner	1986- 1989	ex Maryland Mass Transit Administrator
Brendan W O'Malley	1989 – 1990	ex PNYNJ Official
Adrian G Teel	1991 – 1994	ex Anne Arundel County Chief Accounting Officer
Michael P Angelos	1994 – 1995	ex local industry and MPA employee
Tay Yoshitani	1995 – 1998	ex Port Los Angeles and private sector
James White	1999 – current	ex Director Operations, MPA

Source: POB (various dates).

The decline in the port's fortunes also had important implications for others working in there, especially the port's longshoremen (for more on this topic, see Chapter Four). In a city facing severe economic and social problems, the loss of longshoring jobs due to declining container-handling volumes (and technological change) was particularly hard. There were about 3,500 longshoremen in Baltimore in 1980 (Starr 1994); today there are just 1,200 registered ILA members in Baltimore, although the main 'deep-sea' local (Local 333) did admit 140 new members in 1999, the first such induction since 1978. If 2,000 hours work per year is regarded as a full time equivalent (FTE) job, then the number of FTEs directly generated by cargo handling declined from approximately 3,000 in 1980 to approximately 1,000 in 2000.

Table 6.8 shows that the real value of wages paid to longshoremen declined from over $130m in 1980 to less than $50m in 2000, a significant dent in the local economy. However, the decline resulted entirely from declining hours of work rather than a decline hourly wages; indeed the real hourly wage of longshoremen actually increased by just over a dollar per hour during the period.

Table 6.8 Wages and hours of ILA members at the Port of Baltimore, 1980-2000

	Total hours worked by ILA members	Real (2000) total wages in thousands of $s (1)	Nominal Hourly Wage in $s (2)	Percentage of hours handling automobiles (3)
1980	5,984,828	130,074	10.40	-
1981	5,669,653	124,590	11.60	-
1982	4,633,389	105,831	12.80	-
1983	4,023,042	97,377	14.00	-
1984	4,054,689	100,801	15.00	-
1985	3,465,760	88,744	16.00	-
1986	3,119,708	83,327	17.00	-
1987	3,140,431	80,927	17.00	-
1988	3,043,383	79,740	18.00	51%
1989	2,785,149	69,620	18.00	48%
1990	2,127,077	50,444	18.00	52%
1991	2,342,498	56,296	19.00	52%
1992	2,325,423	57,083	20.00	48%
1993	2,342,407	58,620	21.00	45%
1994	2,487,085	60,687	21.00	44%
1995	2,460,057	58,373	21.00	41%
1996	2,239,072	51,606	21.00	41%
1997	2,053,024	50,662	23.00	43%
1998	2,000,610	48,611	23.00	40%
1999	1,976,037	49,019	24.00	44%
2000	1,968,741	47,250	24.00	-

Source: Baltimore Steamship Trade Association, Maryland Port Administration, Bureau of Labor Statistics.
Notes:

1. Deflated using the U.S. Department Of Labor, Bureau of Labor Statistics. Consumer Price Index, All Urban Consumers, U.S. city average, All items, 1982-84=100, www.bls.gov, accessed 3-20-01. Due to re-basing of the CPI and other changes, a more appropriate CPI could not be found. An index for all urban consumers is available for Philadelphia to 1998, and for Washington-Baltimore from 1996. The North-East index does not appropriately capture Baltimore's mid-Atlantic location.
2. This is the nominal wage for full gang members at year-end, as determined by the Master Contract.
3. This is the percentage of predicted total hours to estimated hours of automobile handling. Estimates were derived by regressing total hours worked per year against the number of automobiles and TEUs, and tonnage of bulks and general cargo handled (R-squared = 0.759). Note that ro-ro cargo is regarded as 'general cargo' for this analysis. This cargo accounts for an increasing share of port labor hours.

At least one commentator has drawn a causal link between labor unrest at the Port of Baltimore and its declining fortunes (see Starr 1991 and 1994). Whether cause or effect, the late 1980s and start of the 1990s were a period of labor discord at the port. Matters came to a head in January 1990 when longshoremen in Baltimore undertook a three-day strike over proposed changes to the Master Contract (Starr 1994). Meanwhile ILA members at other ports had voted to accept a one-year extension of the contested contract (Vail 1989). When the contract was finalized at the end of 1990, ILA members accepted contract changes that allowed unlimited start times and work in rainy weather (Wooton 1996). The MPA's newsletter heralded the agreement as making "the Port of Baltimore one of the most flexible ports on the East coast" (POB March 1991).

Ironically, the labor discord during this period had the lasting effect of increasing the direct involvement of the MPA in labor relations, arguably improving labor relations in the port more widely. Conflict between the MPA and ILA first surfaced over jurisdictional issues in advance of the opening of the Seagirt Container Terminal and ICTF (in 1989 and 1988 respectively). In 1987, then MPA head David Wagner wrote the following on the occasion of the formation a joint ILA-MPA Business Team to address labor relations issues:

> "Quite frankly, our port, like many others, has had an image of a poor labor-management-port agency environment over the years. A good labor environment doesn't just happen. We cannot sit back and assume that a productive labor relationship will evolve at some point; too much is at stake. We must actively create that relationship and work to keep it at the highest level. We must do it now" (POB March 1987; 5).

Wagner's effort floundered, and he was unable to resolve the conflict over whether the ILA's jurisdiction extended to the ICTF. In September 1988, the MPA announced that it would open the facility using state employees, but when it became clear that he had lost the support of Maryland Governor (and former Baltimore mayor) Schaeffer, David

Wagner announced his resignation as head of the MPA in November 1988 (DiBenedetto, 1988a). When the ICTF did opened fully in 1989 it was operated by the Ceres stevedore company (under contract from the MPA) using ILA labor. Some unionists and port officials today hold that this agreement signaled the start of an increasing level of trust between labor and management in the port. The agreement was followed by the formation of a Baltimore Labor Management Committee, funded by the Labor Department with the goal of improving labor relations in the port (POB September 1989).

Thus, one lasting effect of the discord has been the increasing involvement of the MPA in labor relations. In part this is explained by the structure of labor relations in east coast ports (see Chapter Four), and the MPA's role in maintaining a common user principle in the port. However, a history of conflict resolution started with ICTF and extended through creation of MIT as operating arm of MPA. This drew the public authority into labor relations, and set the stage for involvement of MPA in a series of programs designed to reduce damage to automobiles during discharge.

Yet, while Table 6.8 reveals the impact of the declining fortunes of the port for longshoremen, it also reveals the extent to which automobiles remained an important source of port jobs. In addition to 40 to 50% of port labor hours devoted to automobile handling, in the 1990s ro-ro cargo has become an increasingly important source of port employment. Furthermore, the declines in the cargo-handling sectors and sub-sectors of the Baltimore regional economy were considerable (see Table 6.9). Only the automobile distribution sector experienced positive relative employment growth. This relative employment growth was concentrated in the depressed Baltimore County (which includes the City of Baltimore) occurred in the 1980s (see Appendix A, Table A6.1). Note that Baltimore's relative employment growth in automobile assembly is unrelated to port activities, having occurred at the non-exporting GM truck assembly plant in Dundalk.

Table 6.9: Relative Sectoral Employment Growth (1) in the Baltimore Region

	Baltimore Region	
	Broad (Baltimore-Washington, DC)	Narrow (Baltimore County)
	1980-98	
Marine Terminals	-2.9%	-0.8%
Freight Transport	-0.7%	-0.6%
Water Transport	-3.2%	-1.7%
All Transport	-1.5%	-1.7%
Auto Assembly	0.1%	1.7%
Auto Parts	-1.7%	-8.6%
All Manufacturing	-1.9%	-1.9%
Auto Distribution and Retail	-0.3%	0.1%
All Distribution and Retail	-1.0%	-0.4%

(1) Relative Employment Growth is second difference of sectoral employment growth in region with regional and sectoral effects removed. Employment figures from analysis of County Business Patterns. See Chapter 2 (footnote 18) and Appendix B for details.

Given this good news in the automobile trade, what is so surprising about the various port planning and policy documents of the 1980s and early 1990s is how silent they are on the question of automobile shipments. How was it that a commodity that barely featured on the official radar screen of the organization came to occupy such an important place in its operations? It is to the experience of the Port of Baltimore since 1980 in this trade that we now turn.

The Automobile Surprise

The history of automobile shipments through the Port of Baltimore reads like a who's who of the industry. More importantly for the purposes of this discussion, automobiles are imported and exported through the port using the full range of business models deployed in the industry. For example, Toyota operates its own dedicated terminal on the basis of a long-term lease with the MPA, while Mercedes hires a small processing firm to expedite the movement of cars to its Vehicle Preparation Center some 30 miles north of Baltimore. In between the localization model of Toyota and the globalization model of Mercedes, the British-owned Amports operation provides a full independent processing and vehicle preparation service to various manufacturers. The point is that somehow the MPA has been able to accommodate a diversity of automobile manufacturers and their particular business approaches.

Table 6.10 summarizes the key accounts and other events associated with the shipment of automobiles through the Port of Baltimore. The purpose of this section is to review this history. Over the years the Port of Baltimore Bulletin has reported on the automobile manufacturers using the port. The regular attention paid to the automobile shippers in the publicity materials of the port reveals the ambiguity surrounding this cargo in the containerization era. While it would not be correct to say that MPA officials ever consciously turned away the automobile trade, two major automobile importers (Volkswagen, for Wilmington DE, and Nissan, for Norfolk) both left the port because sufficient space was not available in Baltimore. These departures occurred at the same time as the authority was consumed with its drive to become a successful container port.

Table 6.10 History of Automobile Shipment at the Port of Baltimore

Year	Manufacturers using the Port	Other events
1971		Toyota opens Columbia facility
1973	Toyota, Volkswagen, Saab, Ford, GM, Chrysler	
1975	Chrysler, British Leyland, Ford, Toyota, Subaru, Jensen, Saab, Volkswagen, GM	
1976		Volkswagen departs (opens Wilmington facility)
1978		Datsun (Nissan) returns after 6-year absence MPA leases Atlantic facility
1982	Saab, Mercedes, Maserati, Subaru, Mitsubishi, Datsun (Nissan), Toyota, Ford, GM, Chrysler	
1983	Volvo, Saab, Maserati, Mercedes, Renault, Subaru, Toyota, Mitsubishi, Ford, GM, Chrysler	Mercedes Belcamp facility opens
1984		Hobelman (Amports) Chesapeake Ave facility opens Nissan departs (DAS opens Norfolk facility)
1986	Ferrari, Isuzu, Maserati, Mercedes, Mitsubishi-Fuso, Hino, Saab, Subaru, Toyota, Volvo, Yugo, Bertoni, Land Rover, Ford, GM, Chrysler	
1988		Toyota Fairfield facility opens Hobelman (Amports) Atlantic facility opens
1999	Land Rover, Isuzu, Mazda, Suzuki, Mitsubishi, Daewoo, Volvo, Hyundai, Jaguar, Mercedes, Toyota, Ford, GM, Chrysler (Honda – landside distribution only)	Masonville facility opens

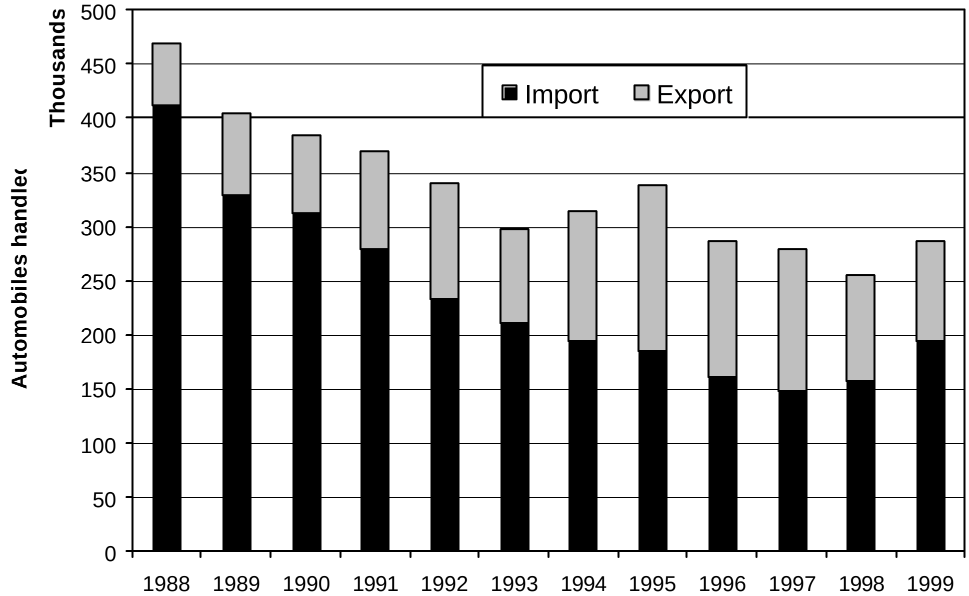
Source: POB (various dates); authors research.

From as early as 1971 the MPA had been actively seeking a site for a dedicated automobile terminal. However, until the mid-1990s, all the discussion and planning aimed at creating an automobile terminal in the Port of Baltimore was framed as a way of freeing up space at the Dundalk Marine Terminal for containers. For example, this was the explicit motivation behind the 1985 Master Plan recommendation to study the feasibility and potential for a new automobile terminal (MPA 1985). In other words, automobiles were long regarded as a side activity, in some ways a nuisance, to the real business of the port. Even during the low-point of staff retrenchments in 1991, Executive

Director Teel's emphasis on cargo diversification appears to have fallen on deaf ears (DiBenedetto 1991). In the desperate push to attract containerized cargo in the early 1980s, automobiles and other cargoes were ignored in the official planning efforts of the authority. In the 1987 Strategic Plan there is some recognition of the importance of this cargo, but full formal recognition was only achieved with the publication of the 1996 Strategic Plan.

In numerical terms, the Port of Baltimore has experienced much the same growth and decline in automobile imports as the nation as a whole (Figure 6.5). In 1959 the port received almost 80,000 vehicles. In 1964 just over 100,000 vehicles, or about one-fifth of all foreign automobile imports into the US, were received in Baltimore. These cars were all European, from Germany, France, UK, Italy and Belguim. In 1967, the first Japanese cars, Datsuns (now Nissan), and Swedish cars arrived at the port. By then, over 200,000 automobiles per year were being received (POB June 1974). In 1985 the 300,000 per year mark was reached (POB January 1986), although since the mid-1980s, volumes have declined in line with the decline in automobile imports nation-wide. In 1999, with a 9% market share, the Port of Baltimore was the fifth largest automobile port in the US, and was the nation’s largest car export port.

Figure 6.5 Automobiles handled at Port of Baltimore, Private and Public Terminals



Source: Maryland Port Administration.

One of the first cargoes to be discharged at the Dundalk Marine Terminal, acquired by the MPA in 1959, was a load of Volkswagen automobiles. From then, until 1978, virtually all automobiles shipped through the Port of Baltimore were handled at the Dundalk Marine Terminal. Pressure on space at the Dundalk terminal grew in the 1960s, and in 1971 the MPA requested $20m to develop a car terminal at Hawkins Point, just south of where the Key Bridge (under construction at the time) meets the western side of the Chesapeake Bay (POB November 1971). The proposed 60-acre terminal would be leased to the automobile processor, Hobelman, for handling Volkswagens.

At the time, Hobelman had leased 130 acres of the Dundalk terminal, but Volkswagen required 200 acres. Hobelman, had previously enjoyed a special status within the port. Under a 1967 contract, Hobelman was exclusive agent of the MPA for handling import automobiles. Hobelman was paid a set fee per car for handling paper work and insurance. Although this practice was ended in 1971, the Hawkins Point development plans later to meet with resistance precisely because of this ‘most favoured status’.

The pressure for developing Hawkins Point was temporarily lifted in the 1972, when Datsun (Nissan) temporarily stopped importing automobiles through the port. However, faced with the long-term prospect of not being able to expand at Baltimore, Volkswagen moved its operation to Wilmington, DE, in 1976.

In 1978, Nissan returned to the Port of Baltimore, this time under a 5-year contract with the MPA (POB April 1978). The MPA leased the 32-acre Atlantic Terminals Pier from the Weyerhauser Company, and sub-leased this to Nissan with Hobelman acting as processor[24]. Rather than leasing the Weyerhauser site, the MPA would have preferred to have gone ahead with Hawkins Point project. However, these plans had met considerable resistance from other automobile processors operating at Dundalk Marine Terminal.

Faced with delays resulting from this resistance, Acting Gov Blair Lee declared a state of emergency and authorized elimination of bureaucratic obstacles in the selection of design consultants for the proposed terminal (*News American* June 2, 1978.). The emergency was declared in the name of capacity shortages at Dundalk. In response, the Maryland Undercoating Company, a Dundalk automobile processor brought a suit against the state claiming that the congestion was not an emergency since it was neither sudden nor unexpected. In testimony in court in 1979 (*Evening Sun* March 15, 1979) the by then former acting governor Lee told how the Secretary of Transportation Herman K Intemann had "kept coming over, pounding on my desk" to make the point about congestion. Lee apparently was not aware that the terminal plans had been around since the early 1970s.

The court decided in favor of the MPA, the judge agreeing that an emergency had in fact existed. Rather than appeal, the plaintiff took his case to the Joint Legislative Committee on the Port of Maryland (*Evening Sun* January 17, 1980). The Hawkins Point project was withdrawn before the Committee voted on it, and apparently it is unlikely that it would have passed. Apart from the conflict between the port authority and the processor, it had become clear that the deal depended too heavily on the continued cooperation of the owner of the site, rail company Chessie (CSX). This apparently could not be guaranteed.

The Hawkins Point episode marks an important step in the development of the relationship between the MPA and automobile shippers. The principle of multiple processing firms operating at the common use Dundalk Marine Terminal was implicitly confirmed. This has proved central in the import model deployed by Mercedes and other manufacturers with small import/export volumes. At the same time, Hobelman's operation on the south side of the harbor was the first specialized automobile terminal in the port. This was also a signal of things to come. In other words, the controversy around the Hawkins Point Terminal established the basis for Baltimore's combination of dedicated / specialised and multi / common-user automobile handling facilities.

---

[24] Note that this lease, between the Port Authority and the automobile manufacturer was an important step in the evolution of Nissan's current distribution model, in which its wholly-owned subsidiary, DAS,

For Hobelman, the Atlantic Terminal proved a highly successful venture, for a combination of reasons related to the lack of congestion on the south side of the Patapsco River. In 1984, Hobelman secured a contract with Isuzu to receive and process half of its US east coast imports of trucks and cars. Previously, all Isuzu's had been imported through the Port of Jacksonville. To handle this account, Hobelman built a $6.5m terminal built at Chesapeake Ave on land that used to house the FS Royster Guano Company fertilizer plant. The new facility, the first completely private automobile terminal in the port had 7 open acres of storage and 25 acres of workshops (POB October 1984). This facility continues to receive Isuzus. Hobelman also acquired the Atlantic Terminal from Weyerhauser in 1986, and opened a 42acre automobile processing, dewaxing and storage facility there in June 1987 (POB May 1988).

Toyota has been importing automobiles through the Port of Baltimore since the late 1960s. Vehicle imports were initially processed by Crown Auto Processors for the Mid-Atlantic Toyota (MAT) distributorship. MAT purchased Crown in 1975, and was itself absorbed into Toyota Motor Sales in 1990, although it has operated as the semi-independent Central Atlantic Toyota since then (see Chapter Seven).

Until 1988, Toyota operations were through the Dundalk Marine Terminal, although the firm was looking beyond the terminal for additional space from the early 1980s. In 1982, Toyota was importing approximately 60,000 vehicles through the port annually, and in that year MAT rented a 14acre facility from the Canton Company to store up to 3,000

---

maintains long term leases for processing facilities at several US ports. For more, see Chapters 4 and 7.

vehicles at a time (POB May 1982). In 1984, the firm further expanded its 34acre car-washing and processing facility at the Dundalk Marine Terminal (POB September 1984).

The relationship clearly worked well, and later in 1984 Toyota Motor Sales gave the port an award for having the lowest damage rate of any US ports it used. However, by the late-1980s it had become clear that a more permanent solution had to be found to Toyota's lack of space at Dundalk. However, the MPA did not use the Masonville site, still reserved at this time for a new container terminal. Instead, in 1987 the MPA bought the land between the Masonville site and the Amports (Hobelman at that time) Atlantic Terminal facility (POB May 1987). The 51acre site had been the Maryland Shipbuilding and Drydock Company yard. It was purchased and cleared at a cost of $8m and is now known as the Fairfield Auto Terminal. After construction worth $15m, Toyota began operations at terminal and processing centre in October 1988, with a 15-year lease and minimum annual guarantee of 65,000 vehicles (Levitt 1988; DiBenedetto 1988b).

One of the reasons cited for the successful agreement was the elimination of double-handling work rule in the 1986 longshoreman's contract (see Chapter Four for more on this point). Toyota also received preferential berthing rights at the Fairfield terminal (POB May 1987), something not possible at the common user Dundalk Marine Terminal.

There were other successes in the automobile trade for the Port of Baltimore during the 1980s. In 1982 Mercedes consolidated its east coast distribution operations in Belcamp, to the north of Baltimore, and increased imports as a result (POB September, 1982). In

1983, Saab increased its imports through the port (POB May 1983), while in 1986, accounts for Suzuki, Hyundai, Mitsubishi-Fuso, Hino and Land Rover were secured by local processors (POB January and April 1986).

The port also came to feature more prominently in the operations of US manufacturers during this period. The big three US manufacturers had been using the Port for several years to export small numbers of vehicles to the European, Middle-eastern and African markets. Their requirements began to expand as they entered into alliances with foreign manufacturers. In 1987, Baltimore handled imports of Ford Festivas built by Kia, Pontiac Le Mans' built by Daewoo and Chryslers' built by Mitsubishi (POB, September, 1987). Chrysler's export activities, begun in earnest after it purchased the American Motor Corp (maker of Jeeps) were expanded in 1988 to include motor car exports to Europe (POB April 1988). The successes of the 1980s continued into the 1990s, although they were less dramatic.

The successes of the port in the automobile trade in the 1980s were duly noted in the Port's promotional materials, and certainly formed part of the marketing efforts of the port. For example, in 1986, MPA traveled officials to Daimler Benz HQ in Stuttgart Germany to consolidate their relationship with this shipper (POB July 1986). This attention to the shipper, rather than the carrier is entirely in keeping with one of the fundamental orientations of the MPA. However, what is surprising is that the automobile trade lacked formal recognition within the organization throughout this period. At the same time as all these successes were being achieved, the formal attention of the organization was fixed firmly on containers. For example, the promotional maps showing the location of Hobelmans expansions at the Atlantic and Chesapeake terminals continued to show the Masonville site as the next container terminal until the early 1990s.

How much of the success in automobiles can we ascribe to individual action? No small amount, to be sure. It does not take one long to find the right person in the MPA to ‘talk cars’ with. Mention automobile shipments in the Port of Baltimore and sooner rather than later you will end up at the office of Mel Bafford, General Manager of International Sales. Bafford joined the MPA in the early 1970s, and although the marketing department did not have a line of business approach at that time, he was quickly tracked into the automobile business. Apparently this began in 1974. There had been various problems with the handling of cars, and the director of operations was tired of dealing with the clients. Bafford was asked to sort things out, and so became the port's de facto automobile champion.

In 1989, Bafford was appointed general manager for shipper sales, responsible for regional sales offices in the mid-West and east coast. At the time, he reportedly said: "We will aggressively go after distribution-oriented cargoes, such as autos and other consumer and food products that are destined for the Baltimore/Washington area and the mid-West" (DiBenedetto 1989). Although there is no evidence of formal organizational backing for the strategy of targeting automobiles until 1996, Bafford's shipper focus was clearly enabled in various ways by the MPA's organizational structure and practices. By 1996, with the successes in the shipment of automobiles, the informal system of shipper relations represented by Bafford, was formalized in the emerging strategic plan and organizational structure.

It is hard to say how things might have turned out differently if Mel Bafford, or someone like him, had not been working in the MPA in this capacity. However his individual actions need to be understood in institutional context. An emphasis on shippers provided an ongoing reason for his contact with the automobile manufacturers. And when casting around for ways to meet the needs of automobile shippers, MPA officials - Bafford and others - found the considerable financial support of the state, an approach to that values multiple port users and an operating model that can accommodate such diversity.

In the mid-1990s, these successes finally found recognition within the organization, in the 1996 Strategic Plan. Bafford reflected thus:

> "As a result of the successes we had in the car industry … it showed us that we needed to do some more niche type cargo attraction … and to define it all. The strategic plan was the result of that process of looking at it all and saying well, we need to do some different things here. There are some areas where Baltimore can be successful, lets look at those areas where we can be successful and lets put more of an emphasis on that, not just for sales but for infrastructure and planning and all those sorts of things."

The most recent developments in the automobile trade in Baltimore confirm that the 1996 Strategic Plan's commitment to automobiles was really meant. In 1998, after considerable resistance from both the port's independent automobile processors, Hobelman and Premier, the MPA secured support from the Maryland Board of Public Work and Legislature for the development of a 50acre automobile terminal at the Masonville site (Watson 1998). The facility was leased for 20 years to the Florida-based automobile processing firm, ATC Logistics. Hobelman and Premier objected to the deal on the grounds that there was insufficient demand for the facility, and that it was implicitly subsidized by the State (Raymond 1998; Murray 1998). However, by the time the facility opened in 2000, opposition had evaporated, in part because the project was completed under budget and because business conditions had improved for all processors at the port (Adams 2000).

Finally, it should also be noted that the port has become something of a hub for non-automobile ro-ro cargo, especially agricultural and earth-moving equipment. There are important compatibilities between ro-ro and automobiles in terms of longshoring skills, and in terms of seasonality; heavy ro-ro cargoes peak before summer, while automobile imports peak before winter. These urbanization economies increase the efficiency of labor, and terminal and other infrastructure usage. They are in turn reinforced by conscious programs to reduce damage to vehicles during handling, programs that in turn act as institution- and trust-building exercises.

QChat: The Quality Cargo Handling Action Team[25]

Efforts to reduce damage to automobile imports in the Port of Baltimore can be traced back to the 1970s when Fiat convened quarterly 'damage reduction' meetings. Today the efforts of the Baltimore port community to attract and retain automobile cargo are

---

[25] This section is based on data collection during interviews with the head of the MPA Total Quality Department staff and a consultant to the QChat, a representative of Chrysler and other members of the QChat, review of internal documents of the QChat made available by the officials of the MPA, and attendance of a QChat meeting at the Amports Atlantic Terminal facility on November 29, 2000.

reflected in the QChat forum, a multi-stakeholder process that includes all those involved in automobile handling, and involves a series of mutual monitoring mechanisms to ensure information exchange and collective learning. The port authority plays a pivotal role in co-ordinating this process.

As the importance of automobiles to the Port of Baltimore gained recognition through the early 1990s, various efforts were launched to reduce handling damage to automobiles. However, it was only in 1996 that three factors combined to allow the current port-wide focus on quality automobile handling in the port, namely the establishment of a Total Quality Office in 1993, the commodity-focus of the 1996 Strategic Plan, and the active involvement of a large automobile shipper. In turn, these factors need to be understood in the context of the wider institutional legacies of the port, particularly the shipper focus and common use principle, as well as the structure of labor relations on the east coast.

In the early 1990s, members of the port community experimented with many of the same programs to reduce damage to vehicles as were being tried elsewhere (such as those at the Ports of New York, Los Angeles and Long Beach; see Chapter Four). For example, in 1992 the STA (employer's association) and ILA (longshoreman's union) established a "quality auto handling" program (POB November 1992). This program resembled the efforts in the other ports, with actions limited to establishing a set of guidelines and some one-off vehicle handling training (POB February 1994). The MPA was not directly involved in this program.

In 1993, in keeping with the 'total quality' trend in both federal and state government, the MPA had launched its own authority-wide program to address the issue of quality (POB February 1993). The program was initially co-ordinated by a steering committee made up of employees from different departments and classifications, with the goals of providing overall guidelines, facilitating support, organizational communications and training. Later that year, a Quality/Customer Satisfaction Unit – now the Total Quality Department – was formed with Barbara Leight as its head (POB October 1993).

The initial focus of the department was internal. According to Barbara Leight, "morale was very bad when we started. A lot of work was required to improve attitudes within the MPA." The organizational location of the Total Quality Department is revealing; it sits within the Division of Staffing and Programs, alongside the Personnel, Administration and Property Administration functions, and away from Marketing, Engineering and Planning.

The MPA's initial externally focused ‘total quality’ efforts did not target specific commodities. With support from the State's Department of Economic and Employment Development, the MPA set up a Port-Wide Total Quality Leadership Group and a $30,000 fund for Total Quality programs in the port community beyond the port authority. These ventures were undertaken with the involvement of the STA and the (yet again) revived Private Sector Port Committee (PSPC) (POB May 1993).

The efforts resulted in some quality-oriented programs; for example, members of ILA Local 1429 undertook some training in container repairs through the Dundalk Community College (POB December 1994). In 1995, various private firms in the port obtained ISO 9002 certification, signifying the spread of total quality thinking. These included the car carrier line, Wilhelmsen Lines, and automobile processor, Predelivery Services (POB August 1995; POB December 1995).

The first attempt by the MPA to focus attention on the issue of automobile damage was not successfully institutionalized. In late 1994, MPA marketing officials attempted to re-ignite the flagging ILA-STA Quality Auto Handling process by convening a meeting of over 50 customers and industry representatives (POB November 1994). The Total Quality Department was not included, and the meeting did not result in any new initiatives. However, just two years later, the pre-conditions for a more concerted focus on automobile handling quality were in place.

In October 1996, John Dostall, a logistics manager at Chrysler requested a meeting with MPA to discuss damage to automobiles, and to screen a video detailing the way in which cars were being damaged during handling at the Port of Baltimore. Within the MPA the meeting was convened by Mel Bafford of the Marketing Department. Bafford involved the Total Quality Department in this meeting, although according to the Leight (head of that department) his motivations were somewhat arbitrary:

> "Well Chrysler had the word quality in whatever they were going to tell us about, and course we're the Quality Department and so that's how we got involved in this. This was a coincidental thing – Mel had really nowhere else to go and so we were there at the meeting, seeing how a pen could rest on two side mirrors since

> the cars are so close together ... so even for a person who really knew nothing about what we were looking at, we knew that there were problems".

Since then, the Total Quality Department has been centrally involved in quality automobile handling, and are a critical element in the QChat's success. It is quite possible that Chrysler threatened to stop using the Port of Baltimore at the initial meeting, and certainly the role of the automobile manufacturers in driving the QChat process should not be underestimated. In turn, this alerts us to the importance of the underlying orientation of the MPA towards shippers. Automobile manufacturers remain powerful actors in the QChat process. Although the QChat Charter indicates that any member is eligible to serve as one of the co-Chairs, it is informally understood that one will be a representative of an automobile importer. According to one MPA official:

> "They are the customers, they hire the lines and the stevedores … all these people have a common boss … if there's no Chrysler there's no Wallenius, if there's no Wallenius there's no Amports, if there's no Amports there's no ILA, etc. If they're happy, this happiness can be shared with everyone"

After intensive consultations – some 20 meetings in the first half of 1997 alone - the Quality Cargo Handling Action Team (QChat) was formed. Legitimacy for the program was derived from two sources, namely the Port-Wide Total Quality Leadership Group formed in 1993, and the focus on automobile cargo contained in the 1996 Strategic Plan. However, whereas the previous MPA effort had included all those involved in the automobile trade, this time the program was initially limited to one representative each from each of the sectors involved in automobile shipments (see Table 6.11). The initial members of the QChat were Chrysler, the ILA, Wallenius Lines, stevedore ITO, processor Hobelman and the MPA Marketing and Total Quality Departments.

Table 6.11 QCHAT Membership

Sector	Initial members (1997)	Current members (2000)
Automobile Manufacturer	Chrysler (now Daimler-Chrysler)	Daimler-Chrysler Mitsubishi Land-Rover North America Suzuki Motor Corporation Toyota
Steamship Line	Wallenius Lines	Wallenius-Wilhelmsen Lines K-Line HUAL NOSAC NYK
Stevedore	ITO (now P&O Ports NA)	P&O Ports NA Ceres
Processor	Hobelman Port Services (now Amports)	Amports Crown Auto Processing Pre-Delivery Services
Other	ILA MPA Departments (Marketing, Quality)	ILA MPA Departments (Marketing, Quality, Operations) MTA Police Steamship Trade Association Abascus Security Services Kerr Norton Marine (ship's agent) Vascor (surveyors)

Source: Total Quality Office, MPA.

Later in 1997, the membership of the QChat was opened up to include any grouping involved in handling automobiles in the port (see Table 6.11), and in 2000, the QChat issued a formal Charter. Although membership of the QChat has expanded significantly, some key players are not involved. For example, even though Mercedes USA is formally a signatory to the QChat Charter and is indirectly represented by Chrysler employees, employees at the local Belcamp processing and distribution facility are not involved since they do not have any direct dealings with the port (for more on this, see Chapters Four and Seven). For automobile importers, the low level of involvement of logistics firms operating beyond the waterfront is also a problem:

> "There are a few groups that could play a more active role – that would be the railroad and the haulaway – they are represented, but they don't play and active role because our initial emphasis was on the quality after the vehicle arrived…. As we continue to look at continuous improvement we realised we need to look further back down the line".

The QChat now consists of various work-group / sub-committees which report to each of the monthly meetings, including the monthly assessments (see below), training, terminal operations, and recognition of outstanding achievements. Participants point to numerous examples of the positive impact of QChat, including actions by the STA to ensure that safety vests are made available to all longshoremen, actions by the steamship lines to improve ventilation during discharges, improvements to parking lots by processors, and filling in of potholes on the Dundalk Marine Terminal addressed by MPA operations. The inclusion of automobile handling in the training program for longshoremen is also regarded as an achievement of the QChat (see Chapter 4).

Information generated through the assessment procedure is central to these successes. During the pilot phase, the founding members of the QChat experimented with specifying various quality criteria and establishing a method of mutual evaluation of performance in terms of these criteria. A central challenge was that outcomes could not be defined. This is because the range of potential damage to automobile is enormous, it is very difficult to tell when damage occurred, and most importantly, because automobile manufacturers were unwilling to share what they regard as proprietary information – for example, information on the costs incurred in repairing damage.

After some experimentation, the QChat participants (under the guidance of Total Quality Department head Barbara Leight and consultant Craig Rogers) have developed an assessment form that seeks to identify preconditions for damage. According to Rogers;

> "If you can't identify a quality standard – how deep or how wide or how far – then you have to identify quality factors that are pre-cursors to damage. You can have quite a significant finding using this approach. People accept that certain practices and behaviors lead to damage. Our focus went beyond damage – and look at how to eliminate or reduce damage. We look at what are the key factors that lead to possible damage. ... When you identify the factors behind damage you can also more easily identify remedial actions".

Each participant in the handling of automobiles (excluding the MPA and automobile manufacturers) assesses each other participant on a 3-point scale across 38 assessment issues. The scores are compiled, analyzed, and presented for discussion at the monthly QChat meetings. For longshoremen and stevedores who often bear most criticism when automobiles are damaged during discharge, the QChat is especially appreciated. Commented one stevedore, "we can hear each other's problems and act on it". A manager of an automobile importer noted the importance of sharing information so that particular groups wouldn't feel unfairly targeted:

> "The data is available to all members of the QChat, regardless of what element of the logistics or supply chain they support. The more you have someone understanding all the elements, the better you can have the understanding what piece they play."

The difficulties in specifying an agreed set of definitions of damage do point to the more fundamental issue of the boundary between arenas of co-operation and competition among port users. While the goal of the QChat is to achieve standardization around port usage issues, the automobile manufacturers have been careful to maintain a boundary between the arenas of standardization and competition. Dostall of Chrysler drew the boundary thus:

> "From the time the vehicle it arrives at the port to the time that it is processed through a processor to the time it is loaded on the ship – these processing procedures may vary from manufacturer to manufacturer - but the speed limit in the yard, the one-way traffic so that vehicles are not criss-crossing, the lay-out of the yard, the proper lighting so that you can have night-time delivery, sufficient rail ….these can be standardized."

Certain firm-specific practices have proved particularly resistant to change through the QChat program. For example, despite some effort, the participant in the QChat have not been able to get the automobile firms to agree on such mundane issues as where to leave the vehicle keys after discharge. In the words of an MPA official, "when we get up to the level of competition between the auto firms we just stay away from that because we aren't going to get anywhere with that".

The 'hard' evidence of the effects of the QChat on the level and nature of automobile shipments through the Port of Baltimore can be seen in the continued success of the port in this trade, although a precise cost-benefit calculus is of course impossible. Rather, the QChat reflects the continued re-enactment of the institutional legacies of the MPA. The port authority remains attentive, in the first instance, to shippers, and has sought to secure the common use of the port. This has involved carefully defining an arena of co-operation between firms that are otherwise close competitors, and crafting a series of collective actions to address problems in this arena. This has surely enhanced the ability of the Port of Baltimore to secure the business of a range of automobile importers, in much the same way as have the port's heterogeneous leasing policies.

Conclusion

The story of the Port of Baltimore's involvement in the automobile trade is important because it demonstrates that public port officials are able to resist the pressures to become captured by one or a few main players in the process of mutual specialization. The possibilities for this commodity diversity follow from three institutional legacies of the port authority. These were established during formative years of the MPA, have been sustained since then, and have exerted a powerful influence over subsequent decisions taken within the authority. These are an orientation towards the state and towards shippers, and the application of the common user principle to terminal leasing and operations. These features are institutional in the sense that they have gained a taken for granted status in the deliberations of MPA officials. The influence of these institutions and their ongoing re-enactment can be seen in the conscious policies, plans and reforms designed to attract container traffic. While the MPA's operating model certainly did change as a result of these conscious interventions, in each case we have seen how the changes reflected the institutional legacies. As a result, the MPA has avoided the practice of privatizing whole terminals that has become common in other ports, and developed a set of practices that blur the distinction between public and private in a more complex and heterogenous fashion.

The series of policy experiments and institutional changes constitute the MPA's response to declining fortunes in the container business. Members of the Baltimore port community do not blame this particular trajectory of institutional change for causing Baltimore's failure in the container business, looking rather to the combination of Baltimore's inland location and deregulation in the transportation industry. Most importantly, the changes left in place a series of operating practices that have proved compatible with the business models of various automobile manufacturers, as well as other shippers of non-containerized cargo.

It took several years for those working inside the MPA to acknowledge this formally. Today, collective programs such as the QChat serve to reinforce the port's commitment to automobiles, but it is important to remember that the consensus that is represented in the 1996 Strategic Plan was achieved through repeated rounds of strategic deliberation and experimentation. Not surprisingly, this commitment to automobiles remains under discussion, and so the chapter ends where it began. When Maersk invited the MPA to bid for its East Coast container hub, MPA officials responded enthusiastically, even though the 'after the fact' wisdom on this episode is that Maersk never had any intention of relocating to Baltimore. Nor should we expect anything less.

Chapter 7

Localization and Globalization Strategies in Moving Automobiles, 1980-1999

Introduction

The forgoing chapters have provided several reasons why we might expect to find differences in the particular services and facilities that ports provide for automobile importers. In part, this is because *ports as institutions* vary so much. In Chapter 4 we noted the considerable variation in the organization of ocean carriage, discharge, processing and land-side distribution. In Chapters 5 and 6 we saw how the legacies (structure) and policies (agency) of public port authorities influenced the institutional governance of these activities. The two port case studies showed that very different outcomes could result from the process of institutional change – selective displacement in the case of Long Beach, or a diverse institutional compatibility in the case of Baltimore.

However, thus far in the analysis, automobile importers and their specific requirements have been largely taken as given. To stop here would not take us much further than the standard derived demand view of infrastructure. This approach is not able to explain the process of mutual specialization that refers to the deepening relationships between automobile importers and specific ports (see Chapter 3). In this chapter we need to complete the circle, so to speak, by recognizing the importance of firm structure and strategy in the dynamic creation of patterns of port usage. In other words, we need to recognize that the relational fix has implications for both parties, and explore this empirically.

In this chapter I show that the distribution strategies of the various automobile importers vary considerably, and I elaborate the theoretical argument about why we should expect this to be the case. By comparing the distribution systems of various foreign automobile manufacturers in the US, I show how and why the various automobile manufacturers have used US ports differently over the period 1980 to 1999. I argue that port-distribution systems can be classified according to the degree of localization and globalization in the system. This has important implications both in determining how many and which ports are used, and how they are used. Table 7.1 below summarizes these differences.

Table 7.1 Usage of US Ports for Automobile Imports: Summary

Automobile Importer	Ports Used	Imports, 1999	Tentative classification of distribution system
Toyota	Portland, Long Beach, New Jersey, Baltimore, Jacksonville	541,000	Most localized
Nissan	Los Angeles, Seattle, New York, Newport News, Jacksonville	271,574	|
Volkswagen	Wilmington, San Diego, Boston, Houston	156,495	|
Mercedes	Jacksonville, Baltimore, Los Angeles	144,231	|
BMW	Port Hueneme, New York	133,596	|
Honda	Portland, San Diego	273,623	Most globalized

In constructing my argument, I have to dispel three interconnected, and highly unfortunate, legacies that pervade the vast literature on the automobile industry, namely the production bias, the assumption of certainty and the devaluation of diversity. All US and non-US automobile manufacturers have confronted uncertainties resulting from changes in market demand, regulatory and trade regimes, industry organization and production technologies. These uncertainties – I distinguish two types of uncertainty – are particularly intense for firms operating at the global scale. Firms attempt to resolve these uncertainties through securing a relational fix that allows the firm to co-ordinate strategic information across remote locations. In other words, by adopting particular business models, firms attempt to generate the information required by a dispersed (global) production-distribution system. Changes in business models – what might be thought of as experiments in organization – thus provide a partial account for changing patterns of port usage by automobile shippers.

However, the act of establishing a particular distribution system has consequences for the internal organization and external commitments of the firm (cf Selznick 1948). This is particularly true for firms operating at a global (as opposed to an intra- or inter-national) scale, since "globalization involves a criss-cross flow of exchanges within the context of a polycentric system, in which each center is considered in terms of its own specific resources" (Belis-Bergouignan, Bordenave and Lung 2000; 42). In turn, this implies that certain relationships and information is privileged within the organization. In this way, the relational fix influences the future development trajectory of the firm, and results in the continued diversity of firm organizational forms, including port usage patterns.

In this chapter I elaborate this theoretical argument before turning to case study vignettes of various automobile importers. In the case studies, I pay most attention to the localized distribution system of Toyota, contrasting this with Honda's globalized distribution system. I also review the hybrid local-global distribution systems of Mercedes, Volkswagen and others to provide points of clarification and comparison. However, I start the discussion with a brief general account of trends in the automobile industry in the US since 1980.

Recent Trends in the Automobile Industry in the US

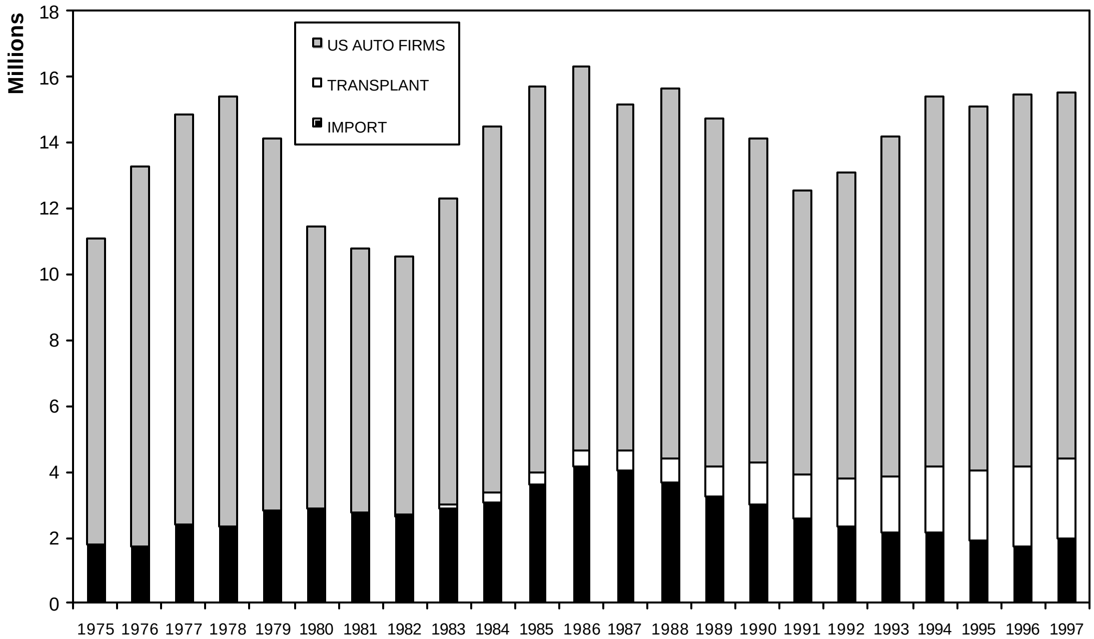
It is commonly held that the automobile industry is one of the most globally integrated (Dicken 1998; Sturgeon and Florida 2000), and the passing of Fordism is taken as emblematic of wider changes in industrial organization and economic regulation. It is possible to identify at least three general phases that each foreign automobile manufacturer has experienced in the US market. However, the case studies will show that each automobile importer experienced, and responded to, these phases differently, resulting *inter alia* in the diversity in patterns of port usage. The three phases may be characterized thus:

(1) A pre-transplant phase which had ended by the mid-80s for most automobile importers (except the Korean firms) following threats of trade sanctions and the Japanese voluntary limit on imports in 1981,
(2) A transplant expansion phase from the early-80s to the early-90s, which included a variety of responses by domestic firms, and which was characterized by rapid changes in the organization and location of production activities, and
(3) An emerging global-local phase in the 1990s, characterized by alliances, consolidations, mergers in both assembly and supply, and most recently, by changes on the distribution side of the business.

Figure 7.1 shows the trends in US sales of imports, transplants (ie produced within the US by foreign-owned auto firms), and US automobile firms. By 1980, the US Big 3 (Ford, GM and Chrysler) shared only three-quarters of US automobile sales, and plants were closing in the context of an economy-wide recession (see Bingham and Sunmuno 1991). Today, 'foreign' cars and trucks account for close to 30% of sales in the US. In a context of considerable trade tensions, this figure has been relatively stable since the mid-1980s. However, the proportion of imports compared to transplants has changed dramatically since 1980. In 1995, sales of transplants overtook sales of imports, and it is unlikely that this trend will be reversed in the foreseeable future. Imports thus represent a declining proportion of the US auto market – down from almost 27% in 1987, to about 13% in 1997 or an absolute decline of some 2 million cars and trucks per year.

In 1980, the foreign automobile manufacturer's share of the US market jumped from less than one-fifth to fully one-quarter of all new vehicle sales. In response to the threat of trade sanctions, the Japanese Ministry of Trade and Industry imposed a voluntary quota on exports to the US in 1981 (Rubenstein 1992). The quota was initially set at 1.68 million vehicles per year, but was raised in 1984 and 1985 to match increasing sales (Washio and Oki 1992). Although trade controversies between Japan and the US have persisted (see Dicken 1998), the rise of transplant production in the US has, for the most part, contained the controversy.

Figure 7.1 US New Car and Light Truck Sales - Imports, Transplants and US Firms



Source: NAAMA. Transplant production began in 1978 at Volkswagen's Westmoreland, Pennsylvania plant, although sales figures do not differentiate transplant production from imports for these years.

The first transplant assembly plant established in North America since the 1960s was the Volkswagen plant, opened in 1978 at Westmoreland, Pennsylvania (see Table 7.2 below). The first Japanese firm to establish a production facility in the US was Honda, at Marysville, Ohio. By 1990, all the major Japanese firms had established plants in the US. European manufacturers were slower to respond after Volkswagen's bad experience – the Westmoreland plant closed in 1988. However, both Mercedes and BMW opened plants in the US in the 1990s. Meanwhile, Volkswagen substantially expanded its operations at its Puebla plant in Mexico. Similar, but slightly later, processes of import penetration and transplant expansion have been noted in Europe and in various Asian countries (Sturgeon and Florida 2000).

Table 7.2 Transplant Automobile Assembly in North America

Company (Nationality)	City, Country	Date Established (closed)
Volvo (Sweden	Halifax, Canada	1963 (1998)
Honda (Japan)	Marysville, Ohio Guadalajara, Mexico Alliston, Canada East Liberty, Ohio Lincoln, Alabama	1982 1985 1987 1989 2001
Toyota (Japan)	Fremont, California (with GM) Cambridge, Canada Georgetown, Kentucky Princeton, Indiana	1984 1988 1988 1996
Nissan (Japan)	Aguascalientes, Mexico Smyrna, Tennessee	1966 1983
Suzuki (Japan)	Ingersoll, Canada (with GM)	1989
Mazda (Japan)	Flat Rock, Michigan	1987
Mitsubishi (Japan)	Bloomington, Illinois (with Chrysler)	1988
Subaru / Isuzu (Japan)	Lafayette, Indiana	1989
BMW (Germany)	Spartanberg, South Carolina Lerma, Mexico	1994 1996
Daimler (Germany)	S Tianguistenco, Mexico Tuscaloosa, Alabama	1985 1997
Volkswagen (Germany)	Westmoreland, Pennsylvania Puebla, Mexico	1978 (1988) 1966
Hyundai (Korea)	Montreal, Canada	1990 (1995)

Source: Sturgeon and Florida (2000); Dicken (1998); authors research.

US automobile manufacturers responded to the competition from imports and then transplants through a variety of strategies, including plant closures, the down-sizing of US models, entering into alliances or acquiring foreign firms to bring ‘captive’ import models to market, and attempts to re-organize labor relations (for a review see Rubenstein 1992). In particular, US manufacturers turned to learning and copying the Japanese production model touted as the *Machine that changed the world* (Womack et al 1990).

Much of the literature focuses upon the inadequacies of these responses, for example Ford’s early and failed attempt to make a ‘world car’ (see Bordenave 1998). But there were successes too; for example, led by Chrysler no less, the North American new vehicle market has been fundamentally changed by the addition of minivans and SUVs to an increasingly diverse product range. In other words, although not sufficiently responsive in the passenger car market, some US automobile manufacturers have nevertheless been able to respond by innovating in new market segments.

We should also not ignore the considerable and difficult changes that transplants faced when entering the US (see Kenny and Florida 1995; Abo 1998). Production in North America demanded a fundamental rethinking of an economic development model based on the export from Japan of a relatively narrow range of products, through what were by 1980 well-established distribution channels in the United States (see Mair 1994).

More cautious than other Japanese firms, Toyota chose to launch its US production through an alliance with the largest US automobile manufacturer, GM. The NUMMI plant at Fremont, California has proved highly successful (see Brown and Reich 1989). However, various authors have commented on the resistance within GM to adopting the techniques learnt here (see Schoenberger 1997). Be that as it may, the Fremont experiment heralded a trend that became more and more important in the 1980s and into the 1990s – that of strategic alliances between automobile manufacturers.

In 1980, there were 5 new agreements between automobile manufacturers - in the years 1986 to 1990 there were more than 10 per year. The figure rose to 17 per year in 1992 and 1993 (de Banville and Chanaron 1999). The purpose of these co-operative agreements has been to generate economies of scale in the production, technological and organizational learning, economies in research and development, and so on. More recently, less formal alliances have given way to outright purchases, and for this reason, Sturgeon and Florida (2000) report an increasing co-operation and consolidation in the automobile industry at a global scale (see Table 7.3).

Table 7.3 Largest Auto Manufacturers and Subsidiaries

1999 Rank by world Sales	Lead company	Partially and fully controlled subsidiaries
1	GM	Isuzu, SAAB, Vauxhall, Opel, Suzuki
2	Ford	Mazda, Land Rover, Volvo, Jaguar, Astin Martin, Kia, Daewoo
3	Toyota	Hino, Daihatsu
4	Volkswagen	Audi, SEAT, Skoda
5	Daimler-Chrysler	American
6	Renault	Nissan
7	Fiat	Iveco, Alfa Romeo
8	Peugot	Citroen
9	Honda	

Source: Toyota (2000a); Sturgeon and Florida (2000).

For some observers, these consolidations are regarded as evidence of convergence. However, although the automobile industry appears to be increasingly dominated by a few large, globally integrated firms, we cannot infer any specific changes in distribution patterns from this trend. For example, it might be argued that the acquisition, say of Land Rover or Volvo by Ford, actually secured the place of these imported brands in the US market. Virtually without exception, the current round of acquisition has been conducted on a Sloanist basis; that is, brand names have been maintained as a way of meeting the market demand for variety. Automobile manufacturers continue to pursue different strategies in various market segments, and to experiment internally with different business models. It is this variation in approach and strategy that provides one source of the observed variation and change in the usage of ports by automobile importers.

Similarly, we cannot necessarily infer changes in shipment patterns and levels directly from the consolidations in the automotive supply industry. Recently, it has been argued that consolidations in assembly have become less important than consolidations in the supply industry (see Sturgeon and Florida 2000; Sadler 1999). Many of the supplier consolidations have followed earlier rounds of strategic co-operation, often with the same product development goals as those on the assembly side (de Banville and Chanaron 1999). Be that as it may, from the point of view of automobile distribution, processes such as the commonalization or modularization of parts (two of the processes associated with increasing concentration in the supply sector) do not by themselves imply particular assembly location strategies or distribution systems.

More interesting for this analysis are changes to the industrial organization of the dealership sector. Unfortunately the literature on this topic is very limited, although this is changing as various writers contemplate the implications of information technology advances for automobile distribution (see Morita and Nishimura 2000). Chanaron and Jullien (1999) provide a European perspective from which some ideas may be drawn. They argue that by the 1990s in particular, there were relatively few improvements to be made in the production arena – "the search for strategic differentiation in the 1990s appeared to have shifted to a less technological domain" (p335). Given that marketing and distribution costs account for close to a quarter of the selling price (Freyssenet and Lung 2000), this was an arena ripe for change.

However it is also an arena in which automobile firms, and their closely allied dealerships, have been facing increasing competition from firms with more specialized service and logistics knowledge. Chanaron and Jullien (1999) argue that the distribution sector is not available as an arena for the application of lean principles – the application downstream of principles learnt upstream in the 80s – because of the institutional configuration of dealerships. Since dealerships, in Europe at least, are highly decentralized, they have limited capacity to generate information on market-wide demand, and can only respond to market demand with a relatively narrow range.

In general, thus, dealers in Europe are highly dependent on one automobile firm, and increasingly have had to look to service activities (repair, credit, spare parts, rental agreements etc) and used car sales to make profit. At the same time, however, dealers are facing intense competition in precisely these sectors – tire and oil change outlets cutting into repair service business, generic spare parts and so on. But automobile manufacturers cannot afford to abandon the downstream sector entirely – for reasons of information collection as well as for maintaining brand loyalty and so on. To resolve this problem, Chanaron and Jullien (1999) conclude that automobile firms in Europe are likely to become more involved in distribution, possibly leading to a concentration of the dealer networks, and the bundling of a range of options and services and longer guarantees. In effect, more cars will be sold on a pull basis – ie made and shipped to order.

Many features of this system apply in the US, but there are important differences. It is true that in the United States, there are fewer dealers relative to the size of the market compared to the European case (Chanaron and Jullien 1999). Also, not all dealers are limited by exclusivity contracts. However, the ability of automobile manufacturers to re-organize the dealership system to allow for more effective collection of market information is limited by the dealer protection (or ten-mile) laws. These limits on market entry have created a powerful constituency of dealers which many believe will slow the introduction of direct sales of automobiles through the internet.[1]

This section has reviewed three broad phases through which most foreign automobile firms in the US have moved since 1980. The growth of transplant production has been a central factor in the changing aggregate level of imports and thus of port usage, but other industry trends – such as industry concentration – do not by themselves account for changing port usage. Furthermore, as noted in Chapter 3, there is considerable variation in the patterns of port usage of individual firms. These observations require that we re-examine the assumption of a neat progression from Fordism to Toyotaism in the automobile sector.

[1] See Morita and Nishimura 2000; see also the debate between the Consumer Federation of America (CFA 2001) and the National Automotive Dealers Association (NADA 2001).

One way to be global?

Many social scientists have read wider theoretical and policy implications into the shifts in the automobile sector since the 1970s. For regional planners in particular, the changes suggested a renaissance. Since Fordist production systems had been sustained by national regulation and macroeconomic management spatial differentiation was less important. At best, localities were viewed as subordinate contributors to the production and sustaining of larger economic, social, cultural and political systems (see Lauria 1997). Conversely, Toyotaism was spatially discerning – just-in-time production, and the associated set of internal management techniques and external relationships demanded a particular geography (Smith and Florida 1994; Klier 1995 and 1999). Clearly some places were going to be more effective at sustaining the relationships required by Toyotaism than others,[2] just as some nations had been more successful at sustaining Fordism than others[3].

However, the assumed neat progression from Fordism to Toyotaism is overstated, and repeats some problematic assumptions about the automobile industry.[4] Revisionist writers on the history of the automobile sector have shown that Fordism and Toyotaism were never as all-encompassing as is often portrayed in the analyses of the emblematic industry leaders. For example, in *One Best Way?* (Freyssenet et al 1998), we are shown that the global strategies of automobile firms differ in important ways. Although this

---

[2] This understanding of how production systems are the product of social processes has been elaborated for the automobile industry in the work of Richard Child Hill, see Hill (1989).
[3] See Gelb (1991) for an insightful account of the labor and product market constraints that limited the ability of the South African apartheid economy to sustain what has been described as 'racial fordism'.
[4] I see my approach as entirely compatible with other critiques of convergence; see for example Gertler, 2001. I have also been influenced by the work of the International GERPISA Program on the Emergence of

analysis focuses on variations in national market structure and regulatory regimes, the analysis allows for incorporating spatial differences at sub- and supra-state level, and variations in corporate strategy. Instead of speaking about a neat transition from Fordism to Toyoatism, at most we can speak of periods in which particular business models - Fordism, Sloanism Toyoatism, glocalism (Mair 1994) and more - were more widespread than other forms of industrial organization (see de Banville and Chanaron 1999).

The key point to take from this literature review is that corporate strategy is embedded in dynamic economic and social systems that necessarily vary in time and space. There never has been a single production model, nor should we expect there to be one in the future. We should expect firms in the same industry to differ "diachronically and synchronically" (Belis-Bergouignan, Bordenave and Lung 2000). Furthermore, if we are to understand how a particular firm responds to the changing environment, we need to understand its unique history, internal structure and strategic actions.

In focusing on the wider implications of the emblematic production systems, the literature on the automobile industry has ignored questions of distribution and marketing. The focus on production was perhaps reasonable when macroeconomic demand was more stable, and when variety was suppressed more successfully by the anti-competitive behavior of the large automobile producers.[5] However, to the extent that it ever existed, the nexus between production and demand has been broken, and so competition and hence innovation, are no longer limited to the production sphere.

New Industrial Models, and in particular the volumes edited by Freyssenet, Mair, Shimizu and Volpato (1998) and Lung, Chanaron, Fujimoto and Raff (1999).

Old assumptions about the stability in market demand, which were in essence, assumptions of certainty, no longer hold.[6] Schoenberger (1997: 115) suggests that a relatively clear set of imperatives emerged for firms in the 1970s and 1980s; these "centered on quality, flexibility, collaborative labor relations, responsiveness to the market, and speed of response". It is this 'constantly' shifting operating environment that is invoked when we seek to understand the uncertainty that has characterized economic conditions for at least the last 20 to 30 years. As argued in Chapter 3, firms deal with such uncertainties by entering into appropriate sets of relationships with those providing inputs for their businesses, including public agencies, those demanding their products and services, and those in competition for shared resources. How these relationships are established has important consequences for patterns of economic development.

Uncertainty, Flexibility and the Organization of Automobile Distribution

To understand this more clearly, it is useful to draw a distinction between fixed and dynamic uncertainty[7]. I define fixed uncertainties as variations in the operating environment that can be recognized in advance. Thus, even though the operating environment may not vary precisely as and when expected, the recognition of the possibility that it might vary allows advanced planning for such contingencies. In other

---

[5] Such as those described by Ralph Nader in his 1965 book, *Unsafe at any speed*.
[6] Of course, the roots of this assumption in social science extend well beyond analyses of the automobile industry (cf Simon 1961 and Christensen 1999).
[7] This distinction is somewhat analogous to the distinction that Knight (1921) drew between risk, a known distribution of possible outcomes, and uncertainty, where the outcomes themselves are unknown. I prefer not to use the term risk to avoid confusion resulting from its strong colloquial association with financial markets.

words, these are uncertainties that can be transformed into risk (Knight 1921). On the other hand, dynamic uncertainties refer to changes in the operating environment that cannot be anticipated; they result from, amongst other factors, the strategic actions of others.

To respond to uncertainty, a firm requires flexibility. There are of course many ways to unpack the concept of flexibility; Belis-Bergouignan and Lung (1999) draw a useful distinction between operational, strategic and structural flexibilities to highlight the benefits of different production systems. These concepts refer, respectively, to the ability to change the rate of output, the mix of output, and the nature of the output. However, this formulation does not address the distinction between knowable (fixed) and unknowable (dynamic) uncertainties.

Florida and Kenney's (1990) notion of 'structured flexibility' in production does capture the essence of the kind of flexibility that is required to resolve fixed uncertainties. For example, automobile manufacturers know that that some production runs will contain errors, and that this eventuality cannot be eliminated entirely. Thus they are able to make contingency plans, to implement systems, and even to structure critical dimensions of the production-distribution system, for this eventuality. One way of doing this is to locate the capacity to identify and correct defects close to the point of final sale. While this capacity may be located anywhere between the assembly plant and the dealer, port facilities often fulfill this function. This is because ports are places where other where processing operations (post-voyage checking and maintenance) will take place anyway (see Chapter 4 for more on vehicle processing).

Similarly, seasonal changes in demand require the ability to change shipment volumes on a regular basis, such as the annual import of new models during the North American fall and winter[8]. As we saw in Chapter 4, 'flexible' storage capacity at ports – where land may an extremely valuable commodity – is something that automobile manufacturers value greatly. Viewed through this lens, we might regard such storage capacity as not much different from the inventory management benefits of just-in-time production. Both examples of the range of management systems designed to deal with shifts in market demand. The point is that once firms know that demand levels will fluctuate, even if they do not know precisely when or by how much, they can establish systems to deal with this possibility.

Dynamic uncertainties require a very different form of flexibility to be resolved. For example, let us return to the example of innovations in the light truck range. In the period 1985 to 1999, the US passenger car market contracted by 21%, while the market for "light trucks" grew by 84%. The market for "light trucks" is now as large as that for passenger cars. What this change reflects is not simply quantitative growth, but rather qualitative change resulting from the introduction, first of minivans and more recently the intense competition for the lucrative SUV market. This was no exogenous shift in market

[8] Foreign manufacturers increase import volumes towards the end of the calendar year, and decrease them during the summer. Using Quarterly Foreign Trade Data from 1994 to 2000 by US Customs Districts (obtained from the US Census Bureau, Department of Commerce), I estimated that on average, imports of automobiles in the 4th quarter are 7% above the annual volume, while in the 3rd quarter they are 7% below

demand that could have been anticipated in advance by market research. Rather it was the unknowable outcome of innovative strategic behavior by another firm. It may just as well have been the outcome of something as apparently unrelated as the unforeseeable changes in transport regulations and technologies associated with containerization.

The type of flexibility required to address dynamic uncertainty goes further than simply the ability of firms to acquire new information about products and processes, and connects with the notions that a certain changes in the operating environment require that the firm redefine itself (Schoenberger 1997). For example, if Toyota had only faced fixed uncertainties in 1980, the flexibility required of it would have only concerned managing a reduced level of exports to the US. However, much more was demanded; the firm, or rather key individuals within it, had to accept the notion that the firm was no longer simply a successful Japanese exporter of bottom-range passenger cars, but rather a global entity offering the full range of automobile models. At the limit, this kind of flexibility might thus be thought of as the ability to re-imagine the future of the firm.

What then is the relationship between the nature of the relational fix and flexibility? The link between the two revolves around the capacities of actors located within different organizational forms to identify, collect, process and use appropriate information. At the risk of over-simplification we can draw just one dualism through which to explore these issues. Certainly there are many different organizational forms and it is beyond the scope this analysis to provide a full account of the relative benefits of each. Rather, we are most

---

the annual volume (adjusting for changes in the aggregate annual level of shipment). Within individual ports, seasonal swings may be considerably larger.

interested in the dimensions that condition the relationship between firms and the ports they use. The most important dualism in this regard is the stance of the organization towards 'localization' and 'globalization' in the distribution of finished automobiles[9].

The concept of globalization refers to the strength of the relationships between portions of the firm in different locations around the globe. This does not describe a centralization / decentralization axis; even though many inter-regional relationships remain hierarchical in a center-periphery sense, globalization needs to be understood as an increasingly polycentric system (Belis-Bergouignan, Bordenave and Lung 2000). The concept of localization refers the strength of the relationships between different portions of the organization and actors outside the firm at the same geographic scale.

At the simplest level, the distinction between globalization and localization can be thought of as the distinction between making (or finishing / accessorizing) in a place, and shipping to a place. A globalization distribution strategy would emphasize the direct connection and decision-making coherence between assembly and the final point of sale, while a localization distribution strategy would emphasize intermediate points that allow the application of decentralized knowledge in decision-making processes. To re-state however, this is not simply a question of physical movement; in addition to knowing how to move, it is also a question of when and what to move.

[9] This idea is somewhat analagous, and builds upon the distinction between horizontal and vertical transnational strategies developed by Gilpin (1987). In this scheme, horizontal strategies involve spatially concentrated and integrated production, while vertical strategies involve a highly dispersed division of

This dualism in organizational structure is thus explicitly spatial, and should not be confused with more conventional business-economics notion of vertical and horizontal integration (cf Williamson 1975). It is now widely recognized that firms have a much wider range of possible forms of interaction, including contracts of differing terms, joint ventures, and a whole range of more or less direct (ie intermediated) relationships (see Biggart and Hamilton 1992). These nature and content of these relationships are very important (see Chapter 4). For now, we are concerned only with the stance of the firm towards the relationships within and between the different spatial arenas in which the firm operates.

As noted above, what distinguishes the internationalized, and increasingly globalized, firms of the automobile sector from those of an earlier era is the requirement that they co-ordinate and use information from multiple sources, dispersed across space, at some speed. The co-ordination and use of information is in essence, a learning process. In a review of the literature on organizational learning, Lawson and Lorenz (1999) argue that three ideas are central. First, learning depends on the existence of a shared system of knowledge; this is a precondition for the co-ordination and communication required for joint problem solving. Information by itself is not enough; it has to be transformed to become useable knowledge (cf Camagni 1991). Second, learning depends on the combination of diverse information. These two requirements establish the tension between localization and globalization within the firm.

labor. The key difference is that I regard localization in distribution as a horizontal strategy that may form part of a production strategy that could be either more vertical or more horizontal.

Ideally the firm should be strong in both dimensions, but there is a fundamental tension between these two goals. A strongly globalized firm can collect information in one place and use it in another place (cf Lazonick 1988, cited in de Banville and Chanaron 1999). So, for example, on the basis of shared means of communicating, changing market demand in the US can be translated into changing production schedules in Japan. However, the ability of the organization to collect a diversity of information depends in part on the strength of localization (see Abernathy 1979; also see Storper 1997). For example, changing market demand in the different regional markets of US can only be monitored close to those markets, and often with the co-operation of dealers and other actors outside the firm. In other words, a central problem for the global firm is the ability to learn both across regions, and within them.

Furthermore, while global and local relationships are important for flexibility, they present very different properties in this regard. For example, decentralized distribution facilities with strong connections to dealers and logistics providers (ie strongly localized) appear to be able to deal well with fixed uncertainties. The following section describes how Toyota achieved such a level of flexibility through regional distributorships and considerable port operations. This localized structure afforded the ability to perform various technical tasks, especially accessorization and stockpiling of vehicles, thus providing the firm with the ability to respond to seasonal and cyclical demand changes. However, to achieve this, Toyota had to tie itself to particular ports over the long term, which creates a series of commitments and obligations, thus compromising flexibility in the face of dynamic uncertainties.

Thus, the requirement for both localization and globalization creates a tension, which while not insurmountable, can be extremely problematic. The source of this problem resides in the third idea from the literature on organizational learning identified by Lawson and Lorenz (1999). This is the notion that an organization is likely to experience resistance to the use of new ideas. This is because routines and procedures within an organization secure the position of particular individuals or groups in the organization. The ability to change these routines and procedures thus acquires a political dimension. Strengthening one axis of the organization is thus not a neutral act; it reconstitutes power relations within the organization, which in turn conditions the future direction of the organization. These power relations are particularly important when considering the dynamic flexibility of the firm.

Localization and globalization strategies are associated with different sets of physical infrastructure requirements (see Table 7.4). In general, localization implies more points of contact between the firm and port authority, due to the long-term, direct contractual arrangements, more extensive permanent port operations, and direct involvement of the automobile firm in port processing operations. Apart from the different physical requirements, the two ideal-types imply different approaches to building and sustaining relationships with a variety of actors, including port authorities.

Table 7.4 Comparison of port infrastructure preferences of globalization and localization distribution structures

	GLOBALIZATION	LOCALIZATION
Processing	Third party	Parent firm, subsidiary or close associate
Contractual arrangements with port authority	Short-term; indirect	Long-term; direct
Land requirements	Smaller; but with desire for flexibility storage space	Larger and permanent
Local employment	Smaller	Larger
Accessorization	Limited	Extensive; FTZ may be particularly desirable
Landside	Landbridge connections more important	Landbridge connections less important
Terminal configuration	Common use	Dedicate / exclusive space

The ideas developed here in the context of automobile distribution are already implicit in some recent theorizing about the future of the production side automobile industry. Freyssenet and Lung (2000) construct three possible scenarios for the process of internationalization in the automobile industry, providing a less general, but much more accessible account of many of the same ideas contained in Belis-Bergouigan, Bordenave and Lung (2000). They argue that global economic and political space has been reconfigured by deregulation, falling trade barriers and increased competition. Companies can no longer rely on predictable domestic markets. Firms thus have to respond through a process of internationalization. However there are strategic choices about how to proceed. They identify three possibilities.

First, firms may follow a *global homogenization* strategy that would imply strong convergence – the creation of 'global car' models. We would expect regional specialization in production on the basis of economies of scale, supported by relatively strong inter-regional connections within the firm. Localization would be relatively unimportant, since under conditions of convergence, learning would be less place-specific. With regionally specialized production, this approach would probably result in greater levels of shipment of parts and finished automobiles of all kinds.

The second scenario is a polar opposite; *regional heterogenization* would imply the dominance of regional integration (ie European, American, Asian integration). Within regions there would be specialization and concentration – localization - and there would be significant differences between regions in terms of product ranges, employment practices etc. We would expect substantial trade only in niche markets under this scenario.

The third, intermediary scenario is described as *regional diversification / global commonalization*. This implies some shared fundamental traits (i.e. principal components and platforms) but differentiation in secondary factors (accessories, customization, etc) to allow different market offerings and workplace arrangements. This suggests an attempt to balance localization and globalization, highlighting the considerable complexities of following such a strategy. This scenario most closely approximates Mair's (1997) characterization of *strategic localization*. It is likely to result in increasing shipments of parts, but probably more assembly close to market and thus less shipment of finished automobiles.

Note that this typology is consistent with three possible combinations of strength in localization and/or globalization; the fourth possibility, that of weakness in both dimensions does not warrant mention. This should be no surprise; one would assume that a firm that is unable to collect information either within or across regions, and then use this information to direct its distribution activities, would be out of business pretty smartly.

In concluding, Freyssenet and Lung (2000) argue that different firms will deploy different strategies, and hence the eventual outcome is uncertain. In other words, we should continue to expect different responses from various firms, and different approaches from the same firm at different points in the market. Or, to employ the concepts developed above, we should expect different firms to experiment with localization and globalization in distribution as they seek to overcome the particular uncertainties of operating at a global scale.

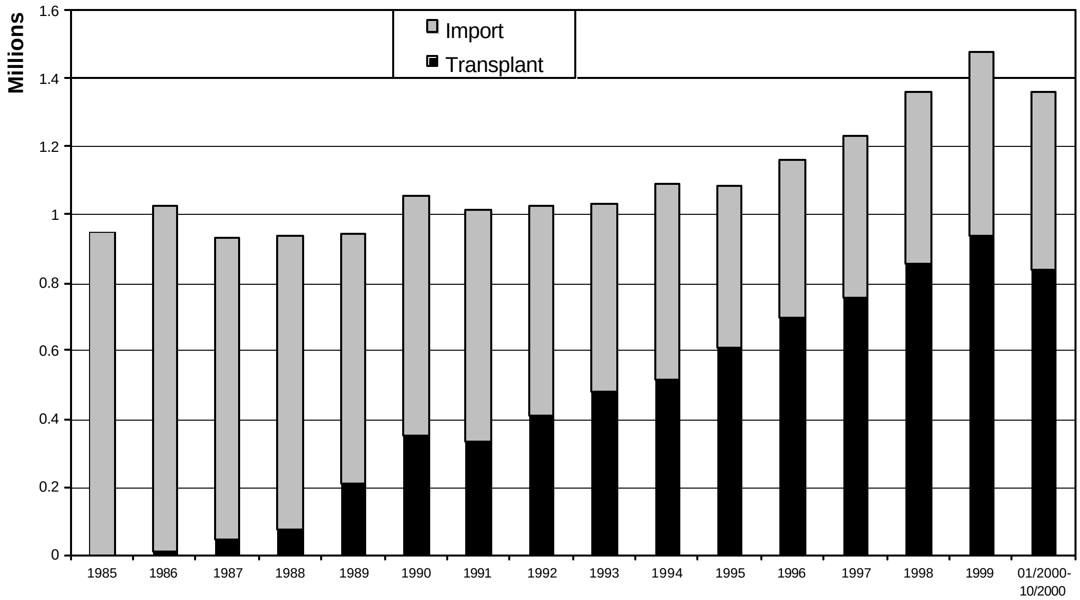
For this reason we turn now to individual firm case studies, starting with Toyota. Toyota has a distribution model that emphasizes localization in distribution within the US – while this overcame the fixed uncertainties of the pre-transplant phase, the distribution model is somewhat at odds with the requirements of shifting to a lower level, but more diversified set of imports and domestic production. Subsequently, Toyota has experimented with new organizational forms, with important implications for port usage. This contrasts with other firms that have maintained a more strongly globalized stance with respect to distribution, especially Honda, discussed after Toyota. The chapter concludes with some discussion of the two German manufacturers that provide some further points of comparison.

Toyota: localization in distribution

Toyota's initial entry into the US market was concentrated in southern California. Toyota Motor Sales USA, formed in 1957, located initially in Hollywood (Toyota 1988). It later migrated to Torrance in 1967 to be nearer the company's main import port and first US production facility (Toyota Auto Body Company) in Long Beach. Since the late 1960's Toyota has achieved considerable success in the US and global automobile market; in 1999 it had an 8.7% market share in the US, and worldwide it is the 3rd largest automobile manufacturer (Automotive News 2000). For Toyota in the US, the period since 1980 has been one of considerable change, the most important factor being the rise of transplant production.

Figure 7.2 below highlights these points. From a low of just over 900,000 vehicles sold in 1987-8, Toyota rebounded in the 1990s to reach a high of almost 1.5 million vehicles sold in 1999. Since first starting final assembly of vehicles at the NUMMI plant in Fremont, California, Toyota's domestic production has increased dramatically to almost 1 million vehicles in 1999. The implications on port usage by Toyota of this shift have been profound. Sales of imported vehicles have halved since the high point of just over 1 million vehicles in 1985.

Figure 7.2 Toyota in US Market: Passenger Car and Light Truck Sales



Source: Wards Auto Data Bank

Not only has there been a dramatic decrease in imports, the mix of imports has changed. Most Japanese transplant production has begun with the production of popular, large volume passenger cars (see Rubenstein 1992). For Toyota, production in the US began with the Corolla in 1984, and then the Camry in 1988. This production strategy reflects the global market entry strategy of the firm. It should be remembered that Toyota first specialised in reducing the production cost of cars produced for the low end of the market, and only later introduced differentiation at the top. Toyota did not begin diversifying its domestic (i.e. Japanese) product range until well into the 1960s, and it was increasing exports that provided the economies of scale that allowed the product diversification (see Belis-Bergouignan and Lung 1999). So, for example, between 1965 and 1971, the number of passenger car models rose from four to nine (Shimizu 1998).

The general point thus is that automobile shipments have occupied an increasingly specialised role in Toyota's overall product offering. Three points bear mention. First, small volume, higher value, and newer models are more likely to be imports, while established market 'favourites' are more likely to be produced in transplants. Of 20 models sold in the US, only 7 are produced in North America. Those not produced in the US include the Celica coupe, the 4Runner, RAV and LandCruiser SUVs, the MR2 Spyder sports car, and the Prius hybrid. While this restatement of the notion of production scale economies shouldn't surprise us, the implication is that the requirement for flexibility has become increasingly concentrated into the logistics operation of this global firm.

Second, all the vehicles in Toyota's luxury range, Lexus, are assembled in Japan. The Lexus range was first marketed in the US in 1987; in 1999 over 185,000 vehicles were sold in the US (Toyota 2000a). This represents almost 13% of all Toyota sales in that year, and almost 35% of imports. Toyota's initially uncertain, but apparently very successful, experiment in market segmentation has been copied by the other large Japanese producers (Nissan and its Infiniti range, Honda and its Acura range).

Third, Toyota's production in the US began with smaller passenger vehicles and only later shifted to the production of light trucks. Thus, light trucks represent an increasing proportion of imports; up from 39% of imports in 1985 to 53% in 1999. Toyota has been importing light trucks to the US since the 1950s; first the Land Cruiser, then the Hi-Lux, and since 1985, the Four-Runner SUV. The first light truck Toyota produced in the US, now known as the Tacoma, was introduced in 1991. The Tundra, assembled in Indiana, has only just made it to market. Similarly, production of the Sequoia SUV in the US has also only just begun. This is partly a result of Toyota following the phenomenal growth in light truck sales relative to passenger vehicles in the 1990s.

Transporting higher value and larger vehicles has important implications for logistics planning. Larger imported vehicles have required ships with higher, or even moveable decks, as well as substantially increasing the costs of landside distribution. This is related to the shift in ship design from Pure Car Carriers to Pure Car / Truck Carriers discussed in Chapter 4. Note also that these changes in import mix have tended to increase the relative importance of reducing damage during port handling.

Despite this product diversification and its attendant implications for port operations, the overwhelming story for Toyota North America since 1984 has been one of dramatically expanded transplant production and reduced imports. Table 7.5 below shows the increasing level and range of operations – from the production of truck beds in Long Beach in 1972, to the production of the Sequioa SUV that reached market in late 2000. This fundamental shift has created pressures on the distribution system and changed Toyota’s usage of ports.

Table 7.5 Toyota Production Facilities in North America

Facility	Location	Opening Date	Products
TABC	Long Beach, California	1972	Truck beds, catalytic converters
Calty Design Research, Inc	Newport Beach, California	1973	Design
Toyota Technical Center	Ann Arbor, Michigan	1977	R&D
NUMMI	Fremont, California	1984	Corolla (from 1984) Tacoma (from 1991)
Canadian Autoparts Toyota	Delta, British Columbia	1985	Aluminum Wheels
Toyota Motor Manufacturing Kentucky	Georgetown, Kentucky	1988	Camry (from 1988) Avalon (from 1994) Sienna (from 1997) Engines
Toyota Motor Manufacturing Canada	Cambridge, Ontario	1988	Camry (from 1988) Corolla (from 1988) Solara (from 1999)
Bodine Aluminum Inc	St Louis, Missouri	1993	Aluminum Castings
Toyota Motor Manufacturing Indiana	Princeton, Indiana	1998	Tundra (from 1998) Sequoia (from 2001)
Toyota Motor Manufacturing West Virginia	Putnam County, West Virginia	1998	Engines

Source: Toyota (2000a and 2000b); Corporate interviews.

Before Toyota began production at New United Motor Manufacturing Inc (NUMMI) in 1984 in Fremont California, cars were imported from Japan through 8 seaports (see Table 7.6 below; note that the Chicago railhead was also regarded as a port of entry). Each of the non-West Coast ports-of-entry corresponded to a major regional market, thus indicating the localized distribution structure. Apart from the company distributorships in Los Angeles and New York, the other 10 regional distribution operations began life as independent firms. Since the mid-1970s, all but two of these distributorships have been sold back to Toyota Motor Sales. While some elements of the regional structure of the Toyota distribution system have been maintained, other activities have been centralised.

Table 7.6 Toyota Motor Sales: Import Port Usage and Regional Distributors

		Pre-Transplant Period (circa 1975)	Current (2000)
Import Ports Used		Portland, Benicia, Long Beach, Houston, Jacksonville, New Jersey, Baltimore, Boston, Chicago railhead	Portland, Long Beach, New Jersey, Jacksonville, Baltimore
Distribu-torships	Company	Los Angeles (formed 1957) New York (formed c1966)	San Francisco, Los Angeles, New York, Portland, Denver, Kansas City, Alaska, Chicago, Cincinnati, Boston
			Central Atlantic Toyota (Baltimore)
	Indepen-dent	Mid-Southern Toyota (Chicago, formed 1966; split into Chicago, Kansas City and Cincinnati in 1973) Southeast Toyota (Jacksonville, formed 1969) Gulf States Toyota (Houston, formed 1969) Mid-Atlantic Toyota (Baltimore, formed 1971) New England Toyota (Boston, formed 1971) Portland, Alaska, Denver	South East Toyota (Jacksonville) Gulf States Toyota (Houston)

Source: Corporate interviews; Toyota (1988).

The independent distributorships were established during the mid-1960's at the time when Toyota was expanding beyond California. The degree of autonomy enjoyed by the independent distributorships was periodically adjusted in order to ensure that "the system did not degenerate into simply being a loose group of sales companies" (Toyota, 1988; 215). The first independent distributorship to be formed, in 1966 was the Chicago-based Mid-Southern Toyota. In 1973, this company was split into three separate companies, each responsible for a smaller number of states. Finally, in 1976 the three companies were bought by TMS and transformed into the Chicago, Cincinnati and Kansas City sales regions.

Apart from buying cars from Toyota at a discount and then being responsible for warranty and goodwill costs, the private distributorships fulfilled three important, but separable, functions. In the pre-transplant period, the company distribution regions also fulfilled these three functions. First, they serviced a dealer network, thus maintaining contact with the point where sales actually took place. This is a crucial information-gathering function since dealers were (and still are) consulted closely when regional sales staff prepared production orders. These production orders ultimately inform aggregate production levels, as well as planning product and model mixes, colors, and various optional accessories. Second, they were responsible for consumer parts distribution. And third, they were responsible for port reception, although all made use of some independent processing firm. In short, they ran the region, and since the port facility was the responsibility of the distributorship, it is not surprising that there was an almost complete correspondence between the two. Conceptually, this distribution system may be thought of as being strongly localized, since there was virtually complete integration of distribution activities at the US regional market scale.

This localized distribution structure resulted in significant processing and accessorizing activity in the various ports used by Toyota. The high level of accessorizing activity was also consistent with tariff policies designed to protect US light truck manufacturers in the 1980s. From 1980, duties on passenger vehicles declined from 2.9% to 2.5%. However, duties on pickups (such as Toyota's Hilux) have always been higher, effectively at 25% since 1980 (Dave Beck, USITC, Personal Communication). One of the ways in which Toyota could reduce such value-based tariffs was to add accessories to such vehicles at the port of entry. This would allow savings even if the accessories were imported, since the duties on automobile parts are generally lower than those applying to the entire vehicle. Toyota's production of truck beds in Long Beach from 1972 also avoided this problem.

Note however that tariff policies only explain why Toyota, and other firms importing light pick-up trucks, might have engaged in more accessorization activities than firms importing only passenger vehicles. What tariff policies do not explain is why Toyota chose to locate these activities at the port of entry rather than at the dealerships, especially since this system was established before 1980 when the tariff was first imposed. To account for this, we still need to turn to Toyota's localized distribution structure.

With the expansion of transplant production Toyota has rationalized its distribution networks for both parts and automobiles, and thus its usage of the various seaports. However, this was not achieved in one step, nor without considerable experimentation and reflection. Nor is it a finished project.

Apart from Gulf States Toyota and South-East Toyota, all the private distributorships have been sold back to Toyota Motor Sales (TMS), USA Inc. In the process, the three functions identified above were separated. Company sales regions (distributorships) continue to provide dealer interface and generate production orders. The company sales regions are however no longer responsible for parts distribution and port operations.

Consumer parts distribution is now the responsibility of the North American Parts Logistics Division of TMS (Toyota 2000b), which operates two Parts Centers in Ontario, California and Toledo, Ohio. These Parts Centers supply smaller Parts Distribution Centers in various US locations, which in turn supply the dealers.

Toyota Logistics Services (TLS), a subsidiary of TMS, is responsible for production parts logistics and vehicle distribution. TLS is thus responsible for what are now called Vehicle Delivery Centers at the various ports and the assembly plants (Thomas, 1998), Toyota's in-house trucking company, and it co-ordinates supply of production facilities in California, Kentucky, Indiana and Ontario (and from next year, West Virginia). Production activities have however remained under Toyota Motor Manufacturing North America, Inc, unlike in Japan where Toyota Motor Company and Toyota Motor Sales merged in 1982 in order to extend "the principles of pull production" (Belis-Bergouignan and Lung 1999). In this way, the continued split between production and distribution within Toyota's North American operation reflects the history of Toyota's North American market penetration.

So, with the formation of TLS, decisions about port usage were, for the most part, centralized. Since the early 1990's, Toyota has stopped using the Port of Boston and has closed its facilities at Benicia (although it still exports through the private Amports terminal) and Chicago (this is now simply a railhead, not a port of entry). Toyota stopped using the Port of Boston in 1992. In this port, Toyota did not have a direct contractual arrangement with the port authority. As a hold-over from when Boston was an independent distributorship, Toyota was represented in the port by the independent automobile processing firm, Foreign Auto Service (FAS). Since losing the Toyota business, FAS has entered into a joint venture known as the Boston Autoport, with a logistics firm, Diversified. The Boston Autoport now handles Subaru shipments.

Unlike Honda, Toyota has not stopped using East Coast ports entirely. The reason for this rests, in part, in the particular relationships that the company has with the ports of Baltimore, Jacksonville and New York, respectively. When pressed as to why TMS had not closed all the East Coast port operations, one Toyota distribution manager at a West Coast facility ascribed it to 'politics'. In part, this was politics with a capital P – apparently the firm did not want to be seen to be withdrawing business from too many localities. Equally important, the decisions reflected intra-firm politics and the resistance to changing established routines and practices that follows the creation of organizational structures. These are obligations to localities that include, and extend beyond, the contractual ties that Toyota maintains with various US port authorities.

Another West Coast logistics manager highlighted the role of the dealers in this decision-making process, arguing that they were an important constituency in favour of maintaining the port processing and accessorizing facilities. Currently, a dealer in the interior of the US may have to wait up to two weeks between when they place final orders for specific accessories and when the vehicle is delivered to the point of sale. Without the capacity to accessorize at the port facility, this order would have to be transmitted to the assembly plant. Sea travel time would then add up to another two weeks to the delay. This is precisely the kind of flexibility benefit that the localised distribution system was supposed to provide.[10]

In New York, Long Beach and Portland, Toyota Motor Sales operates large port facility on long-term lease. This direct contractual relationship with the port authority – a result of Toyota localized distribution system - creates a series of formal and informal commitments and obligations that have remained in place to this day (see Chapter 5).

In the case of Jacksonville, the port remains the port of entry for the private South-East Toyota distributorship. This is the largest franchised distributor of Toyotas in the world, distributing some 240,000 vehicles in 1999 to 160 dealers in Alabama, Florida, Georgia, and North and South Carolina (Thuermer 2001). As with the other independent distributorships prior to 1990, SE Toyota combines dealership, parts and port functions. SE Toyota's presence in the Port of Jacksonville also provides a facility for the importation of Lexus vehicles[11].

However, SE Toyota has moved its main accessorizing activities away from the water, preferring to haul vehicles from the Port of Jacksonville to Commerce (Georgia) by land. In part this is because just over 80% of SE Toyota sales are of domestically produced vehicles (Thuermer 2001), and these are delivered to Commerce by rail. Similarly, the other independent distributorship, Gulf States Toyota, has stopped using the Houston

[10] I have no reason to dispute the assertion that dealers have supported the maintenance of port facilities, but I would remind the reader that this perspective only makes sense in the absence of accessorization by dealers.

port, and has built a processing facility in Houston about 30 miles from the sea. Since 1994 all Gulf State Toyota imports from Japan have been railed from the Port of Long Beach – domestic product also comes overland. Note that in these instances, it was the independent distributorships that were the first to experiment with off-water processing, showing themselves to be more responsive to the change in the mix between import and transplant production.

The reason why Toyota remained in Baltimore through the 1990s revolves around the particular trajectory of Central Atlantic Toyota (CAT). Although a full subsidiary of TMS, CAT was created with more independence than other regional distributorships. A detailed discussion of this intermediary case is illustrative of the concerns facing the Toyota managers as their operating context changed, and why they have chosen to maintain close contacts with so many US ports.

Central Atlantic Toyota, Baltimore

Central Atlantic Toyota grew out of Mid-Atlantic Toyota (MAT), the firm that was established in Baltimore in 1970 as the independent distributor for the District of Columbia, Pennsylvania, West Virginia, Virginia, Delaware and Maryland. At the Port of Baltimore, Crown Auto Processors initially did processing work for Toyota and others. MAT purchased Crown Auto Processors in 1975. As with other private distributorships, the MAT was responsible for all distribution, sales and marketing activities, and would

[11] Lexus has operated as a separate division within Toyota Motor Sales, USA, since being launched in 1987 (Toyota 1988). The distribution system for Lexus is very similar to that for Toyota; Toyota Logistics

enter into contracts with the dealers. And, as with other private distributorships, MAT engaged in considerable accessorization – commented an executive with almost 20 years in the company, "in the old days, Toyota allowed the dealers to do lots of accessorization, shipping very basic cars". This accessorization included radios, air-conditioning, show wheels, adding vinyl roofing, roof racks, and so on.

The accessorization work was an important profit-making opportunity for the distributorships, made possible by the fact that they combined import operations, dealership management and consumer parts distribution functions – the fact that the distribution system was localized, if you will. At the margin, it could be argued that such distributorships actually encouraged customer choice, thus preparing the way for later model and range diversification (see also Loubet 1995 in Chanaron and Jullien 1999).

In any event, this structure, emphasizing localization rather then globalization in distribution, provided Toyota with the capacity to collect information about different (regional) market segments, and to a certain extent act upon this information appropriately. For example, SE Toyota could provide Floridians with air conditioning at a time when this was not standard in relatively low cost vehicles. The particular system thus provided a high degree of static flexibility.

MAT was the last distributorship to be sold back to Toyota, in 1990; in terms of the licensing agreement, the owner, Frederick Weisman, was not allowed to extend the distribution rights to a third party. MAT was named a company sales region, Central

Services handles import operations for the four sales regions that serve 174 dealerships (Toyota 2000b).

Atlantic Toyota (CAT). However, CAT was allowed to operate on the same basis as the private distributorships, even though it was now fully within the Toyota group. In the words of the regional manager: “we were a sales region owned by Toyota but we had an independence about us in that we had a parts distribution center, and the port”. Why would Toyota Motor Sales have changed this aspect of the business model at that stage? In the words of one company official, “it was a conscious experiment to see whether we could get better results by having the three elements tied together with intelligent administration of resources”.

The key difference between this distributorship and the other company distributorships, was that CAT held on to all three functions. Today Central Atlantic Toyota operates in the Port of Baltimore as Quality Port Processor (QPP). They are also a distributorship that sells, services, does the dealer interaction, hires and releases dealers, and they operate a parts distribution center (PDC). In other cases, when Toyota Motor Sales bought back the independent distributorships, they did often away with the automobile processing facilities (Chicago, Boston), and in many cases they did away with the PDC as a way of achieving economies of scale. Today, QPP is the only Toyota processing center serving a single distributorship. Regional managers in the other company distributorships are responsible for fewer functions than the managers at CAT – they are responsible for sales, service, management, dealership contact, marketing assistance – but generally they do no parts distribution, and definitely no processing work.

In fact, the only differences between CAT and the fully independent Gulf States and South East Toyota, are that the independent firms carry the warranty risk, and they have some liberties to do additional or different accessorization, since they are allowed to go outside Toyota OEMs (original equipment manufacturers) for supplies.

As it happened, in early 2002, Toyota Motor Sales announced that it would be closing the Baltimore port facility when its lease expired in 2003. The Port of New York was selected from amongst four ports (also Baltimore, Wilmington (DE) and Philadelphia) to be the Northeast hub for automobile imports for the company. Toyota committed to a 15-year lease that includes various improvements to the existing facility. This move both rationalizes and deepens Toyota's localized approach to port operations. This is occurring within the overall context of Toyota's reduced reliance on imports and hence port operations, as revealed in these comments from Toyota Logistics Services vice-president, Jim Byers:

> "Increasing North American vehicle production and more direct shipment from plant to dealers, is a major reason for Toyota's decision to consolidate mid-Atlantic and Northeast port operations at Port Newark for the handling of vehicles. The network changes will permit Toyota to deliver vehicles to its dealers more expeditiously while keeping transport costs in check" (cited in AJOT 2002).

Some Toyota managers interviewed for this study were actively engaged in the internal debate about the future of the Baltimore facility. For example, a manager at CAT presented the benefits of the CAT model very much in terms of fixed uncertainty:

> "Basically it (the business model) provides a very co-ordinated approach to servicing our dealers. If they call me, and I'm an independent processor I have a high interest because my compensation is tied to the success of the organization … but here I feel the same way; beyond that, being a Toyota Associate, I have an even higher level of commitment because we have regional autonomy that we

> need to preserve and we need to service. So I have a high degree of concern and I think most Associates do as well, because we feel of ourselves as a small unit, not a large company, not that we would be less interested (if we were less autonomous), but I think it puts an exclamation point to everything we do. We like the independence if you will. I think it's an interesting concept".

Note that despite the commitment of this manager to regional autonomy, this was not a blindly unreflective endorsement of the status quo. He was genuinely debating the merits of the different options, and later in the interview speculated about a variety of potential future scenarios. These included the development of an inland distribution hub (ie following the approach of SE and Gulf States Toyota) serving the entire Northeast, the consolidation of the NY and Baltimore processing activities in one port. He even agreed that QPP (ie CAT) might consider doing processing for other automobile importers – something that DAS, the processing subsidiary of Nissan, has done as Nissan volumes have fallen.

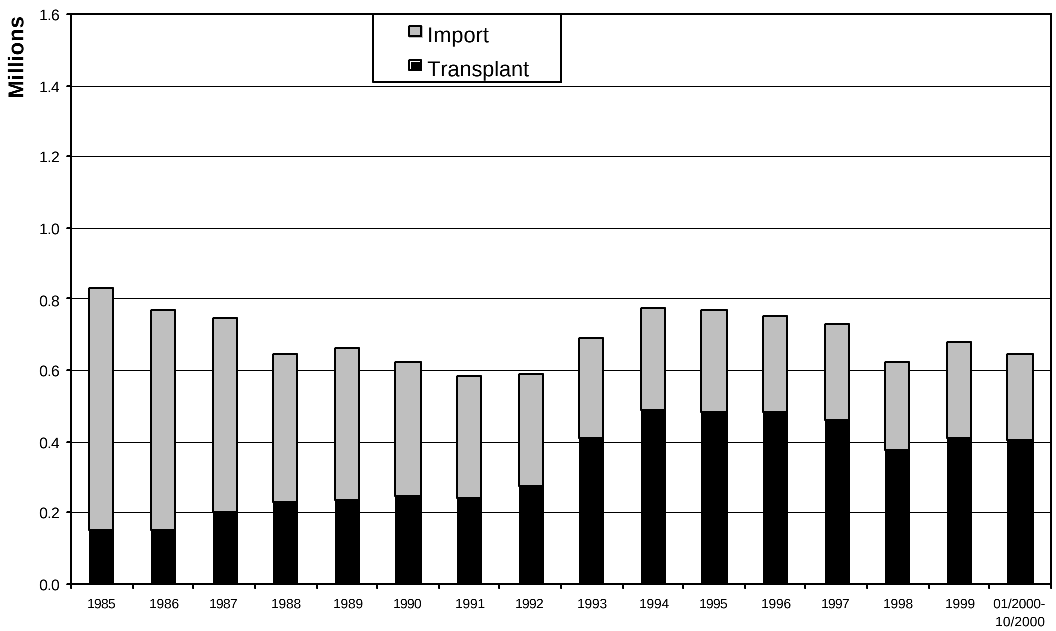
For the most part thus, the vertical integration (in a business literature sense) of the distributorships involved a weakening of localization in distribution. In part this was made possible by the changed requirement for static and dynamic flexibility. With an increasingly wide range of model offerings and variations, the flexibility offered by the localized model, particularly the large amount of accessorization, became relatively less important. Rather, as transplant production increased, Toyota in North America required a greater continent-wide coherence, especially in relation to parts distribution. However the model was not implemented overnight, and not without conscious experimentation.

In summary then, the reason why Toyota currently uses more ports than other automobile importing firms is best understood in terms of the historical trajectory of the firm. Independent regional distributorships were established when the firm first entered the North American market, with an almost one-to-one correspondence between these distributorships and ports of entry. This business model provides much of the flexibility that allowed the firm to succeed. With transplant production, the firm has consolidated its distributorships, but has not consolidated its ports of entry to the same degree as other firms. This is reflects the ongoing processes of strategic planning and decision-making within the firm. The formation of CAT as a semi-independent unit within the firm is an example of such experimentation that is providing the firm with valuable information as it considers its next step.

The history of Toyota's closest rival in Japan, Nissan, resembles the story sketched above. Nissan also operates a strongly localized distribution model. However, Nissan has performed poorly in the North American market in recent years (see Figure 7.3). In 1999 Nissan sold 678,000 vehicles, of which 272,000 were imports. This is close to half the import level of Toyota, and a 60% decline from 680,000 imports in 1985, in a context where overall sales have declined by 18%. Nissan opened an assembly facility at Smyrna in 1983 – production here has been cut back at this plant in recent years.

Nissan automobiles are imported through Los Angeles, Seattle, Jacksonville, Newport News and New York – a pattern of regional representation that is essentially no different from Toyota's. Processing of vehicles is conducted by Distribution Auto Services (known as DAS), a wholly owned subsidiary of Nissan Motor USA. However, unlike the Toyota Motor Sales port processors, who only act on behalf of limited numbers of GM exports, DAS has been actively seeking additional clients to sustain business volumes as Nissans fortunes have waned.

Figure 7.3 Nissan in US Market: Passenger Car and Light Truck Sales



Source: Wards Auto Data Bank.

Honda: not so local after all

The Honda Corporation has been described as having a local-global character (Mair, 1994). In the production arena, this organizational model has the benefits of localized learning and responsiveness, while maintaining global coherence. This suggests that Honda has been able to achieve a unique balance of localization and globalization. While this may be true in the design and production arenas, the US distribution system of the firm has a decidedly global orientation. In this way it provides a useful comparison with Toyota.

Honda was the first Japanese firm to begin transplant production in North America – in 1982, at Marysville, Ohio then in Mexico in 1985 and in Canada in 1986, and finally in East Liberty, Ohio, in 1989. Production in North America has become more extensive than that of Toyota – with an equivalent aggregate level of transplant production approaching 1 million vehicles per year, 75% of Honda's US sales are produced in transplants, versus 65% for Toyota (see Figure 7.4). Exports of US production have also reached significantly higher levels than that of Toyota.[12] However, like Toyota, Honda tends to produce its large-volume cars in transplants, and import SUVs, minivans and sports models.

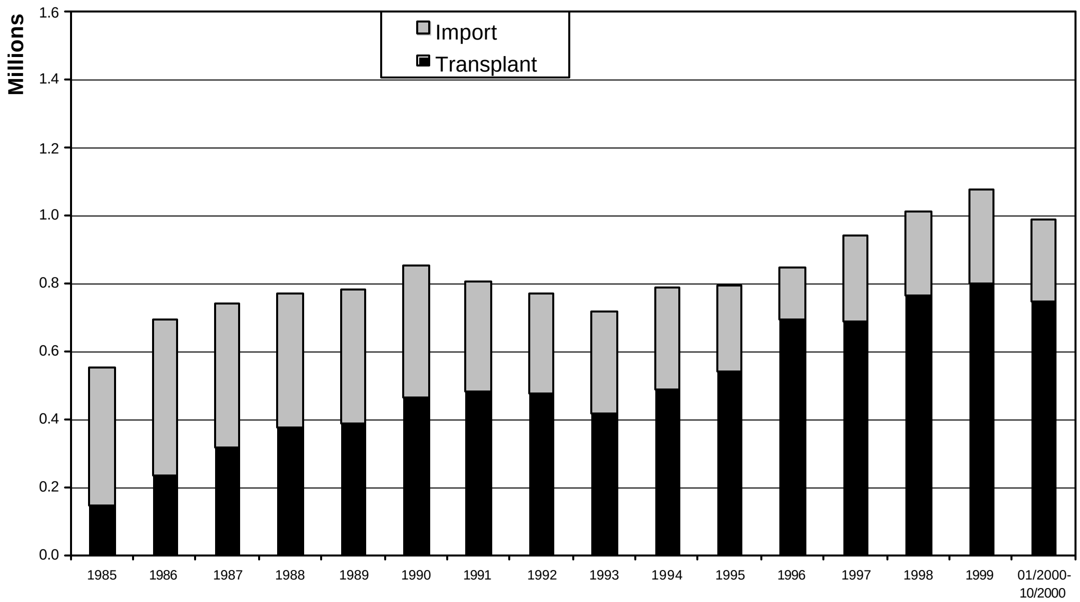
On the downstream end of the business – ie the distribution of vehicles – Honda has opted for direct and close relationships with dealers without a highly regionalized distribution system.[13] Essentially what this implies is a strongly globalized business model. Thus, Honda tends to ship automobiles "showroom ready". It does not have an extensive network of preparation and accessorization centers. Unlike Toyota, Honda has decentralized these services to the dealerships. According to Honda executives, this stronger dealer network has the advantage of improving customer relations. The goal thus

[12] Honda exported over 100,000 vehicles in 1994, and approximately 50,000 per year in the late 1990s when US markets were booming. Toyota exported almost 70,000 vehicles in 1995, and only approximately 30,000 per year in the late 1990s.

[13] This is a global corporate goal. Sean Willis of the Logistics Department at Honda Europe observed that "Our biggest aim is for cars to go straight to the customer and reduce inventory, as is the case for US production" (quoted in Cullen 2001a).

of Honda port operations is, in the words of one port facility manager is "to the get the car out to the dealer as fast as possible".

Figure 7.4 Honda in US Market: Passenger Car and Light Truck Sales



Source: Wards Auto Data Bank.

In this context, it is perhaps not surprising that Honda has never operated port terminals directly; rather it has maintained contracts with various processors and terminal operators. Of course, the firm is physically represented in each port, but operations are on an agency basis[14]. Apparently Honda managers have never seen the need to have direct contact with port authorities; to quote one Honda employee, "it is the way we have always operated". This is despite the disruptions caused when Honda's port processor, Pasha, was forced to leave the Port of Long Beach (see Chapter 5). Honda executives

[14] Despite the fact that American Honda does not have extensive processing or accessorization operations in Portland, the firm does have a long term lease for the use of a terminal in the Port of Portland.

admit that they were caught unawares – "we were a little naïve" - but ultimately this surprise simply contributed to what was already by then, an increasingly rationalized distribution system. In other words, the events in Long Beach did not lead the firm to change its distribution operation, but rather it reinforced what they were doing already.

How has this process of rationalization impacted patterns of port usage? Honda started importing to the US in 1972, initially through six ports associated with each of the major US market regions. Since then, Honda has moved completely to a land-bridging[15] distribution model, and now uses only two ports (see Table7.7). Honda's land-bridging started in 1984 with the end of operations at the Port of Houston – although this might more accurately be described as a mini-bridge. Two years later a full land-bridging model was implemented; Honda ceased operations at three East Coast ports (Jacksonville, Newark, Portsmouth). As a result, Honda, which imports the same number of vehicles as Nissan, only uses two West Coast ports for all imports. Note however the rationalization of port usage is unlikely to proceed any further – in the words of one Honda manager, "we wouldn't want to have all our eggs in one basket".

Apparently American Honda took this lease because it was a way of avoiding a secondary move by longshoremen from the point of rest on the dock to the railhead.

[15] The term 'land-bridging' has been coined in relation to the container shipping business to describe the use of ports on only one coast of the continent, and then to move goods (typically by rail) across the continent.

Table 7.7 Honda: usage of ports for imports since 1980

1980 PORTS (PROCESSOR)	CLOSURES	OPENINGS	2000 PORTS (PROCESSOR)
Houston (Port Services) Long Beach (Pasha) Richmond, CA (Pasha) Portsmouth, VA (Hobelman) Newark (Shimazaki) Jacksonville (Hobelman) Portland (Autowarehousing)	Houston 1984 Long Beach 1989 Richmond 1995/6 Portsmouth 1986 Newark 1986 Jacksonville 1986 Los Angeles 1999	Los Angeles 1989 San Diego 1999	Portland (Auto Warehousing) San Diego (Pasha)

Source: Corporate interviews.

At the same time, it should be noted that Honda does use several other ports for exports. Exports to Japan began in 1987, and now go to 90 countries on every continent. In the most successful export year to date, 1994, over 100,000 vehicles were exported. Honda makes use of six ports to export – San Diego, Los Angeles, Portland, Jacksonville, Newark and Port Everglades.

Because Honda 'pushes' cars to market across the continental land-bridge, landside connections are a particularly important factor in their port selection and Honda has worked with rail companies to design, build and use a flexible auto-carrying railcar known as the Automax (for more on this point, see Chapter 4).

Comparing Toyota and Honda

There are various lessons to be learnt from the comparison of the distribution models used by Toyota and Honda in the US. The firms share several circumstances; both are Japanese importers that have increasingly switched to transplant production of their most popular models. Both must be regarded as successful in their own terms; both have secured an increasing share of the US market. Together, the cases demonstrate that overall firm flexibility may be achieved from either localization in distribution, as in the case of Toyota, or globalization in distribution, as in the case of Honda.

However, these differences have, to some extent, become inscribed in the structure of the organization, and in the practices, routines, and commitments that influence, amongst other things, their subsequent patterns of port usage. On the other hand, even though individuals within the firm do develop commitments to particular structures, both cases show us that business models remain continuous ‘works in progress’, objects of reflexive experimentation.

Despite the qualitative difference in the business models employed, it might be possible to argue that some of the differences between Toyota and Honda relate to their respective sizes. To some extent this is true; surely the larger the firm, the more likely it is to have regional distributorships. However, even this source of structural differentiation within the firm need not necessarily apply in the same way in all instances. The remainder of this chapter addresses this issue through a brief discussion of the distribution systems used by various German automobile manufacturers.

Hybrid strategies: between local and global

Two firms with substantially less market presence than Honda have, in the case of Mercedes maintained, and in the case of Volkswagen extended, processing operations at or near ports of entry to meet particular strategic goals. In other words, the particular combination of localization and globalization attributes in the distribution system is not explained by size alone. This reinforces the notion that there is a considerable margin of choice in the establishment of these organizational structures.

Mercedes

Daimler-Chrysler is the parent company of the Mercedes-Benz (MB), the well-known luxury car manufacturer. In the US, the firm is represented by MB-USA, the import, sales and distribution arm, and MB-USI, the production arm for the assembly plant in Alabama. MB-USA is organized into a series of Vehicle Processing Centers (VPC) and Parts Distribution Centers (PDCs). Dealers are independent, with the exception of the Manhattan dealership. The Mercedes distribution model might thus be characterized as globalized, and in this sense, it resembles the Honda business model. There is no localized tier equivalent to the Toyota regional distributorships, although dealers are organized into sales zones that are matched to particular VPCs and PDCs. However, in the recent past, the distribution-sales linkage within MBUSA was much stronger, and although it has been weakened, key elements have been retained and the changes have been both incremental and experimental.

Before 1990, VPCs, PDCs and sales zones were congruent, as in the Toyota distribution model. There were seven such entities, headquartered in Chicago, Houston, San Francisco, Newark, Baltimore, Los Angeles and Jacksonville respectively. In 1983, the

Newark and Baltimore operations were consolidated into a larger facility at Belcamp, about 30 miles north of Baltimore. Apparently this move was primarily motivated by the desire to separate processing operations from ports, especially from the ILA jurisdiction in Newark (recall that the ILA is responsible for processing in the Port of New York and New Jersey, see Chapter 4). A site near the port of Baltimore was chosen because Baltimore was also the port of entry for the Chicago sales zone. However, it was another seven years before the entire distribution system was re-organized.

In 1990, sales and distribution activities were formally split, and relationships with the dealers were re-organized towards an explicitly pull-oriented distribution model. This application of 'lean distribution' principles, which allowed dealer inventories to be reduced, required particular organizational characteristics. The VPCs no longer reported to the manager of the sales region, but to the head office of MBUSA in New Jersey. It is in this context that a number of VPCs were closed, and hence the number of ports used was reduced; Houston closed in 1990, Chicago in 1992/3 and San Francisco in 1997.

The ports of Jacksonville, Baltimore and Los Angeles continue to be used, with each VPC physically located some distance inland from the actual seaport. At each of these ports, Mercedes hires an independent firm to conduct initial processing operations; in Los Angeles this business is conducted by DAS, in Baltimore by Premier. This processing activity is limited to marshalling vehicles at the first point of rest, customs clearance, and expediting some vehicles for more rapid delivery to the VPC.

On occasion, Mercedes has required additional storage space at entry ports for vehicles in advance of the launch of a new model, but in general, the pass-through from port to VPC is relatively rapid. For example, with space for 3,000 vehicles at the Belcamp VPC, Mercedes usually stores around 1,000 vehicles at the Port of Baltimore. However, on occasion, Mercedes has stored up to 8,000 vehicles on 9 different lots in and around the Dundalk Marine Terminal. Quite how the Maryland Port Administration is able to offer this degree of flexibility was addressed in Chapters 4 and 6.

In separating the VPCs from sales, Mercedes has been able to achieve a single continental distribution system. Why did Mercedes decide to change the system? A single answer is elusive, and again the move is best understood within the context of the specific trajectory of the firm. First, imports of commercial vehicles, which had previously been processed at the Newark, Houston and Los Angeles sites, declined in the 1980s after Mercedes (Daimler) bought Freightliner and shifted its production to this 'transplant'. In particular, this probably contributed to the decision to close the Newark facility. Second, although production only began in 1997 at the Mercedes plant in Alabama, this move followed the re-orientation of the wider global strategy of the firm. Mercedes is pursuing what might be described as a global homogenisation strategy (Freyssenet and Lung 1999) – the product is the same across the world. In this context, the Alabama assembly plant produces the M-class SUV, and it is the only Mercedes plant in the world to do so (Martin 1997). This production strategy demands a more globalized distribution strategy, and appears to make sense only within the framework of the pull distribution strategy; Mercedes tries to make as many vehicles as possible to order.

And yet, despite considerable rationalization, the VPCs and PDCs have remained. Unlike Honda, Mercedes has not entirely been able to dispense with its localized distribution system. The rationalization of PDCs has not proceeded as far as that with VPCs; they are located in Baltimore, Jacksonville, Fort Worth, Los Angeles, Chicago, and until recently, in Somerset NJ. Because most parts distribution is ultimately through the dealers, the PDCs are more closely matched to sales regions.

The continued existence of the VPCs is more revealing. In part they exist is because a pure pull system, even for a luxury automobile firm such as Mercedes is not (yet?) achievable. Thus, my respondents had a very sensible account for why the existing model worked so well; the VPCs are still required to provide a measure of responsiveness to changing market demand. So, for example, VPCs are used for fitting certain optional extras, something that is constantly changing as new standards are set, and as new extras are added. For example, car phones are currently one optional extra that is best supplied close to market. This is in addition to the post-shipment inspection, fitting standard accessories appropriate to the US market (eg service books) and quality control actions.

Dealers are allowed to fit car phones but the pricing structure is organized in a way to encourage them to use the VPCs. This suggests, in principle at least, that there is no intrinsic financial reason why Mercedes has not implemented a fully globalized distribution system. In other words, to understand Mercedes' particular pattern of port usage, we need to understand the reasons behind the continued existence of the VPCs, which in turn reside in the particular historical trajectory of the firm's structure. Nothing else would account for the differences between the Honda and Mercedes systems, particularly given the overtly globalized stance of Mercedes with respect to production.

Another German luxury automobile manufacturer employs a distribution model that is very similar to Mercedes – that is BMW. Like Mercedes, BMW has only recently begun manufacturing in the US, at Spartanburg, South Carolina. This is the only plant in the world to make the Z3 and X5 models[16]. These are mainly exported through the Georgia port of Charleston. BMW North America – the distribution arm - imports are through the ports of Port Hueneme, CA and Port Elizabeth at the Port of New York and New Jersey. At both these ports, BMW has vehicle preparation centers in which considerable quality control and accessorizing is done before cars are shipped direct to dealers.

Volkswagen

A final point of comparison is provided by the case of the German automobile producer, Volkswagen. Volkswagen was one of the first foreign automobile manufacturers with a substantial presence in the US market. Until the last decade, Volkswagen had employed a distribution model very similar to that of Toyota, owning its own ships (see Chapter 4) and operating its own localized port-linked distribution operations. For example, in Wilmington (DE), Volkswagen had two 10-year terminal leases from 1976-86 and 1986-96. When the fortunes of the company in the US market turned sharply for the worse in

[16] The State made various incentives available to attract BMW to South Carolina. One of the conditions the deal was that BMW would make use of the South Carolina Port of Savannah for parts imports.

the early 1990s, the firm responded with a rationalization process. While this did result in some port closures, Volkswagen now combines globalization and localization elements in its distribution system. One dimension of this restructuring – the Post Production Check - has proven particularly important from the perspective of the port authorities involved.

Volkswagen's US sales fell from almost 300,000 in 1985 to about 60,000 in 1993. Employment in Volkswagen NA – the distribution arm – fell from 1,600 to 900 in this period. This dramatic collapse came on top of Volkswagen's decision to close its assembly plant in Westmoreland, Pennsylvania. With imports falling to some 37,545 sales in 1994, one would have expected substantial port closures. This happened in some places, including New York and Los Angeles. In 1994, Volkswagen stopped doing its own processing, and turned to hiring independent processing firms such Transworld, and DAS (the Nissan subsidiary), to do the work for them. In 1996, Volkswagen actually withdrew from the Port of Wilmington for almost a year, apparently over the objections of local Volkswagen distribution managers.

However, today, Volkswagen still has a presence in the ports of San Diego, Houston, Wilmington DE, Boston and Brunswick GA. This is explained by the particular combination of strategies adopted by the firm in the late 1980s and early 1990s in response to this firms own 'crisis'. According to one of my respondents, around this time, Volkswagen executives apparently become disciples of Dr Deming[17]. The new company religion emphasized quality; perceptions about quality got some of the blame for

[17] Dr W Edwards Deming, management guru and author of "Quality, productivity, and competitive position" (1982) and "Out of the Crisis" (1986).

Volkswagen's poor showing in the US. And, adding to the doubts about the quality was the fact that more and more of the cars sold were coming out of Mexico. Today, Volkswagen Beetles and most Golfs sold in North America are produced in Mexico; the old kit assembly plant in Puebla was expanded when the plant at Westmoreland was closed. The established network of port processing facilities came to play an important role in the distribution of these vehicles.

Port processing centers, that had previously been operated to receive and distribute vehicles from Europe, became points for the Post-Production Check (PPC) after 1992 (PWD 2001). Specialized PPC facilities were built at all ports, to be operated by independent processing firms under the close supervision of Volkswagen employees. Apart from their publicity value, the PPCs provided a valuable source of information to process-control engineers at assembly plants in Mexico and Germany. In the words of one respondent; "This is checkpoint 9 – 1 to 8 are at the factory".

The globalization dimensions of this restructuring in the distribution system should not be underestimated. Apparently, the corporate head office in Wolfsberg, Germany maintains strict control over standards and procedures at the various PPCs. The firm has also moved to limit its commitments to the ports, and processing agents involved. Volkswagen now contracts for no more than three years at a time with each port.

However, the PPCs do fulfil many of the roles of the regional distributorships identified in the Toyota model. For example, port facilities continue to play a role in inventory storage. The commitments of Volkswagen staff at PPCs also appear to be mixed; in some instances they are engineers on short-term assignment from Germany and elsewhere, in others they are residents of the locality. One respondent reported to me his frustration with the uncertainties generated by the regular 3-year contract review. Obviously, this also places port authorities in a somewhat uncertain position. This has been most recently illustrated in the uncertainties facing the Port of Boston as they attempt to prevent the Volkswagen processing operation moving to Rhode Island (see JOC 2001). [18]

The Volkswagen case to illustrates two points; first, it reiterates the point that a shift from a strategy of localization towards a strategy of globalization is unlikely to be achieved in one neat and complete step. Second, that a combination of globalization and localization strategies cause tensions within the firm, and in its dealings with third parties.

[18] In 2002, Volkswagen did decide to move its processing operation to the nearby port of Davisville, Rhode Island, citing the savings associated with avoiding the Harbor Maintenance Tax as the primary reason for the move (Lauriat 2002). The Harbor Maintenance Tax was enacted as part of the Water Resources Development Act of 1986. It is an ad valorem (initially 0.04%, later 0.125%) tax on cargo moving through ports using federal funds for commercial purposes, including maintenance dredging (see Code of Federal Regulations, Title 19, Chapter 1, Part 24). While almost all cargo ports in the US are subject to the tax, including all 21 reference ports included in this study, some inter-port inequities do exist. For this reason, since 1996 the Commonwealth of Massachusetts has provided a dollar for dollar tax credit to compensate those paying the federal Harbor Maintenance Tax (for more information see the web site of the Massachusetts Port Authority, http://www.massport.com/ports/about_taxcr.html), the only state to do so. The State of Maryland also considered such a measure in 1997, but House Bill 378 / Senate Bill 204 of 1997 did not receive support in the Ways and Means committee and was dropped. The application of the tax to exports has been declared illegal in terms of the US Constitution (see United States Shoe Company vs United States, 523 US 360 118 S. Ct. 1290, 140 L. Ed. 2nd 453 (1998)), and the tax is currently under review (see GAO 1999).

Conclusion

In this chapter I have established a theoretical case for variations in the usage of US seaports by automobile manufacturers, and demonstrated it empirically through case studies of several of the firms involved. The organizational structure of the firm, in particular the stance of the firm towards the localization and globalization of the distribution system, is one of the most important factors in this regard. This dualism within organizational structure in turn results from the stance that the firm adopts towards creating and sustaining its relational fix.

Chapter 8

Port Policy and Regional Economic Development

This study has argued that the economic geography of automobile shipment results from an on-going process of mutual specialization and inter-penetration among a range of participants and organizations. Public officials, by virtue of their role in constructing some of the institutions that mediate the relationships between economic actors, thus have a role as active participants in shaping economic development outcomes at the waterfront and beyond. The economic activity of global corporations is thus not as footloose as is often assumed. This is not however to suggest that local institutional design choices are easy. What are public policy makers, and port managers and planners in particular, to take from this finding? *How might*, as opposed to *how do*, public ports influence regional development outcomes?

The answer to this question is neither neat nor simple, and is thus probably less tempting than the main competing policy alternatives. Yet, the alternative accounts of the pattern of commodity flows and attendant economic activity provide only intermediary explanations in which policy options are highly circumscribed. Commodity flows do not simply follow packages of infrastructure spending, subsidies and local political support assembled by some port authorities and not others; policy makers do not work on a clean slate when assembling incentive packages.

Instead, the empirical material presented here indicates that considerably closer attention to existing relationships and institutional design by port managers in particular and economic development planners more generally is warranted. It is the task of planners to create and sustain institutional structures that support close, yet inclusive relationships with a diversity of firms. Paradoxically, such a policy stance requires paying close attention to specific firms and their particular business structures. I start the chapter with a review of the argument and evidence, before exploring the concept of institutional compatibility. Finally, I discuss the challenges facing institutional design as policy.

Review of argument and evidence

The central problem with existing approaches to the relationship between ports, and indeed other types of infrastructure-providing public authorities, and economic development outcomes is not so much with the answers they provide as with the questions they ask. Despite the predictive shortcomings discussed in Chapter 2, analyzing ports as cargo, infrastructure or trade nodes each do provide important insights on the question of *how do* ports influence economic development in their hinterlands. Rather, the problem with each of these approaches is that they avoid the planning and policy-oriented question of *how might* ports influence patterns of economic development. In particular, these approaches fail to recognize the dynamic, interactive processes that lead firms to demand particular port services, and lead local public authorities to supply particular infrastructure and services.

To understand this process we need to understand *ports as institutions*, that is as clusters of rules, norms and patterns of behavior. Chapter 3 explored this understanding of ports both empirically and theoretically. During the period 1980 to 2000, automobile imports into the United State experienced what is described as a process of mutual specialization whereby firms concentrated their imports in fewer ports. In theoretical terms, this was understood through the concept of the *relational fix*. In the face of uncertainty, economic actors rely on relationships in order to provide the information necessary to take decisions – to make investments, establish production-distribution systems and organizational structures. A relational fix is specific to the parties to it, establishing internal constituencies and external commitments that are semi-permanent in nature.

The empirical chapters that followed examined the relational fix from various angles, noting how various actors combine to create the locally distinctive relational fixes that constitute economic geography. Although port authorities and automobile importers are the central concern here, Chapter 4 discussed the range of intermediary actors involved in this economic activity. The institutional structuring of the relationships between these participants varies considerably and reflects differences in national industrial organization and policy (e.g. relationships between shipping lines and automobile importers), coast-wide systems of collective bargaining and port-specific labor regimes, and past technological choices (e.g. distribution mode choices). Only under certain circumstances are direct relationships between firms and port authorities promoted.

For public port authorities, the presence of intermediaries in the automobile trade presents an opportunity as well as a challenge. The case studies contained in Chapters 5 and 6 showed how officials in public port authorities influenced the patterns of interaction between various port users. In providing infrastructure services in particular ways, in pursuing particular leasing, pricing and planning policies, in providing some services collectively, in regulating activities, port managers and planners are active participants in the establishment of relational fixes. This is not to say that public officials enjoy unconstrained voluntarism in action.

In the case of the Port of Long Beach (see Chapter 5) officials have implemented a series of terminal leasing, pricing and planning policies that led to the selective displacement of all but one automobile importer. The changes were driven by containerisation, but reflect the underlying institutional legacy of the port authority. With a very different institutional legacy, officials of the Maryland Port Administration responsible for the Port of Baltimore have achieved unintended successes in attracting a diversity of automobile importers (see Chapter 6). This success is rooted in a set of institutional legacies that favor shippers, common user policies and a reference to state-wide concerns and constituencies. We saw how these institutional legacies exerted their influence in the internal policy debates as they confronted containerisation and deregulation.

The last participant in the relational fixes discussed here – certainly not the least, but equally not the only 'driver' as it is so often portrayed – are the automobile importers themselves. Chapter 7 discussed in theoretical terms why spatial and temporal diversity in the business models of firms in this sector is to be expected, and then confirmed this empirically through case studies of the distribution systems of several automobile firms. In order to remain flexible, firms operating at a global scale need to be able to collect, process and transmit information. This requires establishing horizontal and vertical relationships that in turn entail trade-offs in organizational structure; strong horizontal connections at the same geographic scale (characterized as 'localization' models) are at odds with strong vertical connections between geographically dispersed portions of the firm (characterised as 'globalization' models).

This distinction is central to understanding both variation and change in patterns of port usage, since these different business models establish very different ways in which firms and port authorities can and do relate to each other. For example, Toyota's localization model is reflected in the several relatively large, permanent port automobile facilities in which the firm maintains direct relationships with the port authority. Conversely, Honda's globalization model is reflected its vigorous rationalization of port usage, and indirect involvement in smaller port facilities designed to ensure rapid throughput.

Challenges to an onymous policy of institutional design

Institutions matter in economic development planning because they structure actual and potential relationships. However, saying that institutions matter is not the same thing as saying that if you get the institutions right you will get the right outcome. Institutions have no agency; they operate through organizations (and individuals). What we can say, however, is that given the diversity of business models and the uncertainty of large investments, public authorities are more likely to attract economic activity and are more likely have existing activity grow if they can establish institutional compatibility with a range of business models. A public policy that recognizes this can be a much more assertive version of the currently popular, but “ethically agnostic” (Forester 1998), planning practices built on notions of dialogue and communication (cf Beauregard forthcoming; Fainstein 2000; Innes 1995).

The purpose of designing compatible institutions is to ensure ongoing information-sharing relationships between a diversity of economic actors. However, the processes of mutual specialization and interpenetration raise the very real prospect of the ‘capture’ of local public authorities by a sub-set of firms or economic actors. At the same time, a policy of purported neutrality and independence is neither realistic nor desirable. Rather, planning and policy explicitly needs to take account of the fact that the relationships between firms and public authorities are not abstract, but rather are grounded social relationships. Actor-blind policies, and those that attempt to find generalized institutional solutions miss this point. The challenge thus is to find an onymous[1] policy of institutional design that is nevertheless open and inclusive.

Those steeped in the libertarian and new institutional economics traditions may interpret this as further evidence of the need to ‘get the prices right’. The importance of prices as information, and the impossibility of consciously planning the co-ordination of information, is central to the interpretation of Adam Smith by writers such as Menger (1985), Hayek (1967) and others in the spontaneous order tradition (see Horwitz 2001). This reading of Smith emphasizes the role of the market as a co-ordination mechanism. The individual is "led by an invisible hand to promote an end which was no part of his intention" (Smith 1776 (1976:453)). Conversely, interfering with this co-ordinating mechanism would have negative unintended consequences (for an extended critique of this perspective, see Sen 1999).

The evidence presented here points in a very different direction. Price signals might, eventually, have told the officials of the Maryland Port Administration that theirs was not to be a container hub port, but could not and did not tell them what kind of port to be instead. Similarly, while land prices may have told officials of the Port of Long Beach to convert their land holdings to container terminals, price alone does not explain the ongoing relationship between Toyota and this public authority.

The new institutional economists[2] do not necessarily adopt such a radically anti-planning approach, allowing some role for policy and the state in the evolution and maintenance of impersonal, open, legal-rational rules (cf North 1990). However, what this view fails to recognize is the social and non-generalized nature of institutions in sustaining relationships between specific actors. Relationships are not between un-named

[1] The Oxford English Dictionary defines the adjective onymous as follows: *Having or bearing a name; of a writing: Bearing the name of the author; of an author: That gives his name. The opposite of anonymous, and usually explicitly contrasted with it.* (OED Online, www.oed.com, accessed 16 July 2002).
[2] In contrast for example, with old institutional economists such as John Commons, who in his 1931 classic article defined institutions as "collective action in control, liberation and expansion of individual action".

individuals, or categories of individuals. Rather than impersonal institutions sustaining anonymous relationships, the relational fix is ‘personal’ and onymous.

How to work with this reality without reverting to the entirely open-ended dialogic processes that are so often recommended by planners today? Local public authorities have considerable scope for intervention and through conscious institutional design can, and indeed do, support ongoing communication between specific economic actors. This insight suggests an approach that builds upon and goes beyond the recent deliberative policy prescriptions of writers such as Michael Storper and Charles Sabel.

The specificity of the relational fix suggests that planners can and should do more than seek to create general moral orders, or norms of interaction. There are, for instance, limitations to the recent proposals of Charles Sabel, which proceed from the argument that in successful economies, co-operation is sustained by a shared moral institutional order prompts individuals to trust each other (Sabel and Zeitlin 1997:6). An example of such an institutional order is the tutelage systems, regional joint boards of arbitration and other training and wage-setting labour market institutions of some north-western European nations.

Sabel’s policy proposals are wide-ranging, but all seek to address how structural conditions impede people in a regional economy from being reflexive or strategic in their behaviour. Decentralised experimentation is also favoured by this approach since reflexivity is contingent on local history, and may be prompted in a variety of ways.

Another concrete policy would be bench-marking or best-practice studies that serve to prompt consciously deliberative action (Sabel 1995). Stories, deliberate strategy-making, conscious and reflexive public engagement, in short "studied trust" are the policy implications flowing from this approach (Sabel 1995; Sabel1993).

One of the key weaknesses in this work has been a lack of recognition of the importance of higher-level interventions that create the conducive environment in which this kind of decentralized experimentation may take place. In follow-up work, Dorf and Sabel (1998) address this concern through their proposed 'constitution of democratic experimentalism'. They argue that a combination of decentralisation and mutual monitoring would allow the right mixture of local experimentation and national direction. In similar vein, Amin (1999) reminds us that endogenous, regional institutional development requires a conducive macro-economic policy framework.

The shortcoming in these proposals, however, is that economic actors are not seeking a generalized, abstract environment to support their activities, so much as they are seeking actual, concrete relationships that will sustain their specific needs for information and overcoming uncertainty. Storper's (1997) proposals for a circular process of learning and institution-building around specific products do begin to address this concern, but do not go far enough.

Storper (1997) proposes a series of concrete steps, starting with strategic assessment to identify which products in the regional economy may be developed. Possibilities for action are identified through a process of 'talk' that generates mutual understandings of policy goals. Eventually, the conventions of learning are deepened and widened through the building of trust in repeated rounds of interaction. He argues that it is only at this stage that formal institutions should be built to achieve agreed goals. There are various problems with these policy prescriptions, especially as regards the question of initiation. If formal institution-building should await the development of supportive conventions, it is unclear who will initiate the early rounds of policy intervention. This is not simply an implementation problem; if this is to be left to the state, then in whose interests will the state act? In this sense, Storper may be open to the critique that it ignores politics (Markusen 1999).

The approach advocated here does not deny the importance of circular, reinforcing processes of dialogue, learning and action. A process of dialogue could usefully be centered upon the institutional governance of common property facilities and resources, such as a port authority. This would involve in-depth analysis of all current users of the infrastructure with the goal of understanding how institutional arrangements influence authority-firm relationships and firm organization. It would also involve asking hard questions about whether existing institutional arrangements preclude particular development alternatives, or promote unwanted development outcomes. The key point is that attention to formal institutional arrangements and actual firms by officials in local public authorities may be an important prior condition to deliberative processes seeking to articulate a development vision and supporting concrete policies.

By starting with actual public authorities and firms, and the institutions that mediate their relationships, we would focus on the extent to which public authorities can establish rules and norms that reinforce an on-going, diverse and inclusive set of interactions. Precisely what should the institutions enacted by public authorities look like?

Institutional Compatibility and Public Policy

The actor- and context-specificity of the relational fix implies that we should expect viable firms in the same sector to differ with respect to their business models and to internal structure. Hence public policy needs to be very careful about prescriptions that reduce or preclude the possibilities for public officials to learn about, and implicitly participate in, changes in firm strategy and organization. In other words, institutional compatibility is a policy stance that explicitly recognizes the diverse and dynamic nature of economic development. For this reason, the perspective adopted here explicitly rejects much of what is done with public infrastructure in the name of economic development planning.

Traditional infrastructure-led approaches to development planning, including growth poles, often failed this test because they only paid attention to traded input-output relations between a relatively small number of large companies, and to governmental actions to support pre-identified economic activities. In so doing, economic planners have constructed institutional environments that, in enabling some forms of economic activity, constrain others (Hall 2000). For this reason, growth poles, technopoles and so on have been singularly unsuccessful in establishing endogenous growth dynamics beyond the immediate (read constrained) vision of the planners (for critiques addressing this point, see Peattie 1987; Castells and Hall 1994).

A similar critique applies to the use of preferential infrastructure pricing policies to attract economic activity. The perspective advanced here is not so much concerned with the potentially distorting effects of altered price signals than with the establishment of institutionalized relationships with some actors to the exclusion of others. Indeed, the case studies showed that, regardless of price level, pricing policies are not neutral in their effects. This critique in no way detracts from the other critiques of the use of public resources to subsidize economic activity, such as accountability concerns and the zero-sum and/or macro-economic distorting effects of this kind of territorial competition. Note however that rejecting price-based territorial competition is not the same thing as rejecting all territorial competition, since competitive pressures between local public authorities constitute an important impetus for institutional learning and experimentation.

The approach adopted here is also critical of, but not opposed in principle to, much that is done in the infrastructure arena under the name of privatization. By offering port facilities on exclusive long term lease basis, officials in the Port of Long Beach seriously reduced the range of actors with which they could, and indeed did, maintain the kind of close relationships required for information-sharing. In theory a terminal operator can maintain relationships with a diversity of users, but under full privatization, there is no public mechanism to assure this outcome, especially given the increasing vertical integration in the shipping industry (Slack, McCalla and Comtois 2002).

'Partnership' is often presented as a solution to this kind of problem – in infrastructure planning this has come to refer to a range of mechanisms of joint public-private sector planning, construction, ownership and management. However, one of the insights of this dissertation is that relationships are specific, not general. Partnerships are thus not between the public and private sector in general; rather they are between specific authorities and firms, each with their own goals, structures and systems. Without strong public sector autonomy, and conscious attention to inclusiveness of those not currently parties to the transaction, future development options may be precluded.

Instead, what this dissertation indicates is a policy of infrastructure provision built around the concept of institutional compatibility. Some sets of institutions are more likely to create and foster relationships between different actors. Paying attention to who is able to enter into positions of voice in relation to local public authorities is an important and legitimate issue of institutional design. Public port authorities in the era of containerization should consciously seek institutional arrangements that accommodate a diversity of commodities, cater to both big and small shippers, and create spaces for value-adding activities associated commodity flows. Local public authorities are more likely to sustain economic activity, especially through the dynamic and disruptive processes of innovation and technological change, if institutions support information-sharing with a diversity of economic actors.

There is hence a need for redundancy in institutional design to allow multiple points of contact for problem solving and mutual learning. For example, the static value of a Foreign Trade Zone is its tax advantage; its dynamic value is two-fold. First, as the designers of the policy intended, zone status can be turned on and off as trade regulations, product mix, demand levels and other uncertainties of operating a business arise. Secondly, it represents another level at which the authority is able to institutionalize relationships with a firm around trade promotion, real estate development and other activities of the tenant.

Compatibility is a similar concept to the notion of synergy debated in the developmental state literature and interprets this idea at the level of the locality.[3] Of course, local public agencies lack many of the policy tools of husbandry and midwifery, such as the ability to influence demand through central government spending and fiscal policy. This reduced range of formal policy mechanisms, implies a need to place more importance on the relationships through which corporations develop commitments to particular places. However, they are, in principle at least, able to pay closer attention to specific firms and to the distinctive institutional governance of their economic decision-making. In other words, the institution of infrastructure is a critical comparative advantage of local public authorities, one they should exploit.

[3] Evans argues that state-society synergy involves both "complementary actions by government and citizens" and "ties that cross the public-private divide" (Evans 1996: 1119). The latter dimension of synergy is often referred to as embeddedness (see Evans 1995).

References

Abernathy, WJ. 1978. *The productivity dilemma. Roadblock to Innovation in the Automobile Industry*. The Johns Hopkins University Press: Baltimore.

Abo, Tetsuo. 1998 "Changes in Japanese automobile electronic transplants in the USA: evaluating Japanese-style management and production systems" in Hook, GD, Hook GDt and Hasegawa, H. (eds). *Japanese Business Management: restructuring for low growth and globalization*. London: Routledge.

Adams, P. 2000. "Hopes high with terminal set to open", *The Baltimore Sun* (Business), September 24, 2000: page 1C.

AJOT, 2001. "Wallenius Lines to acquire stake in Renault's CAT". *American Journal of Transportation*, April 2, 2001, page 10B.

AJOT, 2002. "Toyota to sign lease to create northeast hub at Port of New York / New Jersey", *American Journal of Transportation*, March 25, 2002: pages 1B/12B.

AJOT, 2002a. "Wallenius Wilhelmsen establishes Latin American hub in Manzanillo, Panama". *American Journal of Transportation*, March, 25, 2002, page 4B.

AJOT, 2002b. "Volvo to import vehicles via Colonel's Island Auto Facility". *American Journal of Transportation*, March, 25, 2002, page 4B.

AJOT, 2002c. "Trailer Bridge awarded US Patent". *American Journal of Transportation*, August 12, 2002, page 16.

Allied, 2000. *Allied Holdings Inc, Annual Report, 2000*. www.alliedholdings.com, accessed 4-26-2002.

Alston, Lee J., Eggertsson, T. and North, DC. 1996. *Empirical studies in institutional change.* Cambridge: Cambridge University Press.

Amin, A and Hausner, J. (eds). 1997. *Beyond market and hierarchy: interactive governance and social complexity.* (Derives from the Seventh Annual Conference of the European Association for Evolutionary Political Economy, Krakow, October 1995). Lyme: Edward Elgar.

Amin, A. 1998. "An institutionalist perspective on regional economic development". *International Journal of Urban and Regional Research*, 23(2): 365-378.

Amsden, A. 1989. *Asia's Next Giant: South Korea and Late Industrialisation*. Oxford: Oxford University Press.

Amundsen, A. 1978. *Current trends in port pricing*. US Department of Commerce (Maritime Administration): Washington.

Apodaca, P. 1994. "Harboring Great Dreams", *Los Angeles Times*, November 8, 1994: Business 10.

Aschauer, D. 1989. “Is Public Expenditure Productive?” *Journal of Monetary Economics*, 23: 177-200.

Automotive News. 2000. *2000 Market Data Book*. Automotive News: Michigan.

AutomotiveLogistics, 2000a. “Second Tier ports in danger fro industry consolidation”, *Automotive Logistics*, 3(2). www.automotivelogistics.co.uk/magazine, accessed 3-28-02.

BAC (Baltimore Association of Commerce). 1954. *Port Promotion, Protection and Administration*. A Baltimore Association of Commerce Staff Field Survey and Report on Eight Atlantic and Gulf ports, March-May 1954.

Baird, A., 1997. “Port privatisation: an analytical framework.” In: *Proceedings of International Association of Maritime Economist Conference*, City University, London, 22–24 September.

Baltimore Sun:
- July 17, 1969, “Legislative Council Spurred by Lowe, To Probe Port Authority”
- Aug 20 1969, “Port Agency, Legislators at Odds”

Barff, RA and Knight, PL. 1988. “Dynamic Shift-Share Analysis”. *Growth and Change*, 19(2): 1-10.

Beauregard, R. (forthcoming). “Resisting Communicative Planning: An Institutionalist Perspective”, *Planning Theory*.

Belis-Bergouignan, M, Bordenave, G and Lung, Y. 2000. “Global Strategies in the Automotive Industry”. *Regional Studies*, V34, n1 (41-53).

Benner, C. 1998. “Win the Lottery or Organize: Traditional and Non-Traditional Labor Organizing in Silicon Valley”. *Berkeley Planning Journal* Vol. 12 (1997-98): 50-71.

Bennett, A and George, AL. 1997. *Process Tracing in Case Study Research*. Paper presented at the MacArthur Foundation Workshop on Case Study Methods, October 17-19, 1997.

Berechman, J. 1995. “Transport Infrastructure Investment and Economic Development” In Banister, D (ed). *Transport and Urban Development*. London: E&FN Spon.

Berger, S and Dore, R (eds). 1996. *National Diversity and Global Capitalism*. Cornell University Press.

Biggart, N and Hamilton, G. 1992. "On the limits of a firm-based theory to explain business networks: the western bias of neoclassical economics". In Nohria, N and Eccles, R (eds), *Networks and organisations: structure, form and action*. Harvard Business School Press.

Bingham, RD and Sunmuno, KK. 1992. "The restructuring of the automobile industry in the USA", *Environment and Planning A*, vol 24: 833-852.

BJAC (Baltimore Junior Association of Commerce). 1953. *Report on the Scope and Efficacy of the Present Efforts to Promote the Port of Baltimore*. Report Prepared by the Port Development Committee and approved by the Board of Directors of the Junior Association of Commerce, Inc. of Baltimore.

Boarnet, MG. 1997. "Highways and Economic Productivity: interpreting recent evidence", *Journal of Planning Literature*, 11(4): 476-486.

Bordenave, G. 1998. in Freyssnet, M, Mair, A, Shimizu, K and Volpato, G. (eds). *One Best Way? Trajectories and Industrial Models of the World's Automobile Producers*. London: Oxford University Press.

Boschken, H. 1988. *Strategic Design and Organizational Change: Pacific Rim Ports in Transition*. Tuscaloosa: University of Alabama Press.

Boschken, HL. 1998. "Global shift in container traffic and its implications for economic development along the American land Bridge". *Public Works Management and Policy*, 2(4): 368-372.

Branch, AE. 1988. *Economics of shipping practice and management*. New York: Chapman and Hall.

Brenner, N. 1998. "Between fixity and motion: accumulation, territorial organization and the historical geography of spatial scales", *Environment and Planning D: Society and Space*, 16: 459-81.

Brenner, RB. "Plans for port dealt a setback", *The San Diego Union-Tribune*, January 18, 1987: Local Edition B1.

Brown, C and Reich, M. 1989. "When does union-management cooperation work? A look at NUMMI and GM-Van Nuys". *California Management Review*, 31: 26-44.

Brown, C, Nakata Y, Reich, M and Ulman, L. 1997. *Work and Pay in the United States and Japan.* Oxford University Press.

Brown, G. 2000. “Our fourth ro/ro rodeo is a huge success”, *The Port of Baltimore* (Maryland Port Administration), August 2000: 16-19

Business Times, 2002. “Hyundai expects auto deal in April”. *Business Times*, March 28, 2002. business-times.asia1.com.sg, accessed 3-28-02.

Buxbaum, PA. 2000. “Atlantic ro/ro mirrors container trade”, *The American Journal of Transportation On-line*, November 21, 2000. www.ajot.com, accessed 11-21-00.

California, 1911. *Tidelands Trust Act, Grant to the City of Long Beach* (Chapter 676, Statutes of 1911). State of California: Sacramento.

California, 1925. *Tidelands Trust Act, Grant to the City of Long Beach* (Chapter 102, Statutes of 1925). State of California: Sacramento.

California, 1935. *Tidelands Trust Act, Amended* (Chapter 158, Statutes of 1935). State of California: Sacramento.

California, 1959. *Tidelands Trust Act, Grant to the City of Long Beach* (Chapter 1560, Statutes of 1959). State of California: Sacramento.

California, 2002. *Harbors and Navigation Code*. State of California: Sacramento.

Camagni, R. 1991. “Local ‘milieu’, uncertainty and innovation networks: towards a new dynamic theory of economic space”, in Camagni, R (ed). *Innovation Networks: Spatial Perspectives*. Belhaven: London.

Campbell, S. 1993. “Increasing trade, declining port cities: port containerization and the regional diffusion of economic benefits”. In *Trading Industries, Trading Regions: International Trade, American Industry and Regional Economic Development*, eds. Noponen, H., Graham, J. and Markusen, A. New York: Guildford.

Cantwell, A. 1992. "Smaller ports are big winners in race for automobile cargo". *Journal of Commerce*, September 21, 1992: 4C.

Cantwell, A. 1994. “Auto Trade is a driving force of cargo growth at US Ports”, *Journal of Commerce*, August 18, 1994: 1C.

Cassell, P. 1993. *The Giddens Reader*. Palo Alto: Stanford University Press.

Castells, 1997b. “Hauling in the future”, *Guardian*, 13 December, 21. (cited in Graham and Marvin, 2001).

Castells, M and Hall, PG. 1994. *Technopoles of the world: the making of twenty-first-century industrial complexes*. New York: Routledge.

Castells, M. 1996. *The Information Age: Economy, Society and Culture (Vol.I: The Rise of the Network Society).* Cambridge MA. Oxford UK: Blackwell Publishers.

Castells, M. 1997a. *The Information Age: Economy, Society and Culture (Vol.II: The Power of Identity)*. Malden MA. Oxford UK: Blackwell Publishers.

Castells, M. 1998. *The Information Age: Economy, Society and Culture. (Vol.III: End of Millennium).* Malden MA. Oxford UK: Blackwell Publishers.

CFA, 2001. *A roadblock on the information superhighway: anti-competitive restrictions on automotive markets.* Consumer Federation of America. (www.consumerfed.org)

Chanaron, J-J and Jullien, B. 1999. "The Production, Distribution and Repair of Automobiles: new relationships and new competencies" in Lung, Y, Chanaron, J-J, Fujimoto, T and Raff, D. (eds*) Coping with variety: flexible productive systems for the product variety in the auto industry*. Aldershot: Ashgate.

Chang, S. 1978. "In Defense of Port Economic Impact Studies". *Transportation Journal,* Spring 1978: 65-85.

Charlier, JJ. 1988. "Structural Change in the Belgian Port System, 1980-1986", *Maritime Policy and Management*, 15(4): 315-326.

Charlier. J. 1996. *Le systeme portuaire sud-africain a l'aube du 21eme siecle*. Brussels: Royal Belgian Maritime Academy.

Chilcote, PW. 1988. "The Containerization Story: meeting the competition in trade", in Hershman, MJ (ed), *Urban Ports and Harbor Management: responding to change along the US waterfront*. New York: Taylor and Francis.

Christensen, KS. 1999. *Cities and Complexity: making intergovernmental decisions*. Thousand Oaks: Sage Publications.

Cole, JO. 1987. Letter to Governor Schaeffer, October 30, 1987. (Containing the recommendations of the Governor's Special Committee on the Port of Baltimore).

Commons, JR. 1931. "Institutional Economics", *American Economic Review*, 21: 648-657.

Cooke, FL, Earnshaw, J and Rubery, J. 2002 (forthcoming). "Contracts, co-operation and employment relationships: working in a multi-employer environment". *British Journal of Industrial Relations.*

Corbert, KS. 1996. "Double or Nothing: the big stakes of hub ports". *The Journal of Urban Technology*, 3(2): 1-10.

Cox, KR (ed). 1997. *Spaces of Globalization: reasserting the power of the local*. New York: Guildford Press.

Cronin, W. 1991. *Nature's metropolis: Chicago and the Great West*. New York: WW Norton.

Cullen, T. 2001a. “Trends in finished vehicle logistics: Honda’s stretching supply chain”, *Automotive Logistics*, 4(1). www.automotivelogistics.co.uk/magazine, accessed 3-28-02.

Cullen, T. 2001b. “The view from Hesslinger Strasse”, *Automotive Logistics*, 4(1). www.automotivelogistics.co.uk/magazine, accessed 3-28-02.

Cullinane, K., Song, DW and Gray, R. 2001. “A stochastic frontier model of the efficiency of major container terminals in Asia: assessing the influence of administrative and ownership structures”, *Transportation Research Part A: Policy and Practice*. 36(8): 743-760.

Darrup-Boychuck, C. 2002. "Industry insight from Amports", *American Journal of Transportation,* April 8, 2002, page 2B.

De Banville, E and Chanaron, J-J. 1999. “Inter-Firm Relationships and Industrial Models” in Lung, Y, Chanaron, J-J, Fujimoto, T and Raff, D. (eds*) Coping with variety: flexible productive systems for the product variety in the auto industry*. Aldershot: Ashgate.

DiBenedetto, W, 1988b. "Toyota Terminal Operates Smoothly", *Journal of Commerce*, November 1, 1988: 1A.

DiBenedetto, W. 1988a. "Port Director's resignation adds to Baltimore's woes", *Journal of Commerce,* November 25, 1988: p1A.

DiBenedetto, W. 1989. "Baltimore alters port sales staff", *Journal of Commerce* (Maritime Section), March 1, 1989: page 1B.

DiBenedetto, W. 1991. "Baltimore Port Chief Stresses Service, Cargo Diversification", *Journal of Commerce*, September 18, 1991: page 1A.

Dicken, P. 1998. *Global Shift: transforming the world economy.* New York: Guilford Press.

Doig, JW. 2001. *Empire on the Hudson: entrepreneurial vision and political power at the Port of New York Authority.* New York: Columbia University Press.

Doner, R. 1992. “Limits of State Strength: towards an institutionalist view of economic development”. *World Politics*. 44: 398-431.

Dorf, MC, and Sabel, CF. 1998. “A Constitution of Democratic Experimentalism”. *Columbia Law Review*, 98 (2).

Dosi, G, Freeman, C, Silverberg, G and Soete, L (eds). 1988. *Technical Change and Economic Theory*. London: Pinter.

Douglas, M. 1986. *How institutions think*. Syracuse, N.Y.: Syracuse University Press.

Dowd, T. 1987. *Container terminal leasing/pricing methods and their economic effects.* Seattle: Washington Sea Grant (Advisory Report).

Dowd, T. 1988. “Port finances and operations: understanding the bottom line” in Hershman, MJ (ed), *Urban Ports and Harbor Management*. New York: Taylor and Francis (pages 217-233).

Dowd, T. 1992. *Port pricing: a process*. Seattle: Washington Sea Grant (Port Management Series).

Dowding K, John P, and Biggs S. 1994. "Tiebout - A Survey Of The Empirical Literature". *Urban Studies*, May, 1994, V31(4-5):767-797.

Dunlap, C. 1992. “Saab imports now flow through GA port only”, *Journal of Commerce,* January 24, 1992: 9B.

Dupin, C. 2001. “Adjusting as customers consolidate”. *Journal of Commerce*, *JoC Week*, February 12, 2001. Special Report page 27.

Dupin, C. 2001a. “Keeping an even keel”. *Journal of Commerce, JoC We*ek, July 16, 2001, page 20.

Dwyer, J. 2000. *Presentation of the Draft 2010 Facilities Master Plan to the meeting of the Qchat*, November 29, 2000.

Eisinger, P.K. 1988. *The Rise of the Entrepreneurial State.* Madison: University of Wisconsin Press.

Erie, S. 1996. *International Trade and Job Creation in Southern California: facilitating Los Angeles / Long Beach Port, Rail and Airport Development* (A policy Research Program Report prepared with the collaboration of Harold Brackman and James E Rauch). California Policy Seminar: University of California.

Esteban, AL, Malchow, M and Kanafani, A. 2000. *Intermodalism and port competition in the US*. Unpublished paper. University of California, Berkeley: Department of Civil Engineering.

Evans, C and Fiore, F. 1990. "Honda import terminal may move to San Pedro". *Los Angeles Times*, April 15, 1990: J2 (Long Beach Section).

Evans, P. 1995. *Embedded Autonomy: states and industrial transformation*. Princeton: Princeton University Press.

Evans, P. 1996. “Government Action, Social Capital and Development: reviewing the evidence on synergy”. *World Development*, 24(6): 1119-1132.

Evening Sun:
- March 15, 1979, “Lee cites economic crisis in Hawkins move”
- January 17, 1980, "Plaintiff takes case to Legislature"

Fainstein, S. 2000. “New directions in planning theory”. *Urban Affairs Review*, 35(4): 451-478.

Fair, ML. 1954. *Port Administration in the United States*. Cambridge: Cornell Maritime Press.

Finlay, W. 1988. *Work on the Waterfront: worker power and technological change in a West Coast Port*. Philadelphia: Temple University Press.

Fishman, R. 1993. “Why LA?”, Introduction to Fogelson, RM. 1993. *The Fragmented Metropolis: Los Angeles, 1850-1930*. University of California Press: Los Angeles.

Florida and Kenny, 1990. “High-technology restructuring in the USA and Japan”, *Environment and Planning A*, 22: 233-252.

Fogelson, RM. 1993. *The Fragmented Metropolis: Los Angeles, 1850-1930*. University of California Press: Los Angeles.

Forester, J. 1998. “Rationality, Dialogue and Learning: what community and environmental mediators can teach us about the practice of civil society”. In Douglass, M and Friedmann, J (eds). *Cities for Citizens*. John Wiley and Sons: Chichester.

Foster, K. 1997. *The Political Economy of special-purpose government*. Washington: Georgetown University Press.

Frank, AG. 1969. *Capitalism and Underdevelopment in Latin America*. New York: Monthly Review Press.

Freyssenet, M and Lung, Y. 2000. “Between Globalization and Regionalization: what is the future of the motor industry?” in Humphrey, J, Lecler, Y and Salerno, MS (eds). *Global Strategies and Local Realities: The auto industry in emerging markets.* London: Macmillan Press.

Freyssenet, M, Mair, A, Shimizu, K and Volpato, G. (eds). 1998. *One Best Way? Trajectories and Industrial Models of the World's Automobile Producers*. London: Oxford University Press.

Friedmann, J and Alonso, W (eds). 1975. *Regional Policy: readings in theory and applications*. Cambridge: MIT Press.

Friedmann, J. 1972. "A general theory of polarized development", in Hansen, NM, ed. *Growth Centers in Regional Economic Development*. New York: Free Press.

Friedmann, J. 1987. *Planning in the Public Domain*. Princeton: Princeton University Press.

Friedmann, J. 2000. "Reading Castells: Zeitdiagnose and Social Theory", *Environment and Planning D – Society and Space*, 18(1): 111-120.

Frobel, F, Heinrichs, J and Kreye, O. 1978. "The World Market for Labor and the World Market for Industrial Sites". *Journal of Economic Issues*, vol XII, No 4.

Fujita, M and Mori, T. 1996. *"The role of ports in the making of major cities: self-agglomeration and the hub-effect*", Journal of Development Economics, 49: 93-120.

Fujitrans, 2002. Corporate web site of Fujitrans Corporation, www.fujitrans.co.jp, accessed 10-3-02.

GAL, 2002. Corporate web site of Great American Lines, www.galinj.com, accessed 10-3-02.

GAO, 1999. *Maritime Industry: Updated Information on Federal Assessments*. General Accounting Office Report GAO/RCED-99-260. GAO: Washington DC.

GBC (Greater Baltimore Committee), 1956. *Report to the members of the Greater Baltimore Committee by the Port Development Subcommittee*. January 4, 1956.

Gelb, S. (ed) 1991. *South Africa's economic crisis*. Cape Town: David Phillip.

Gerlach, M. 1989. "Keiretsu Organization in the Japanese Economy: Analysis and Trade Implications", in Johnson, C, Tyson, L and Zysman, J. *Politics and Productivity: How Japan's Development Strategy Works*. Harper Business: New York.

Gertler, M. 2001. "Best Practice? Geography, Learning and the Institutional Limits to Strong Convergence", *Journal of Economic Geography*, 1.

Giddens, A. 1979. *Central problems in social theory: action, structure and contradiction in social analysis*. Berkeley: University of California Press.

Giddens, A. 1984 *The constitution of society: outline of the theory of structuration*. Berkeley: University of California Press.

Gilpin, R. 1987 *The Political Economy of International Relations*. Princeton: Princeton University Press.

Glaeser, EL, Kallal, HD, Scheinkman, JA and Shleifer, A. 1992. "Growth in Cities", *Journal of Political Economy*, vol. 100 no. 6: 1126-1152.

Graham, S and Marvin, S. 2001. *Splintering Urbanism: networked infrastructures, technological mobilities and the urban condition*. London: Routledge.

Gramlich, EM. 1994. "Infrastructure Investment: a review essay", *Journal of Economic Literature*, vol. 32 (September 1994): 1176-1196.

Granovetter, M. 1985. "Economic Action and Social Structure: the problem of embeddedness". *American Journal of Sociology*, vol 91. no 3. (November 1985). p481-510.

Grimm, C., and R. J. Windle. "Regulation and Deregulation in Surface Freight, Airlines and Telecommunications," In Peoples, J (ed). *Regulatory Reform and Labor Markets.* Boston: Kluwer Academic Publishers (15-49).

Gripaios, P and Gripaios, R. 1995. "The impact of a port on its local economy: the case of Plymouth". *Maritime Policy and Management*, 22(1): 13-23.

Gulick, J. 1998. "It's all about market share: competition among US West Coast Ports for Trans-Pacific Containerized Cargo". In Ciccantell, PS and Bunker, SG (eds). *Space and Transport in the World System*. Greenwood Publishing Group.

Hall, KG. 1992. "Long Beach Port Dodges City Raid On Revenue", *Journal of Commerce*, June 25, 1992: 1B.

Hall, KG. 1993. "Long Beach Cuts Volume Rule for Reduced Steel Slab Tariffs". *Journal of Commerce*, March 31, 1993: 5B.

Hall, PA. 1986. *Governing the Economy: The Politics of State Intervention in Britain and France*. New York: Oxford University Press.

Hall, PV. 2000. "Regional Development and Institutional Lock-in: A case study of Richards Bay, South Africa". *Critical Planning*, 7 (Spring): 87-102.

Harvey, D. 1982. *The Limits to Capital*. Oxford: Blackwell.

Harvey, D. 1989. *The condition of post-modernity.* Oxford: Blackwell.

Hayek, F. 1967. *Studies in Philosophy, Politics and Economics* (p96-105).

Hayut, Y. 1981 "Containerization and the load center concept" *Economic Geography* 57(2): 160-176.

Heikkila, EJ, Gordon, P and Richardson, HW. 1991. "Leaping ahead: the Ports of Los Angeles and Long Beach embark on an ambitious course – the 2020 plan", *Portus*, vol 6, no. 2: 14-20.

Helling, A. 1997. "Transportation and Economic Development: a review". *Public Works Policy and Management*, 2(1): 79-93.

Hensel, B. 2000. "Cars in a box". *Journal of Commerce, JoC Week*, July 31, 2000. Special Report page 36.

Herod, A. 2001. *Labor Geographies: workers and the landscapes of capitalism*. New York: The Guilford Press.

Hershman, M and Kory, M. 1988. "Federal Port Policy: retrenchment in the 1980s", in Hershman, MJ (ed), *Urban Ports and Harbor Management*. New York: Taylor and Francis (pages 99-122).

Hershman, MJ (ed). 1988. *Urban Ports and Harbor Management*. New York: Taylor and Francis.

Hill, RC. 1989. "Comparing transnational production systems: the automobile industry in the USA and Japan", *International Journal of Urban and Regional Research*, vol 13 (3): 462-480.

Hilling, D. 1987. "Cargo-handling technology and changing waterfront land use". *Journal of Shoreline Management*, 3: 23-37.

Hilling, D. 1996. *Transport and Developing Countries*. London: Routledge. (Chapter 7: Seaport 'Gateways' and Port Development).

Hirsch, Barry, "Trucking Regulation, Unionization, and Labor Earnings: 1973-85," *Journal of Human Resources*, Summer 1988, 23, 296-319.

Hirschman, A. 1958. *The Strategy of Economic Development*. New Haven: Yale University Press.

Holtz-Eakin, D. 1994. "Public-Sector Capital and the Productivity Puzzle", *Review of Economics and Statistics*, :12-21.

Horwitz, S. 2001. "From Smith to Menger to Hayek: Liberalism in the Spontaneous-Order Tradition", *The Independent Review*, 6(1): 81-97.

ILA-STA. 1996. *Agreements negotiated by the Steamship Trade Association of Baltimore on behalf of its members with International Longshoremen's Association Locals 333, 921, 1355, 1429 for the Port of Baltimore, effective October 1, 1996 through September 30, 2001.* International Longshoremen's Association and Steamship Trade Association.

ILWU-PMA. 1999. *Pacific Coast Longshore Contract Document, 1999-2002*. International Longshore and Warehouse Union and Pacific Maritime Association.

Immergut, Ellen M., 1998. "The Theoretical Core of the New Institutionalism", *Politics and Society*, 26 1: 5-34.

Innes, J. 1995. "Planning theory's emerging paradigm: communicative action and interactive practice". *Journal of Planning Education and Research*, 14 (3): 183-189.

Ircha, MC and Garey, D. 1992. "Labor/management relations in North American ports", *Maritime Policy and Management*, 19(2): 139-156.

Isard, W. 1956. *Location and Space Economy*. Cambridge: MIT Press.

ITJ, 2001. "HUAL: customised approach". *International Transport Journal*, 25/2001: 8-9.

JCP (Joint Committee on Ports), 1985. *Report of the 1985 Interim to the Maryland general Assembly*. Annapolis, Maryland.

Jessop, B. 1995. "Towards a Schumpeterian workfare regime in Britain? Reflections on regulation, governance, and welfare state." *Environment & Planning A*, 27(10): 1613-1627.

JOC (Journal of Commerce), 1986. "MPA creates office for Strategic Planning". *Journal of Commerce Special* (Maritime Section), October 27, 1986: page 22B.

JOC (Journal of Commerce), 1987. "Baltimore wins 15-year commitment from Toyota", *Journal of Commerce* (Maritime), February 17, 1987: page 2A.

JOC (Journal of Commerce), 1989. "Judge OKs settlement in LA Stevedore Case". *Journal of Commerce*, July 26, 1989: 8B.

JOC (Journal of Commerce), 2001. *Massachusetts Governor seeks Harbor Maintenance Tax Repeal*. Journal of Commerce Online, April 2, 2001 (www.joc.com).

Johnson, C. 1982. *MITI and the Japanese Miracle*. Stanford: University Press.

Johnson, GS. 1992. "NJ rail link gives car carriers direct access to N America", *Journal of Commerce*, February 5, 1992: 2B.

Johnson, GS. 1996. "More and more new cars are riding the rails", *Journal of Commerce*, April 29, 1996: 3B.

Jones, T. 1997. *The Port of Durban and the Durban Metropolitan Economy*. Research Monograph No. 10, Economic Research Unit, University of Natal, Durban.

Kagan, RA. 1990. **"**How Much Does Law Matter - Labor Law, Competition, And Waterfront Labor Relations In Rotterdam And United States Ports". *Law and Society Review*, V24(N1):35-69.

Kagan, RA. 1990a. *Patterns of Port Development: Government, Intermodal Transportation, and Innovation in the United States, China and Hong Kong*. Research Report UCB-ITS-RR-90-13, Institute of Transportation Studies, University of California at Berkeley.

Kaldor, N. 1985. *Economics without equilibrium*. NY: Sharpe.

Kendall, LC and Buckley, JJ. 1973(2001). *The Business of Shipping* (7th Edition). Cornell Maritime Press: Centreville, MD.

Kenney, M and Florida, R. 1995. "The Transfer of Japanese Management Styles in Two US Transplant Industries: Autos and Electronics", *Journal of Management Studies*, 32:6. 789-802.

Kessides, C. 1993. *The Contributions of Infrastructure to Economic Development: A review of experience and policy implications*. World Bank Discussion Papers, no 213. Washington DC: World Bank.

Klier, TH. 1995. "The geography of lean manufacturing: recent evidence from the US auto industry" *Economic Perspectives* (Federal Reserve Bank of Chicago), 19(6): 2-16.

Klier, TH. 1999. "Agglomeration in the US auto supplier industry" *Economic Perspectives* (Federal Reserve Bank of Chicago), 23(1): 18.

K-Line, 2000. Corporate Web Site of Kawasaki Kisen Kaisha (K-Line), www.kline.co.jp, accessed 8-19-00.

Knight, FH. 1921. *Risk, Uncertainty and Profit*. New York: Augustus Kelly.

Krugman, P. 1995. *Development, Geography and Economic Theory*. Cambridge: MIT.

Lamb, JJ. 2001. "Hueneme's growth is a balancing act", *American Journal of Transportation*, June 11, 2001: 6A.

Lambooy, JG. 2002. “Knowledge and urban economic development: an evolutionary perspective”. *Urban Studies*, 39(5): 1019-1036.

Larsen, JC. 1995. *Memorandum to Commissioners Perez and Bellehumeur on Leasing Policy, July 18, 1995.* Port of Long Beach, California.

Lauriat, G. 2002. “Massport’s Maritime Division Optimistic”, *American Journal of Transportation*, April 29, 2002: 2A.

Lawson, C and Lorenze, E. 1999. “Collective learning, tacit knowledge and regional innovative capacity”. *Regional Studies*, 33(4): 305.

Lazonick, W. 1988. “The causes and consequences of the modern corporation: innovation and adaptation in the theory of the firm”, *UC Intercampus Group in Economic History Conference*, Santa Cruz, April 29-May 1.

Lazonick, W. 1990. *Competitive Advantage on the Shop Floor*. Cambridge: Harvard University Press.

LDR International, 2000. *Port Land Use Development Zone Master Plan (Phase 2: Planning Background / Data Collection Technical Memorandum).* October 5, 2000.

Levine, MV. 1987. “Downtown Redevelopment as an Urban Growth Strategy: a critical appraisal of the Baltimore Renaissance”, *Journal of Urban Affairs*, vol 9 (2): 103-123.

Levitt, EB. 1988. "Toyota begins long-term operation of new vehicle import center", *Port of Baltimore Bulletin*, October 1988: 12-13.

Linn, G. 2000. “A changing business”, *Journal of Commerce, JoC Week*, July 31, 2000. Special Report page 32.

Lipietz, A. 1993. “The local and the global: regional individuality or inter-regionalism?” *Transactions of the Institute of British Geographers*, 18.

Long Beach, 1999. *Financial Statements of the City of Long Beach*, Harbor Department. City of Long Beach, California.

Long Beach, 2001a. C*harter of the City of Long Beach*. City of Long Beach, California.

Long Beach, 2001b. *Comprehensive Annual Financial Report, 2001*. City of Long Beach, California.

Long Beach, 2001c. *Long Beach 2010* (Strategic Plan). City of Long Beach, California.

Luberoff, D and Walder, J. 2000. *US Ports and the Funding of Intermodal Facilities: an overview of key issues*. New England University Transportation Center, Massachusetts Institute of Technology.

Lung, Y, Chanaron, J-J, Fujimoto, T and Raff, D. (eds*) Coping with variety: flexible productive systems for the product variety in the auto industry*. Aldershot: Ashgate.

Luria, M (ed). 1997. *Reconstructing urban regime theory: regulating urban politics in a global economy.* Thousand Oaks: Sage Publications.

Maguire, M. 1985. 'MPA, no longer calm about losing port customers, tries to cut a deal'. *Baltimore Sun*, Wed March 13, 1985.

Mair, A. 1994. *Honda's global local corporation*. New York: St, Martin's Press.

Mair, A. 1997 "Strategic Localization: the myth of the postnational enterprise", in Cox, KR (ed). *Spaces of Globalization: reasserting the power of the local*. The Guildford Press: New York.

Markusen A.1996. "Sticky Places In Slippery Space - A Typology Of Industrial Districts**".** *Economic Geography*, 72(3):293-313.

Markusen, A. 1985. *Profit Cycles, Oligopoly and Regional Development*. Cambridge: MIT Press.

Markusen, A. 1987. *Regions: The Economics And Politics Of Territory*. Rowman And Littlefield.

Markusen, A. 1999. "Fuzzy concepts, scanty evidence and policy distance: the case for rigor and planning relevance in critical regional studies". *Regional Studies*, 33(9): 869-884.

Marshall, A. 1890. *Principles of Economics*. London: Macmillan.

Martin and Associates Reports. 1995. *The Economic Impact of the Port of Oakland's Maritime Division*.

Martin, J. 1997. "Mercedes: made in Alabama", *Fortune,* Jul 7 1997, 136(1):150-158.

Martin, J. and Thomas, BJ. 2001. "The Container Terminal Community", *Maritime Policy and Management*, 28(3): 279-292.

Maryland, 1956. *Journals of the Senate and House of Maryland* (Extraordinary session, March 6, 1956). King Brothers: Baltimore.

Maryland, 1970. *Laws of the State of Maryland made and passed* (House Bill 1000). King Brothers: Baltimore.

Maryland, 2000. *Annotated Code of Maryland, 6-102*. State of Maryland: Annapolis.

Massey, D. 1979. “In what sense a regional problem?”, *Regional Studies*, v 13: 233-243.

Massey, D. 1984. *Spatial Division of Labour: Social Structures and the Geography of Production*. London: Methuen.

McJunkin, JH and Slavin, MJ. 1986. *Memorandum to the Members of the Board of Harbor Commissioners,* City of Long Beach Harbor Department, December 2, 1986.

MDOT, 2001. *Consolidated Transportation Program: 2001 State Report on Transportation, FY 2001-2006*. Maryland Department of Transportation.

Menger, C. 1985. *Investigations into the method of the social sciences, with special reference to economics*. New York: New York University Press.

Metro News. 1975. *Metro News,* 3(10). Baltimore: The Johns Hopkins University, Center for Metropolitan Planning and Research.

Miller, G. 1994. "Long Beach Port acquires 725 acres for $405m", *Los Angeles Times,* March 24, 1994: J5 (Southeast Home Edition).

Miller, MV. 1990. “A statistical portrait of FTZs”, *Global Trade*, September 1990: 22-23.

MOL, 2001. *Corporate Web Site of Mitsui OSK Line*, www.mol.co.jp, accessed 3-23-01.

Mongelluzzo, 1995. "New Long beach tariff reluctantly accepted", *Journal of Commerce*, December 13, 1995: 6B.

Mongelluzzo, B. 1988. "LA Port denies discrimination in lease battle". *Journal of Commerce*, November 25, 1988: 1B.

Mongelluzzo, B. 1990. “Auto industry presses for redesigned railcars”, *Journal of Commerce,* August 27, 1990: 1A.

Mongelluzzo, B. 1991. “Smaller ports driving cars from LA-Long Beach”, *Journal of Commerce,* November 5, 1991: 1A.

Mongelluzzo, B. 1992. "Terminal operators look to partnerships", *Journal of Commerce*, April 22, 1992: 1B.

Mongelluzzo, B. 1996. "Port funds diversion tops S. California ship group's concerns", *Journal of Commerce*, January 25, 1996: 3B.

Mongelluzzo, B. 1997. "Agency transfers funds to Long Beach; Commission once more OKs money for city use", *Journal of Commerce*, December 1, 1997: 12A.

Morales, R. 1986. The Los Angeles automobile industry in historical perspective. *Environment and Planning D: Society and Space*, 4:289-303.

Morgan, K. 1997**. "**The learning region: institutions, innovation and regional renewal." *Regional Studies* v31, n5 (491-505).

Morita, M and Nishimura, KG. 2000. *Information Technology and Automotive Distribution: a comparative study of Japan and the United States*. Discussion paper CIRJE-F-96.

MPA. 1966. (Maryland Port Authority). *Decade for Port Progress 1967-1977: A ten-year development plan for general cargo facilities, Port of Baltimore*. Baltimore: Maryland Port Authority.

MPA. 1985. (Maryland Port Authority). *Master Development Plan, Maryland Port Administration, General Cargo Terminals*. Report Prepared in response to 1985 General Assembly Joint Chairmen's Report.

MPA. 1987. *Strategic Plan*. Baltimore: Maryland Port Authority.

MPA. 1996. *Strategic Plan*. Baltimore: Maryland Port Authority.

MPA-TSC (Maryland Port Administration, Tariff Study Committee), 1983. *Report on MPA Tariff and Lease Structure Revisions and Recommendations*.

MPA-TSC (Maryland Port Administration, Tariff Study Committee), 1984. *Report on MPA Tariff and Lease Structure Revisions and Recommendations*.

MPA-TSC (Maryland Port Administration, Tariff Study Committee), 1985/6. *Report on MPA Tariff and Lease Structure Revisions and Recommendations*.

MPC (Maryland Port Commission), various dates 1990-2000. *Annual Report to the Maryland General Assembly*. Annapolis: Maryland.

Muller, EJ. 1993. "How the railroads got religion", *Distribution*, 92(8): 94-97.

Murray, SD. 1998. "Car terminal favored, opposed: MPA wants Masonville, but two operators doubt it's warranted", *The Baltimore Sun* (Business), June 10, 1998: page 1C.

Myrdal, G. 1957. *Economic Theory and Underdeveloped Regions*. London: Duckworth.

NADA, 2001. *Franchise Laws in the Age of the Internet*. National Automotive Dealers Association. (www.nada.org)

News American, 1978. “MPA Building $16 Terminal at Hawkins Point”. *News American,* June 2nd, 1978.

Noponen, H., Markusen, A and Driessen, K. 1997. “Trade and American Cities: who has the comparative advantage?” *Economic Development Quarterly*, 11,1: 67-87.

North, D. 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge University Press.

North, DC, 1955, "Location Theory and Regional Economic Growth", *Journal of Political Economy,* 63:3 (243-258) (reprinted in Friedmann and Alsonso op cit.)

NYT (New York Times). 1999. “As Governors Feud Over Shipping Leases, Dockworkers Fear for Their Jobs”. *New York Times*, Monday, April 26, 1999: A23.

O’Conner, JR. 1973. *The fiscal crisis of the state.* New York, St. Martin's Press Date.

Olson, DJ. 1992. *Governance of US Public Ports: A preliminary survey of key issues*. Paper prepared for the Marine Port Governance Roundtable, November 10, 1992. Washington: DC.

Oster, CV, Rubin, BM and Strong, JS. 1997. “Economic Impacts of Transportation Investments: The Case of Federal Express”. *Transportation Journal*, Winter 1997: 34-43.

Ostrom, E. 1996. “Crossing the Great Divide: coproduction, synergy and development”. *World Development*, 24(6): 1073-1087.

Peattie, L. 1987. *Planning: Rethinking Ciudad Guayana*. Ann Arbor: University of Michigan Press.

Peck, J. 1996. *Work-Place: the social regulation of labor markets.* London: Guildford.

Peoples, J. 1998. "Deregulation and the labor market" *The Journal of Economic Perspectives*. Summer 1998, 12(3): 111-130.

Perroux, F. 1950. “Economic Space: theory and applications”. *Quarterly Journal of Economics,* 64, no. 1: 89-104.

Piore, M and Sabel, C. 1984. *The Second Industrial Divide*. New York: Basic Books.

PLA, 1986. *Port of Los Angeles, Annual Report*. City of Los Angeles, Harbor Department.

PLA/PLB (Ports of Long Beach and Los Angeles), 1998. *San Pedro Bay Ports Long-term Cargo Forecast*, Mercer and DRI.

Plume, J. 2001. "Steel Wheels", *Journal of Commerce, JoC We*ek, July 16, 2001, page 29.

PLUTF (Port Land Use Task Force). 1996. *Governor's Port of Baltimore Land Use Task Force*. Unpublished Report.

PMA, 2002. *2001 Pacific Maritime Association Annual Report*. San Francisco: PMA.

PNYNJ (Port Authority of New York and New Jersey), 2000. *Building a 21st Century Port*, The Port Authority of New York and New Jersey.

POB (Port of Baltimore). *Port of Baltimore Bulletin*
- November 1971. Car Terminal Planned at Hawkins Point (p10)
- March 1973. Containerization: Baltimore completes its first ten years (p14-16)
- June 1974. Automobile Import Center (p2-4)
- January 1978. Joe Stanton Retires (p17)
- April 1978. Datsun (p14-18)
- June 1979. POB Launches Crane Training Program (p7-8)
- March 1980. 1979 Excellent year for POB (p17-20)
- May 1981. Trade Topics
- July 1981. Trade Topics
- October 1981. Trade Topics
- January 1982. Trade Topics
- April 1982. Trade Topics
- May 1982. Toyota Expands Port Import Operation (p3-5)
- July 1982. Trade Topics
- September 1982. Mercedes-Benz Expands Import Operations (p51)
- March 1983. Trade Topics
- May 1983. Saab increases auto imports via Baltimore (p4-5)
- July 1984. Trade Topics
- September 1984. Toyota Import Facility Expands at Dundalk Marine Terminal (p10-11)
- October 1984. Isuzu Motors Ltd. Begins Baltimore Import Shipments (p21)
- January 1986. Import Cars Pass 300,000 mark (p7)
- March 1986. MPA Reorganization Begins (p8-9)
- April 1986. Port gets new import trucks (p5)
- July 1986. Visit by MPA officials to Daimler Benz HQ in Stuttgart Germany (p28)
- August 1986. Funding agreement reached for 50-foot channel project (p13-17)
- October 1986. Ceres signs lease (p8)
- December 1986. Planning Office Formed (p5)
- March 1987. ILA-MPA Business Team formed (p5)
- May 1987. Toyota Pact Reached (p14-15)
- September 1987. Ford and GM Pick Baltimore (p21)
- January 1988. Report on Governor Schaefer (p10)

- April 1988. Chrysler Begins European Exports (p15)
- May 1988. Atlantic Terminal Succeeds (p17)
- September 1988. Baltimore Port Link, USA lowers shipping costs (p15)
- June 1989. Report on PSPC (p12)
- October 1989. Special Seagirt Section (p6-13)
- September 1989. Port community works together in labor-management committee (p12)
- January 1990. Annual Report (p3)
- May 1990. Port begins offering cargo incentives (p4)
- March 1991. Unlimited midnight starts at port help steamship lines stay on time (p8)
- August 1991. Port dedicates 50-foot channel deepening project (p6-7)
- October 1991. Defining a new mission for the MPA (p28)
- March 1992. More and More Cruise Lines Discover Baltimore's Charm (p13-15)
- April 1992. CSXI's Cincinnati Intermodal Service Attracts Customers back to Baltimore (p16)
- November 1992. ILA, STA initiate portwide drive for Total Quality Auto-handling (p6)
- February 1993. Making Total Quality A Reality (p28)
- May 1993. Total quality program to enhance ports reputation for customer service (p30)
- October 1993. New Unit Illustrates MPA's Commitment to Providing Quality Customer Service (p8)
- February 1994. White Glove Treatment (p15)
- March 1994. Port Automobile Customers Benefit from CSXT's new rail terminal (p24)
- November 1994. Port Stresses Quality Auto Handling (p20)
- December 1994. Building a model total quality product (p14-15)
- August 1995. Wilhelmsen earns a TQ first with ISO 9002 Certification (p10)
- December 1995. Predelivery earns Q1 Preferred Quality Award (p5)
- December 1995. Reorganization Begins at Maryland Port Administration (p10-11)
- June 1999. Port opens Detroit Office to maximize new intermodal linkages (p14-15)
- September 2000. Getting new business for the port is Reaves' priority (p20-24)

Polanyi, K. 1966. *The Tacit Dimension*. New York: Kegan Paul.

POLB (Port of Long Beach, California).
- 1976 Advertising Supplement (placed in the Los Angeles Times, Long Beach Independent Press-Democrat, Orange County Register, Daily Breeze / News-pilot and Southern California Business).
- 1978 (1999) Port Master Plan (including changes through Amendment #14, July 1999)
- 1979 Harbor Highlights, 3(1) Spring, 1979.
- 1980 Harbor Highlights, 4(2), Summer 1980.
- 1980a Official Statement, $85,000,000 1980 Harbor Revenue Bonds
- 1981a Harbor Highlights, 4(3), Spring 1981.
- 1981b Harbor Highlights (Milestones and Memories), 4(4), Summer 1981: 10-11.
- 1981c Harbor Highlights (Port Planning), 5(1), Fall 1981.
- 1982 Harbor Highlights, 5(3), Summer 1982.
- 1983 Harbor Highlights, 6(1), Spring 1983.

- 1988 2020 OFI Study Summary: Cargo Handling Operations, Facilities and Infrastructure (OFI) Requirements Study.
- 1993 Facilities Master Plan.
- 1993a Annual Report. Saying Yes! To The Future.
- 1994 Annual Report. Passage to the Pacific. Gateway to the World.
- 1995 Annual Report. Setting new standards, reaching new heights.
- 1997 Annual Report. Serving the World, From a Global Community.
- 1998 Annual Report. Moving on….staying ahead.
- 1998a San Pedro Bay Ports Long-term Cargo Forecast
- 1998b North Harbor Study Area Final White Paper
- 1999 Annual Report
- 2001 Annual Financial Statements
- 2001a Facilities Master Plan
- 2002 Port of Long Beach History (www.polb.com, accessed 5/14/2002).

Putnam, R. 1993. *Making Democracy Work: civic traditions in modern Italy*. Princeton: University Press.

PWD (Port of Wilmington, Delaware), 2001. "Volkswagen of America at the Port of Wilmington: A 25 Year Milestone". *Port Illustrated*, Fall 2001: 8-9.

Queenan, CF. 1986. *Long Beach and Los Angeles: A tale of two ports.* Northridge: Windsor Publications.

Rauch, JE. 1995. "Bureaucracy, Infrastructure and Economic Growth: Evidence from US Cities During the Progressive Era". *The American Economic Review*, 85,4: 968-979.

Raymond, J. 1998. "Proposed state-owned auto facility at port draws ire of private firms", *The Daily Record*, June 10, 1998, page 3A.

Rhodes, RAW. 1994 "The hollowing out of the state: the changing nature of the public service in Britain. (Institutions in Disarray)" *Political Quarterly*, April-June 65:2 (p138-152).

Riles, A. 2000. *The Network Inside Out*. Ann Arbor: University of Michigan Press.

Ross, JR. 1992. "Heat is on for Cool Auto Business", *Global Trade*, February 1992: 46-50.

Rubenstein, JM. 1992. *The changing US auto industry: a geographical analysis*. Routledge: New York.

Rukert, NG. 1982. *The Port: Pride of Baltimore*. Badlad and Associates: Baltimore.

Sabel, C and Zeitlin, J, 1997. "Stories, strategies and structures: rethinking historical alternatives to mass production", in *World of possibilities: flexible and mass production in Western Industrialisation*. Cambridge University Press.

Sabel, C. 1993. "Studied Trust: building new forms of co-operation in a volatile economy", in R. Swedberg (Ed.), *Explorations in economic sociology*. Thousand Oaks, CA: Sage.

Sabel, C. 1995. *Intelligible Differences: On deliberate strategy and exploration of possibility in economic life*. Paper presented to the 36th annual meeting of the Societa Italiana delgi Economisti.

Sadler, D. 1999. "Internationalization and Specialization in the European Automotive Components Sector: Implications for the Hollowing-out thesis", *Regional Studies,* Vol. 33.2: 109-119.

Saramago, J. 1999. *All the Names*. (English Translation by Margaret Jull Costa). San Diego: Harcourt.

Sassen, S. 1997. "The Spatial Organisation of Information Industries: implications for the role of the state", in Mittleman, J, ed. *Globalisation: Critical Reflections*. Boulder, London: Lynn Reimer.

Saxenian, A. 1994. *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*. Cambridge, MA: Harvard University Press.

Sayer, A. 1992. *Method in social science: a realist approach*. (2nd Ed) London: Routledge.

Schoenberger, E, 1997. *The Cultural Crisis of the Firm*. Cambridge MA: Blackwell.

Schumpeter, J. 1950. *Capitalism, Socialism and Democracy*. New York: Harper Torchbooks.

SCMP (*South China Morning Post*):
- September 14, 1992. "Long Beach port buys Union Pacific waterfront property". (page 1)
- March 15, 1995. "Shipping". (page 6)

Scott, AJ. 1998. *Regions and the world economy : the coming shape of global production, competition, and political order*. New York: Oxford University Press.

Scott, WR. 1995. *Institutions and Organizations*. Thousand Oaks: Sage.

Scott, WR. 1998. *Organizations: rational, natural and open systems* (4th Edition). Upper Saddle River: Prentice Hall.

Selznick, P. 1948 (1984). *TVA and the Grass Roots: a study of politics and organisations*. Berkeley: University of California Press.

Sen, A. 1999. *Development as Freedom*. New York: Anchor Books.

Sharkey, M. 2001. "Border War Brewing over port facilities". *Jacksonville Daily Record*, March 27, 2001. www.jaxlegalnotice.com, accessed 3-28-02.

Shashikumar, N and Schatz, GL. 2000. "The Impact of US Regulatory Changes on International Intermodal Movements", *Transportation Journal*, Fall 2000: 5-14.

Shatzkin, K. 2000. "Court sides with drug rehab ship; Port discriminated against project, jury says" *The Baltimore Sun*, December 1, 2000: page 3C.

Sherman, R. 2002. *Seaport governance in the United States and Canada*. American Association of Port Authorities (http://www.aapa-ports.org/pdf/governance_uscan.PDF accessed 9-24-02).

Shimizu, K. 1998. "A New Toyotaism?" in Freyssnet, M, Mair, A, Shimizu, K and Volpato, G. (eds). *One Best Way? Trajectories and Industrial Models of the World's Automobile Producers*. London: Oxford University Press.

Simon, H. 1961. *Administrative behavior; a study of decision-making processes in administrative organization*. New York, Macmillan.

Slack, B. 1993. "Pawns in the Game: Ports in a Global Transportation System", *Growth and Change*. Vol 24: 379-88.

Slack, B. McCalla, R. and Comtois, C. 2002. *Logistics and Maritime Transport: a fundamental transformation*. Paper presented at the Annual Meeting of the American Association of Geographers, Los Angeles, March 2002.

Smith, A. 1776 (1976). *An Inquiry into the nature and causes of the Wealth of Nations*. (edited by Campbell, RH and Skinner, AS). Oxford: Clarendon Press.

Smith, DF and Florida, R. 1994. "Agglomeration and Industrial Location: an econometric analysis of Japanese-affiliated manufacturing establishments in automotive-related industries", *Journal of Urban Economics*, 36: 23-41.

Smith, N. 1984. *Uneven Development: Nature, Capital and the Production of Space*. New York: Blackwell.

Sommer, D. 1999. *Private Participation in Port Facilities – recent trends*. Public Policy for the Private Sector, Note 193. Washington: World Bank.

Starr, JT. 1991. “The Port of Baltimore: off the beaten track?”, *Maritime Policy Management*, 18 (3): 171-181.

Starr, JT. 1994. “The mid-Atlantic load centre: Baltimore or Hampton Roads?”, *Maritime Policy Management*, 21(3): 219-227.

State of Maryland, 1985. *Joint Committee on Ports Report of the 1985 Interim to the General Assembly*. Annapolis, Maryland.

State of Maryland, 1987a. *Report on the Port of Baltimore* (A briefing paper for the 1987 General Assembly). Department of Fiscal Services. Annapolis, Maryland.

State of Maryland, 1987b. *Port of Baltimore: Evaluation of Subsidy Programs.* Department of Fiscal Services, State of Maryland. Annapolis, Maryland.

Stinchcombe, AL. 1990. *Information and organizations*. Berkeley : University of California Press.

Stoker, G. 1998. Governance as theory: five propositions. *International Social Science Journal*, 50(1):17-29).

Stopford, M. 1988. *Maritime Economics*. London: Routledge.

Storper, M. 1997. *The Regional World: territorial development in a global economy.* New York: The Guildford Press.

Storper, M. 2000. “The resurgence of regional economics: ten years later”, in Barnes, TJ and Gertler, MS (eds). *The New Industrial Geography: regions, regulation and institutions*. London: Routledge.

Storper, M. and Walker, R. 1989. *The Capitalist Imperative: Territory, Technology and Industrial Growth.* London: Basil Blackwell.

Sturgeon, T and Florida, R. 2000. *Globalization and Jobs in the Automotive Industry*. A study by the Carnegie Mellon University and the Massachusetts Institute of Technology for the Alfred P Sloan Foundation.

Sutton, J. 1992. "Port and intermodal growth: market demand faster than supply", *Global Trade*, May 1992: 10-14.

Swyngedouw, E. 1993. “Communication, mobility and the struggle for power over space”, in Giannopoulos, G and Gillespie, A. *Transport and Communications in the New Europe*. London: Belhaven.

Talley, WK. 2001. *Dockworker Earnings, Containerization and Shipping Deregulation*. Paper presented at the University of California at Berkeley, Institute for Transportation Studies Weekly Transportation Seminar, October 5, 2001.

Taylor. PJ. 2000. Embedded statism and the social sciences 2: geographies (and metageographies) in globalization. *Environment and Planning A*, 32:1105-1114.

Teitz, M. 1994. Changes In Economic Development Theory And Practice. *International Regional Science Review*, 16(1-2):101-106.

Tendler, J. 1997. *Good government in the Tropics*. Baltimore: Johns Hopkins University Press.

Thomas, L. 1998. "From dock to dealer" *Manufacturing Systems*, May 1998, 16(5): 32-34.

Thompson, J. D. 1967. *Organisations in Action: Social Science Bases of Administrative Theory*. New York: McGraw-Hill.

Thuemer, KE. 2001. "Proximity to dealers and manufacturers important for Southeast Toyota Distributors", *American Journal of Transportation*, March 26 2001, page 10A.

Thuermer, KE. 2001a. "Ro/ro commodities fit nicely for niche business and inland, more shallow ports". *American Journal of Transportation*, June 11, 2001: 7A.

Tiebout, CM. 1956, "Exports and Regional Economic Growth". *Journal of Political Economy*, 64:2 (160-69). (including Reply from DC North and Rejoinder from CM Tiebout) (reprinted in Friedmann and Alsonso op cit.)

Tiebout, CM., 1956 "A Pure Theory of Local Public Expenditures", *Journal of Political Economy*, 64: 416-424.

Toyota, 1988. *Toyota: A History of the first 50 years*. Toyota Motor Corporation: Toyota City.

Toyota, 2000a. *Toyota Data Book 2000*. (www.global.toyota.com, accessed August 10, 2000).

Toyota, 2000b. *A Quick Look at Toyota USA*. (www.toyota.com/times/tusa/qlook, accessed August 9, 2000).

Toyota, 2000c. *Toyota Annual Report, 2000*. (www.global.toyota.com, accessed August 10, 2000).

Turner, HS. 2000. "Evaluating seaport policy alternatives: a simulation study of terminal leasing policy and system performance" *Maritime Policy and Management* 27-3:283-301.

US (United States Court of Appeals for the Fourth Circuit). 1998. *Maryland Port Administration vs Federal Maritime Commission*. Case No. 97-2418.

US (US Department of Transportation, Bureau of Statistics), 1997. *National Transportation Statistics*. Washington, DC.

US (US Department of Transportation, Maritime Administration), 1998. *A Report to Congress on the Status of the Public Ports of the United States, 1996-7.* Washington, DC.

US DOT, 1992. *Landside Access to US Ports.* Department of Transport (Transportation Research Board).

US DOT. 1999. *An Assessment of the US Marine Transportation System: A Report to Congress*. Department of Transport (Maritime Administration and Coast Guard).

Vail, B. 1989. "ILA, Employers agree to extend their contract", *Journal of Commerce*, July 3, 1989; page 1A.

Van de Voorde, E. 1995. "Sea Ports, Land Use and Competitiveness: how important are economic and spatial structures?" In Banister, D (ed). *Transport and Urban Development*. London: E&FN Son.

van Dijk, J. nd. "The One-dimensional Network Society of Manuel Castells." *The Chronicle* (http://www.thechronicle.demon.co.uk/archive/castells.htm, accessed 3-18-02).

Van Klink, HA and van den Berg, GC. 1998. "Gateways and Intermodalism". *Journal of Transport Geography*, 6(1): 1-9.

Vandeveer, D. 1998. *Container Port Throughput Enhancement using an Inland Sorting Facility.* Paper presented to the University of California, Berkeley, Institute of Transportation Studies Seminar, October 30, 1998.

Vickerman, R. 1999. "The Transport Sector, New Economic Geography and Economic Development in Peripheral Regions", in Beuthe, P and Nijkamp, P (ed). *New Contributions to Transportation Analysis in Europe*. Aldershot: London.

Wade, R. 1996. "Globalization and its limits: reports of the death of the national economy are greatly exaggerated", in *National Diversity and Global Capitalism*, Berger, S and Dore, R. eds. New York: Cornell University Press.

Walsh, AH. 1978. *The Public's Business: The Politics and Practices of Government Corporations.* Cambridge: MIT Press.

Washio, A and Oki, E. 1992. "Cut in Auto Export Quota may Backfire", *Japan Times Weekly International Edition*, Mar 30-Apr 5 1992, 32(13):1,6.

Wastler, AR. 1992. "California Ports Delay Lawsuit Over Budget Law". *Journal of Commerce,* October 28, 1992: 5B.

Waters, RC. 1977. “Port Economic Impact Studies: Practice and Assessment”. *Transportation Journal*. Spring 1977: 14-18.

Watson, R. 1998. “Maryland port agency wins OK for auto processing unit”. *Journal of Commerce,* September 29, 1998: p13A.

Weber, A. 1909 (1929 Translation). *Alfred Weber’s Theory of the Location of Industries*. Chicago: University of Chicago Press.

Wellman, D. 1995. *The Union Makes Us Strong: Radical Unionism on the San Francisco Waterfront*. New York: Cambridge University Press.

Werner, B. 1999a. “Port makes valuable contacts through bid” *Baltimore Business Journal*, March 22, 1999.

Werner, B. 1999b. “Port seeks solace in entry of CSX rival” *Baltimore Business Journal*, May 24, 1999.

Williamson, O. 1975. *Markets and Hierarchies*. Free Press.

Wolff, G, Rigby, D, Gauthier, D and Cenzatti, M. 1995. “The potential impacts of an electric vehicle manufacturing complex on the Los Angeles economy”. *Environment and Planning A*, 27:877-905.

Womack, JP, Jones, DT, and Roos D. 1990. *The machine that changed the world*. New York: Rawson Associates.

Woodyard, C. 1988. “Long Beach Port’s Executive Director to take new post”. *Los Angeles Times*, January 23, 1988: Home edition, Business Section Part 4, Page 1.

Wooton, S. 1996. “Contract rejected by dockworkers: Longshoremen accept master accord but call local pact worst ever”. *Baltimore Sun*, October 3, 1996, page 1C.

Appendix A

Additional Tables and Analysis

Contents

A2: Analysis of Commodity Specialization across the US Port System, 1982-1999

The following analysis confirms that the distribution of less containerized cargoes, such as automobiles, are more likely to be specialized within the US Port System than for more containerized cargoes.

Following Charlier (1988) I have examined the overall level of specialization in the US Port system using US Army Corp of Engineers data from 1982-1999 for the 21 reference ports and commodity data organized in 26 'summary' and 123 'detailed' commodity classes. The tonnage for each commodity has been adjusted to account for differential economic impact (see Appendix B). For a given year, for a set of ports (1...i...n) and commodity classes (1...j...m), an elementary specialization index is calculated as follows:

Elementary Specialization Index: $I_{ij} = (T_{ij}/T_{.j})/(T_{i.}/T_{..}) = (T_{ij}/T_{i.})/(T_{.j}/T_{..})$,

> where T_{ij} denotes tons of commodity j handled in Port i, $T_{i.}$ is total tons in Port i, $T_{.j}$ is the total tons of commodity j, and $T_{..}$ is the total tons at all Ports

From this elementary specialization index, a composite index of specialization in the entire system, and partial indices of specialization per commodity across all ports, and of specialization per port across all commodities, may be calculated as follows:

Composite Specialization Index: $G = \sum_{mn} \left| I_{ij} - 1 \right| = \sum_{m} C_j = \sum_{n} P_i$

Specialization Index per commodity: $C_j = \sum_{n} \left| I_{ij} - 1 \right|$

Specialization Index per port: $P_i = \sum_{m} \left| I_{ij} - 1 \right|$

The specialization indices confirm that, in general, there is an inverse relationship between containerization and the degree of specialization. Containerized commodities became less specialized across the 21 ports, while non-containerized commodities became more so. Container ports became less specialized, while Diversified and Niche ports became more so.

The overall level of specialization in 21 reference ports fell in the period 1982-1999 (see Table A3.1). This finding is confirmed for both summary and detailed commodity classification systems. However, the partial specialization indices for ports and commodities do reveal some contrary trends.

Tables A3.2 and A3.3 presents the Specialization Index per Port for the summary and detailed commodity classifications. Most ports experienced decreasing specialization, while the only ports to experience increasing specialization according to both measures (Baltimore, Portland, Hampton Roads, Philadelphia and Benicia) are Diversified or Niche ports. This suggests an inverse relationship between containerization and specialization in the 21 reference ports.

Tables A3.4 and A3.5 present the Specialization Index per Commodity for the 21 reference ports. At the summary level (see Table A3.4), it is apparent that commodity groups less likely to be carried in containers are also those commodities experiencing the largest increases in specialization (field crops, coal and lignite, and petroleum products).

The more detailed commodity classification confirms this finding. Table A3.5 presents the Commodity Specialization Indices for selected commodities. The selected Manufactured Products commodities have been chosen to show that only Motor Vehicles, Parts and Equipment experienced high and increasing commodity specialization, and that this is the least containerized commodity in this class. The 12 other selected commodities are simply illustrative. They represent 6 pairs of similar commodities with respect to containerization rate, but with differing degrees of specialization across US ports.

Finally, confirmation of the inverse relationship between containerization and specialization is provided by a simple bivariate correlation analysis for 113 commodity classes. The correlation between change in containerization rate and change in specialization index per commodity from 1990 to 1999 is –0.127. This is not statistically significant but in the right direction. The correlation between containerization rate in 1990 and change in specialization index from 1990 to 1999 is –0.186. This is statistically significant at the 95% confidence level. The findings are robust regardless of whether outliers are included or excluded.

Table A3.1: Composite Specialization Index for Adjusted Cargo Tons, 1982-1999

	Summary Commodity Classes	Detailed Commodity Classes
1982	520.2	3918.0
1983	518.7	3855.5
1984	514.3	4102.9
1985	457.4	3601.3
1986	464.2	3640.6
1987	466.5	3596.4
1988	468.7	3707.6
1989	464.5	3355.2
1990	486.6	3310.1
1991	479.8	3605.4
1992	469.4	3535.6
1993	470.4	3382.6
1994	465.9	3128.9
1995	462.9	3148.3
1996	468.1	3090.6
1997	452.6	3129.4
1998	453.6	3119.5
1999	446.4	3225.5
Change 1982 to 1999	-73.8	-692.5

Source: Authors analysis of adjusted tons of imports and exports from the US Army Corp of Engineers Commodity Movement Database.

A3: Relative Sectoral Employment Growth

Table A5.1: Relative Sectoral Employment Growth (1) in Southern California

	Los Angeles			San Diego
	Broad (LA-Riverside-Orange)	Narrow (Ventura County–Port Hueneme)	Narrow (Los Angeles County – LA/LB)	
1980-90				
Marine Terminals	5.1%	.	6.1%	-8.3%
Freight Transport	1.0%	-4.4%	1.1%	1.7%
Water Transport	3.0%	2.9%	4.0%	3.2%
All Transport	0.0%	1.2%	0.2%	-2.8%
Auto Assembly	1.1%	18.2%	-0.5%	8.4%
Auto Parts	-0.6%	20.6%	0.2%	2.6%
All Manufacturing	0.1%	1.8%	0.4%	0.6%
Auto Distribution and Retail	0.0%	0.0%	-0.5%	-1.5%
All Distribution and Retail	-0.1%	-1.2%	-0.1%	-0.7%
1990-98				
Marine Terminals	6.9%	.	7.4%	2.9%
Freight Transport	0.9%	-3.3%	0.1%	1.3%
Water Transport	7.9%	-8.8%	8.6%	-6.7%
All Transport	1.9%	-7.3%	2.3%	-1.3%
Auto Assembly	-4.1%	-26.5%	-8.9%	-15.5%
Auto Parts	1.7%	10.2%	-1.3%	4.3%
All Manufacturing	0.6%	1.6%	0.0%	0.6%
Auto Distribution and Retail	0.6%	1.0%	-0.1%	0.8%
All Distribution and Retail	0.2%	0.9%	0.1%	-0.1%

(1) Relative Employment Growth is second difference of sectoral employment growth in region with regional and sectoral effects removed. Employment figures from analysis of County Business Patterns. See Chapter Two and Appendix B for details.

Table A6.1: Relative Sectoral Employment Growth (1) in the Baltimore Region

	Broad (Baltimore-Washington, DC)	Narrow (Baltimore County)
	1980-90	
Marine Terminals	-2.6%	0.0%
Freight Transport	-0.2%	-0.2%
Water Transport	-1.7%	-1.9%
All Transport	0.1%	-1.2%
Auto Assembly	-1.0%	1.9%
Auto Parts	-1.4%	-7.0%
All Manufacturing	-1.9%	-2.0%
Auto Distribution and Retail	-0.2%	0.8%
All Distribution and Retail	-1.0%	-0.7%
	1990-98	
Marine Terminals	-3.4%	-2.0%
Freight Transport	-1.4%	-1.0%
Water Transport	-5.1%	-1.5%
All Transport	-3.2%	-2.1%
Auto Assembly	1.4%	1.4%
Auto Parts	-2.2%	-10.6%
All Manufacturing	-2.0%	-1.7%
Auto Distribution and Retail	-0.5%	-0.7%
All Distribution and Retail	-0.9%	-0.1%

(1) Relative Employment Growth is second difference of sectoral employment growth in region with regional and sectoral effects removed. Employment figures from analysis of County Business Patterns. See Chapter Two and Appendix B for details.

Appendix B

Data Sources and Treatment

Overview

The exploratory nature of the questions posed by this dissertation and the methodological approach adopted required a mixture of social science research methods. I collected and analyzed data using three methods; interviews analyzed qualitatively, documentary data analyzed historically, and quantitative data analyzed statistically. This appendix contains information on data sources and treatment.

Qualitative data for this dissertation was obtained from a semi-structured telephone survey of 21 Port Authorities, site visits to 12 of these Ports and longer visits of several weeks to two case study Ports, Long Beach and Baltimore. I interviewed one or more representative of 6 different automobile firms and visited automobile processing and distribution facilities in several locations. In all, I conducted over 50 formal interviews of up to 2 hours duration, supported by numerous informal conversations.

When conducting telephone and in-person interviews I requested relevant documents. In the case study ports I requested and obtained access to contracts between Port Authorities and firms in the automobile sector, minutes of meetings and other internal documents.

Quantitative data for this dissertation was obtained from a diverse range of sources, including commodity handling data from the US Army Corp of Engineers (Waterborne Commerce Division) and Department of Commerce (Maritime Administration), automobile production, sales and import/export data from the Wards Auto Data Bank, Bureau of Economic Analysis and the Journal of Commerce Port Import-Export Reporting Services (PIERS), and employment data from the Bureau of the Census County Business Patterns.

Interview Data and Qualitative Analysis

The goals of this data collection and analysis effort were to understand the nature, content and changes in the relationships between Port Authorities and automobile importers as experienced by those involved. In the case study ports I sought to reconstruct and understand the process of handling automobiles in terms of the actors involved and their relationships with each other. In the 21 reference ports I sought to get a less detailed understanding as background and confirmation for the cases. Where possible I tape-recorded interviews and drew on these for quotations (see Appendix B1 for the List of Interviews and B2 for the Letter of Consent).

(1) Telephone Survey of 21 Port Authorities: during the first half of 2000, I surveyed the 21 reference ports by telephone. I called the public relations, publicity or marketing office of each Port Authority and asked to speak to the person who could tell me about the port, its structure, operations, and commodities handled, including automobiles. In many cases I was referred to more than one person, in which case I followed all leads. I used a semi-structured interview schedule to guide the discussions.

(2) Site Visits to 12 Ports: in addition to the 2 case study ports, over the course of the research I was able to visit 10 other ports (Seattle, Tacoma, Portland, Benicia, Oakland, Port Hueneme, San Diego, Los Angeles, Wilmington and New York). In

each case I met with one or more representative of the Port Authority. In Port Hueneme, San Diego, Portland, Wilmington, and New York I also met with one or more representative of an automobile importer, processor or stevedore. I used interview schedules developed for the case study ports as appropriate.

(3) Case Study Ports: I conducted interviews, visited facilities and collected documents in the Port of Long Beach in September 2000, and in the Port of Baltimore in November-December 2000. In each case I sought to interview Port officials concerned with the automobile trade, and representatives of all the intermediary actors than are involved in the automobile trade. Within the Port Authorities this involved interviewing officials in the Marketing, Property / Leasing, Planning and Operations functions. Amongst the intermediaries this involved interviewing representatives of steamship lines, stevedoring firms, longshoremen, vehicle processors and land transportation providers. I developed semi-structured interview check-lists respectively for Port Authorities, Shipping Lines, Stevedores and Longshoremen, and Automobile Processors. Where possible I tape-recorded the interview. I identified interview respondents using a snowball sampling technique - I asked each respondent to identify the individuals in the automobile trade they worked with, both inside and outside their organization, firm or authority.

(4) Automobile Firms: I sought telephone and in-person interviews with logistics planners and distribution facility operators of all major automobile importers, with mixed success. I was able to interview one or more representative of Toyota, Honda, Mercedes, VW, BMW and Chrysler, using a semi-structured interview in each case. In each interview I sought to understand the current and historical pattern of port usage by the firm, in the overall context of the firm's North American operations. I visited facilities operated by or on behalf of Toyota, Honda, Mercedes and VW in various ports.

Documentary Data and Historical Analysis

The goal of this data collection and analysis effort was to reconstruct the historical sequence of events in the case study ports, Long Beach and Baltimore. This was so as to be able to place the relationships revealed through the qualitative interview research in context, and understand their history in relation to the other events influencing the ports. A second goal of the documentary research was to understand specific aspects of the shipping, ports and automobile sectors. This involved collecting port charters, planning documents and promotional materials, federal maritime regulations, newspaper articles, trade journals and other typical sources of supporting information.

I sought four specific kinds of documentary evidence to structure the historical case study analyses in Baltimore and Long Beach:

(1) Documents of historical record: by this I mean that I sought documents through which to reconstruct the chain of events in each case study Port from the late 1970s until the late 1990s. In both ports I relied on the annual (Long Beach) / monthly (Baltimore) publicity magazines of the authority. In the case of Long Beach I also reviewed the minutes of the Port Commission and visited the archives of the San Pedro Historical Society. In the case of Baltimore, I visited the Maryland State Archives in Annapolis and reviewed the annual report of the MPA to the legislature.
(2) Contracts: In each case study port I requested and was given copies of contracts between the Port Authority and automobile importers and processors.
(3) Correspondence: I reviewed correspondence between the Port of Long Beach and various automobile importers and processors over the period from the 1960s up till the early 1990s.
(4) Internal Documents: I reviewed a variety of internal policy documents in both case study ports concerning terminal leasing, planning and finances. In the Port of Baltimore I reviewed the detailed minutes of the Port's tariff setting committee for the period from 1980.

Quantitative Data and Statistical Analysis

The goal of the statistical analysis component of the research was to provide a background statistical description of commodity flows and port activity levels, and to highlight the strengths and weaknesses of alternative approaches to the relationship between ports and economic development (see especially Chapters Two and Three). I collected and analyzed three sets of data; port commodity handling, automobile shipment and regional employment data.

My study required data on the commodities handled by various ports that met the following requirements. First, I required time series data for the period 1980 to the present. Second, I required details on commodities as opposed to the more commonly reported data on commodity modes (ie containers, break-bulk, liquid bulk and dry bulk). Third, I required data for the individual Port Authorities under study, as opposed to the more commonly reported Customs District data. These rather strict requirements were not easy to meet, but I was able to rely on a merged data set for the period 1982-99 from the US Army Corp of Engineers, supplemented by data from the Maritime Administration for the period 1990-99. Although these data sources have shortcomings, they were the best and most affordable options available.

There are two main sources of data on commodities moving through US ports. First, the Department of Customs needs to know the value of goods that are imported and exported, amongst other things in order to levy the correct duties. The 'cargo manifest' form (also known as the Shipping Export Declaration and Customs Cargo Manifest) records this information, which is then collected by the Foreign Trade Division of the Bureau of the Census. This data is combined with similar data collected at airports and land crossings to generate balance of payments and other national accounts statistics. The primary strength of this data source is that it directly reports the value of the cargo being shipped. However, before 1994 this data is only reported for each customs district, not for each port.

Second, whenever a ship is loaded or unloaded, a separate report is completed detailing the cargo. This is known as the 'bill of lading'. This data source is collected by the Maritime Administration (MARAD) to provide detailed statistics on the number of ship visits and cargo handled at each port. The primary strength of this data source is that it organizes the data by port visit, thus allowing analyses that link shipping patterns to commodity movement.

From 1998, the Maritime Administration became responsible for both data sources. The MARAD statistics office has since 1990 merged these data sources. This provides a time series of commodity shipment data by foreign origin/destination (including in-transit shipments that have neither US origin nor destination), US port, by weight and value for all 6-digit Harmonized Series (HS) commodity classes, and indicating whether the cargo is containerized.

Before 1990 the picture is less clear. The US Army Corps of Engineers, responsible for port dredging and other marine engineering tasks, has for many years collected very detailed statistics on the volume of traffic moving through all US waterways. The source of this data is the 'bill of lading'. This data series reports shipments by commodity type for every shipping channel – this high level of spatial disaggregation can be combined to generate port-level statistics. However, due to the unique needs of the Corps, this data source does not include value, and weights are reported in short tons. Since 1999, the Corp has stopped publishing this data. However, I was able to get a complete data series of commodity volumes per port authority for the period 1982-99 directly from the US Army Corp of Engineers (the WCUS data).

It should be noted that none of the data sources described here provide information on the US land-side origin or destination of cargo. There is one commercial source that provides data on these movements for current (or recent historical) data – the PIERS (Port Import-Export Series) compiled by the Journal of Commerce. This data source is based on the Bill of Lading, and PIERS have estimated commodity values. At considerable expense, data can be purchased for individual shipments, detailing the name and address of the shipper. Due to cost constraints, I only purchased a sub-set of data on automobile imports from this source.

US Army Corps of Engineers: Waterborne Commerce of US 1982-1999

This data was obtained from the National Data Center of the US Army Corp of Engineers. It included data on imports and exports, including through-traffic, for the Waterborne Commerce of the US (WCUS) commodity and port classifications. The main advantage of this data is that it is available for all ports, from 1982 to 1999. The data required the following treatment.

First I had to develop common commodity classes. Commodity classes for the WCUS data have changed: before 1990 they used a 4-digit classification while since 1990 they have used the 5-digit SITC classification and an internal classification code known as the

Publication Commodity Group. Although there is a high degree of conformity between these systems, when I merged the data I had to combine some classes. The number of reportable classes for all 18 years was reduced from around 150 in each of the separate classification systems, to 123. I then grouped the 123 classes into 26 larger classes, following the categorization systems used by the WCUS, and to ensure that commodities requiring similar handling technologies were grouped together (see Appendix B3). For example, I drew a distinction between grains and other similar agricultural field crops that are generally transported as dry-bulks, and fruit and vegetables that are transported in refrigerated containers or as palletized cargo on refrigerated ships. The common classification system allowed full usage of data of the entire time series. Note that in this data series, Vehicles and Parts are reported as one class, and thus I have had to rely on other data sources to examine Automobile shipments.

Second, while in most cases, the WCUS defined port match the public port authority completely, this is not the case in the following instances:

(1) What I have analyzed as the Port of Benicia is in fact the Carquenas Strait, and thus includes various other private terminals. Benicia is itself the only fully privately owned and operated port in the reference group, and thus has not been regarded as directly comparable with other ports in this study.
(2) In the case of many East Coast ports, the WCUS definition of the port may include several privately owned terminals. For example, in Baltimore, private terminals handling steel and some wood products have been included, as have the private automobile terminal at the Chesapeake terminal of Amports. In these cases however, the bulk of container, automobile, ro/ro and general cargo is moved across public terminals, or across private terminals that are essentially still part of the port complex under study.

Third, further data treatment was required to ensure that transshipped cargo was consistently excluded from the total reported foreign traffic. This is to ensure compatibility across the time series, although it is debatable whether it should be included or not, since through traffic does require some on-dock handling. However, since through traffic is generally not associated with value-adding activity, I decided to exclude such transshipments. Amongst the reference ports, this was only a problem at the Ports of Norfolk and Benicia, where foreign commodities are transshipped on internal waterways.

Fourth, I calculated what are referred to in this study as *Adjusted Cargo Tons*. When comparing the distribution of a given commodity across several ports, singular measures of the commodity, typically weight or value, provide an appropriate measurement scale – a ton of eggs has the same economic development implication everywhere. However, when one is trying to assess the overall commodity mix of one port with another, or with itself over time, a singular measure is inadequate. This is because a ton of crude oil has very much less economic impact than a ton of eggs – both in terms of its impact on the hinterland economy and in terms of its impact on port and other transportation-related activity levels.

Various methods have been proposed to adjust for this problem – I chose to use a modified version of the scheme proposed by Charlier (1996). In Charlier's original scheme developed for African ports, every ton of general cargo was counted at parity, while each ton of container cargo was divided by 3, each ton of bulk cargo divided by 6 and each ton of liquid petroleum divided by 12. This reflects their relative economic impact on direct port activities. I adjusted these factors slightly using the commodity-specific economic impact estimates for various US ports: general cargo, fruit and automobiles – 1; containerized cargo – 3; dry bulks (ores, grains, excluding coal) and liquid bulks (excluding petroleum) – 6; and coal and petroleum – 20. Using these factors, I was able to derive an adjusted cargo measure for each port that was approximately comparable. This allowed me to estimate concentration and specialization indices for commodities within each port.

Maritime Administration: Commodity Data 1990-1999

In order to examine the impact of containerization on the transportation of individual commodities, I acquired a data set from MARAD. This data reported the weight, value, containerized weight and containerized value of some 1500 commodities imported and exported through each US port, for 1990 to 1999. This data allowed me to calculate the percentage (by weight) of each commodity that is transported by container for each of the 21 reference ports. This data required the following treatment.

First, I had to make the 1500 commodity classes of the 4-digit Harmonized Series (HS) compatible with the 123 and 26 commodity classification systems I had developed for the US Army Corp of Engineers data. Second, I found a small but noticeable number of errors in the MARAD data. I identified these when the reported percentage containerization of a given commodity exceeded 100%. In such cases I was able to trace the problem to a missing series of values in the data. I corrected this by estimating values for the missing data. I did this by averaging data for the missing cell of port-commodity-year data, or by using the WCUS data from the US Army Corp of Engineers. In a small number of cases I also eliminated the reported data on containerized cargo, for example for commodities such as crude petroleum. This editing procedure affected approximately 250 port-commodity-year cells, which represents less than 1% of all port-commodity-year cells in the final output.

PIERS: Automobile Import Data, October 1980/1990/2000

I purchased proprietary data on automobile imports from the Port Import-Export Reporting Service (PIERS) of the Journal of Commerce. PIERS capture the data contained in individual cargo manifests, thus providing detailed information on origin, port of entry, shipper and size of each load of a particular cargo. Table B1 lists the variables and descriptions, and provides commentary on the usefulness of the data.

Table B1: PIERS New Automobile Imports Database Variables Used

Field Name	**Field Description**	**Comments**
MONTH	Vessel Arrival Date	
COMMODITY	Manifest Commodity Description	Used to identify auto manufacturer
COUNTRY	Country Description	
USPORT	U.S. Port Name - SCHEDULE D	Used to identify Port
NAME	U.S.Importer Name	Used to identify auto manufacturer
FNAME	Foreign Shipper Name	Used to identify auto manufacturer
SLINE	Ship Line-Carrier Code	Used to identify shipping line
QTY	Quantity of Goods	Number of automobiles

Due to the cost of the data I was only able to acquire records for the months of October 1980, October 1990 and October 2000. I chose October because according to industry sources, this has been one of the busiest months for new automobile imports – it is when the new models for the coming year are imported in advance of the holiday season. I chose these years, partly because of their neat decennial symmetry, but also because they all occurred at or near the peak of a business cycle. 1980 represents the pre-transplant period, while 1990 and 2000 represent deepening transplant production. The data required considerable cleaning and coding to transform into a useful format. Table B2 summarizes the data cleaning steps and their impact on the number of records.

Table B2: Treatment of PIERS Automobile Import Data

		1980	1990	2000	Total
Raw Data	Records / Manifests	1,121	2,789	3,517	7,427
	Auto Units	241,644	293,699	283,321	818,664
Non-usable records excluded	Records / Manifests	1,104	2,786	3,498	7,388
	Auto Units	237,893	293,022	282,900	813,815
Records without auto manufacturer excluded	Records / Manifests	469	2,733	3,256	6,458
	Auto Units	223,883	289,166	278,568	791,617

I had to exclude a small number of records because they were golf-carts and other products that had incorrectly been included in the data. This eliminated 39 records and 4,849 units. I also lost some data in the process of identifying the automobile manufacturer for each shipment. In many cases this was explicit in the commodity variable (eg Toyota Camry), but in other cases I had to code using the name of the US or foreign shipper (eg Toyota Motor Sales). This problem was more serious with individual private-owned vehicle (POV) shipments, where the manifest would provide the name of an individual as shipper, and list the commodity as “classic car” or some such description. Thus, although this eliminated a large number of records (933) it did not reduce the number of automobiles (22,222) by the same proportion. However, particularly in the 1980 data this did eliminate some new car loads shipped to automobile processing firms.

I eventually used only those records for which I could identify the manufacturer. Most of the shipments without manufacturer identification where either individual shipments of POVs or were shipments with inconsistencies (for example, the unit of measure for many was listed as Containers or Pieces). So, although some valid data were lost through this step, it was deemed prudent. An alternative rejection rule I considered was to eliminate all shipments below a certain size (say 1 or 5 vehicles) – with the idea that this would eliminate POV shipments. However, shipments of some new, high-value German luxury automobiles are listed per vehicle, and so this decision rule would have eliminated substantial valid data.

I was not able to identify the vehicle model, the inland destination and which automobile processing operation received the automobile with enough accuracy to use this data. I then coded the data for:

(1) US Port of entry,
(2) US Port Range (Pacific North-West, California (north and south), Gulf, North-East Coast (Norfolk and north), and South-East Coast),
(3) Foreign region (Europe, Asia, Americas), according to the nationality of the manufacturer; and
(4) Shipping line (NYK, Mitsui-OSK, WWL, HUAL, K-Line, Autoliners, Toyofuji, VAG Lines, Nissan Motor Line, etc).

Wards Auto Data: Automobile Production, Imports, Exports and Sales, 1985-99

This analysis has been limited to passenger cars and light trucks, and excludes medium and heavy trucks. Passenger cars and light trucks are treated similarly by port authorities and shipping lines, and they are sold through consumer-oriented dealerships. Light trucks represent all SUVs, light-duty pickups, minivans, and most vans. Medium and heavy-duty trucks are usually referred to as commercial duty trucks while light duties are those generally purchased by the consumer for private use. The various sources do use differing definitions of light trucks, and the problems associated with finding comparable data are surprisingly great.[1] Rather than attempt to reconcile and merge these data sources, I have kept them separate.

From the Bureau of Economic Analysis of the US Department of Commerce I obtained time series data on automobile production, sales and imports since 1976. However, to obtain firm-specific data I had to purchase production, sales and imports data from the Wards Automotive Report – a widely used industry source. The source of this data is company reports, but Wards does estimate for some of the smaller manufacturers.

The geographical reporting in this data source is unfortunately not consistent:

(1) Production includes vehicles assembled in the US, Canada and Mexico (except for VW),
(2) Export includes exports of Canadian and US assembled vehicles only,
(3) Import sales include all vehicles not produced in US, Canada or Mexico, and
(4) Domestic Sales include all vehicles produced in US, Canada or Mexico (includes VW).

The confusion with VW arises from the fact that production stopped in Pennsylvania in 1988, but continued and indeed expanded production in Mexico. Note also that some smaller exporters are not reflected (Mitsubishi and Nissan do not report exports; Mazda

[1] The Harmonized Series identifies weight of trucks and one convention is to regard trucks of 5 metric tons and more as medium or heavy. For reasons discussed above (see Marad Data) I did not use this source to for counts of the number of vehicles handled per port. The Bureau of Economic Analysis regards Light Trucks as those weighing less than 10,000 pounds including minivans and sport utility vehicles. The Wards Automotive report uses a vaguer definition that distinguishes heavy or commercial trucks and light or "those generally purchased by the consumer for private use".

stopped reporting after 1993; Volvo might have exported when they produced in Canada up to 1998, but did not report; BMW does export the X5 SUV but does not report).

County Business Patterns: Regional Employment Statistics, 1980/1990/1998

For employment statistics I used the County Business Patterns series, since this source provides time series data at detailed industrial and geographic levels. County Business Patterns data is collected by the US Bureau of the Census. The reporting unit is the establishment. The data series provides the number of employees and establishments per county, per sector. I extracted data from the UCData facility for 1980, 1990 and 1998 (the most recently available year). I then defined and selected data for specific industrial and geographic entities. In order to protect confidentiality, data are suppressed for some sectors in many counties. The Census Bureau provides data suppression codes that indicate an employment range. I allocated the mid-point of each suppression class in cases where the data were missing. In no cases was data in the top-code (100,000 or more employees) missing, and so top-coding bias was not a problem.

Industry definitions: Table B3 below shows which 4-digit SIC codes and 6-digit NAICS codes were combined to derive the following ten industrial sectors and sub-sectors related to the import of automobiles, namely:

(1) "marine cargo handling and terminal operations" sub-sector,
(2) water transportation,
(3) freight transportation,
(4) automobile assembly,
(5) automobile parts,
(6) automobile distribution and retail,

(7) all manufacturing,
(8) all transportation,
(9) all wholesale and retail distribution, and
(10) all sectors.

The following limitations on industry-specific data should be noted. First, the correspondence between the 1980 and 1990 data is close, but with the introduction of NAICS in 1998, small errors may have entered. In particular, the NAICS system substantially re-defines the transportation services sector to match changes in the rise of third party logistics providers and other transportation intermediaries. Second, the automobile assembly and parts sectors matches the definition of the automobile sector of the Office of Automotive Affairs of the International Trade Administration of the US Department of Commerce. The most significant portion of the automobile sector not included is car seats. Note also that the rail sector is entirely omitted due to reporting problems at all geographic scales.

Geographic definitions: for each port, I defined 3 hinterlands for analysis purposes:

(1) Broad hinterland corresponding to the metropolitan region (CMSA or MSA) in which the port is located,
(2) Narrow hinterland corresponding to the county in which the port is located, and
(3) Jurisdictional hinterland corresponding to the boundaries of the administrative unit with authority over the port. See Appendix B4 for full definitions.

The following limitations should be noted. First, one port (Brunswick) fell outside of any defined MSA. Second, the narrow hinterlands of some ports correspond to several counties (or cities in the case of Virginia). Third, a jurisdictional hinterland could not be defined for two ports (Benicia, a private port, and Philadelphia and Camden, a division of the bi-state Delaware River Authority).

Table B3: Definitions for Ten Industrial Groupings

	1972 SIC (1980)	1987 SIC (1990)	NAICS (1998)
MARINE TERMINALS			
Marine cargo handling and terminal operations	4463	4491	488310, 488320
WATER TRANSPORTATION			
Shipping	4410-4450	4410-4489	483100, 483200
Marine cargo handling and terminal operations	4463	4491	488310, 488320
Other water services	4464-4469	4492-4499	488330, 488390
FREIGHT TRANSPORTATION			
Trucking	4210, 4231	4210-4219, 4231	484100, 484200 492110, 492210
Warehousing	4220-4229	4220-4229	493100
Freight services	4710, 4723	4730	488510
Other Transport Services (Packing and Crating, Inspection, Transportation Services nec)	4780-2	4780	488990, 488210, 488490
ALL TRANSPORT			
Transport	4000	4000	480000
AUTO ASSEMBLY			
Automobile Assembly	3711	3711	336100
Truck and Bus	3713	3713	336211
Truck trailers	3715	3715	336212
Motor homes	-	3716	336213
AUTO PARTS			
Automobile Parts	3714	3714	336312, 336330 336340, 336350 336399
Tires and Inner Tubes	3010	3011	326211
Automotive stampings	3465	3465	336370
Carburetors, pistons, rings and valves	3592	3592	336311
Vehicular lighting	3647	3647	336321
Storage batteries	3691	3691	335911
Electrical equipment for Internal Combustion Engines	3694	3694	336322
ALL MANUFACTURING			
Manufacturing	1900	2000	310000
AUTO DISTRIBUTION AND RETAIL			
Wholesale autos	5012	5012	421110
Wholesale parts	5013	5013, 5015	421120, 421140
Wholesale tires	5014	5014	421130
New & used car dealers (not incl. Used Car Dealers)	5510	5511	441110
ALL DISTRIBUTION AND RETAIL			
Wholesale distribution	5000	5000	420000
Retail distribution	5200	5200	440000
ALL SECTORS			
All sectors	0000	0000	0000

Note: Automotive industry (assembly and parts) as defined by Office of Automotive Affairs of the International Trade Administration of the US Department of Commerce

Appendix B1: List of Interviews

NAME	TITLE	ORG	DATE	PLACE
Marsha Schachtel	Researcher, Policy Studies	JHU	11/13/2000	Baltimore
Jon Dostal	Chairman, QCHAT	Chrysler Corporation	1/2/2001	Baltimore
Charles Eyet	Manager	Central Atlantic Toyota	11/15/2000	Baltimore
Duncan Stuart	Planner	City of Baltimore	11/8/2000	Baltimore
Larissa Salamacha		Baltimore Development Corporation	11/9/2000	Baltimore
Jim Herle	Port Land Use Study	Maryland Dept of Transportation	11/9/2000	Baltimore
Frances Reaves and Robert Barnes		Maryland Dept of Business and Economic Development	11/21/2000	Baltimore
John Lewis	Capital Planning	Maryland Dept of Transportation	12/7/2000	Baltimore
Bob Baron	Safety Director	STAB	11/14/2000	Baltimore
Doug Wagner	President	ILA Local 333	11/17/2000	Baltimore
Barbara Leight and Craig Rogers	Quality	MPA	11/6/2000	Baltimore
Eldon Miller, Ben Lieberman, Mel Bafford	Planner, Market Analyst and Market Manager	MPA	11/8/2000	Baltimore
Bob Huber	leasing	MPA	11/27/2000	Baltimore
Eldon Miller	Planner	MPA	11/30/2000	Baltimore
Ben Lieberman	Market Analyst	MPA	12/1/2000	Baltimore
Mel Bafford	Manager	MPA	12/5/2000	Baltimore
David Ziolkowski	Traffic	MPA	12/5/2000	Baltimore
Rick Costello	Operations	MPA	12/6/2000	Baltimore
Bob Simms	Budget	MPA	12/8/2000	Baltimore
Paul Bernstein		Amports	11/10/2000	Baltimore
Eric Carlson	Operations	WWL	12/6/2000	Baltimore
Fritz de Goede		P&O Ports	12/4/2000	Baltimore
Karen Lotoszynski	Truck Scheduler	NUMMI	8/23/2000	Bay Area
Bob Jeurgens		Mercedes	12/4/2000	Belcamp
Maria Veneris	International Trade and Technology	Cal State Long Beach	9/15/2000	Los Angeles
Goetz Wolff	Planning School	UCLA	9/20/2000	Los Angeles
Richard Frick		Honda	10/26/2000	Los Angeles
Tim Kennedy		PMA	9/13/2000	Los Angeles
Bob Dodge	Safety Director	PMA	9/15/2000	Los Angeles
Dominic Miretti		ILWU	9/22/2000	Los Angeles
Verne Hall	Consultant	ex Port of Los Angeles	9/18/2000	Los Angeles
Lucy Ambrosino	FTZ Co-ordinator	PANYNJ	7/12/2000	Los Angeles
Matt Plezia and Ron Everett	Market Analyst and Planner	Port of Long Beach	8/30/2000	Los Angeles
Don Wylie	Director: Marketing	Port of Long Beach	9/14/2000	Los Angeles
Dave Mathewson and Larry Cottril	Marketing and Planning	Port of Los Angeles	9/15/2000	Los Angeles
Katheryn McDermott	Properties	Port of Long Beach	9/20/2000	Los Angeles
Ray Leonard		K-Line	9/12/2000	Los Angeles

NAME	TITLE	ORG	DATE	PLACE
Leo Langle		Metropolitan Stevedoring Company	8/28/2000	Los Angeles
Bob Wilder		Stevedoring Services of America	10/26/2000	Los Angeles
Lillian Borrone, Matt Baratz and Bill Ellis	Port Commerce	PANYNJ	5/15/2000	New York
Don Lotz	Intermodal Development	PANYNJ	6/15/2000	New York
Bill Ellis	Planner	PANYNJ	12/12/2000	New York
Matt Baratz	Technology	PANYNJ	12/14/2000	New York
Earl Vizzone and Gary Love		FAPS Inc	12/15/2000	New York
Mark Nichols	Consultant	Trade Zone Associates	9/1/2000	Port Hueneme
Judy Cofer	Deputy Manager	Port of Port Hueneme	9/1/2000	Port Hueneme
Len Mazzella		WWL	9/1/2000	Port Hueneme
Donnie Turbeville	FTZ Co-ordinator	BMW	8/22/2000	S Carolina
Stuart Farnsworth and Chuck Labitan	Planner	Port of San Diego	8/31/2000	San Diego
Candy Rangelle		Pasha Group	8/31/2000	San Diego
Dave Valentovich		VW	11/20/2000	Wilmington
John O'Donnell	Marketing Manager	Port of Wilmington, DE	11/20/2000	Wilmington
REFERENCE PORTS				
Baltimore		Visited	Nov. 2000	
Benicia		Visited	Oct. 2000	
Boston		Telephone interviews		
Brunswick		Telephone interviews		
Charleston		Telephone interviews		
Houston		Telephone interviews		
Jacksonville		Telephone interviews		
Long Beach		Visited	Sept. 2000	
Los Angeles		Visited	Sept. 2000	
Miami		Telephone interviews		
New York and New Jersey		Visited	Dec. 2000	
Norfolk and Hampton Roads		No response		
Oakland		Visited	Oct. 2000	
Philadelphia and Camden		No response		
Port Hueneme		Visited	Sept. 2000	
Portland		Visited	April 2001	
San Diego		Visited	Sept. 2000	
Savannah		Telephone interviews		
Seattle		Visited	Jan. 2001	
Tacoma		Visited	Jan. 2001	
Wilmington		Visited	Nov. 2000	

Appendix B2: Consent Letter

UNIVERSITY OF CALIFORNIA, BERKELEY

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO SANTA BARBARA • SANTA CRUZ

COLLEGE OF ENVIRONMENTAL DESIGN
DEPARTMENT OF CITY AND REGIONAL PLANNING
228 WURSTER HALL # 1850
BERKELEY, CALIFORNIA 94720-1850

(date)

To:

Thank you for agreeing to speak with me today. This letter clarifies the purpose and conditions of the interview.

The interview forms part of my doctoral research in City and Regional Planning concerning the relationship between the automobile industry and the US seaports that it has used since 1980. I will ask you questions about the activities of your firm or agency in this regard. The interview will take between 30 minutes and one hour. With your permission, I will audio-tape the interview. I expect to conduct only one interview, however follow-ups may be needed for clarification. If so I will contact you by email, mail or phone.

There are no foreseeable risks to you from participating in this research. There is also no direct benefit to you, although I hope that the research will benefit society by showing the impact and importance of public-private sector relationships in the provision of large infrastructure projects. There will be no costs to you, other than your time involved.

All the information that I obtain during the research will be kept confidential. I will store the tape recording and notes about it in a locked cabinet at my home. I will not use your name or other identifying information in any reports of the research without your explicit consent on this form (see below). After this research is completed I will save the tapes and notes for use in future research by myself. The same confidentiality guarantees of will apply in future storage and use of the materials.

Your participation in this research is voluntary. You are free to refuse to take part, or to answer any questions, or to stop taking part at any time. Whether you participate in this research will have no bearing on your standing in your job.

If you have any questions about the research, please free to call me, Peter Hall at (510) 548-7143. Please sign parts a) and b) below and return the form to me at the interview. I will provide you with a copy for your records.

(a) I have read this consent form and agree to participate in the study:

Signature ________________________________ Date__________

(b) I have read this consent form and agree to allow my name or other identifying information to be included in all final reports and publications resulting from my participation in this research:

Signature ________________________________ Date__________

Appendix C

Glossary of Port Terms[1]

Backhaul: To haul a shipment back over part of a route it has travelled.

Berth: The wharf space at which a ship docks. A wharf may have two or more berths, depending on the length of incoming ships.

Bill of lading (B/L): A document that establishes the terms of a contract between a shipper and a transportation company. It serves as a document of title, a contract of carriage and a receipt for goods.

Board of Commissioners: The members of the governing board of a port authority are called commissioners. Members of a Board of Commissioners can be elected or appointed and usually serve for several years.

Bonded Warehouse: A warehouse authorized by Customs authorities for storage of goods on which payment of duties is deferred until the goods are removed.

Box rate / tariff: A per container fee that combines wharfage, dockage and other tariff items. Used by some Port Authorities in leases for single-user terminals.

[1] This combines and amends glossaries from the following web sites: AAPA (American Association of Port Authorities), http://www.aapa-ports.org/industryinfo/glossary.html; MARAD (U.S. Department of Transportation Maritime Administration), http://www.marad.dot.gov/publications/glossary/Glossary.html; CenterPort Ltd, http://www.centreport.co.nz/7_0_glossary.html

Break Bulk Cargo: Loose, non-containerized cargo.

Bulk Cargo: Not in packages or containers; shipped loose in the hold of a ship without mark and count. Grain, coal and sulfur are usually bulk freight.

Bunkering: The operation of filling or replenishing a ship with fuel.

Cabotage: Shipments between ports of the same nation, commonly referring to coast-wise or inter-coastal navigation or trade. Many nations have laws that require national flag vessels to provide domestic inter-port service (in the United States, the Jones Act).

Cargo Manifest: A manifest that lists all cargo carried on a specific vessel voyage.

Carrier: Any person or entity who, in a contract of carriage, undertakes to perform or to procure the performance of carriage by rail, road, sea, air, inland waterway or by a combination of such modes.

Completely Knocked Down (CKD): Parts and subassemblies being transported to an assembly plant.

Common User Terminal: A shared wharf facility with no priority rights of use, i.e. operates on a first come, first served basis.

Conference: An association of ship owners operating in the same trade route who operate under collective conditions and agree on tariff rates.

Container: A truck trailer body that can be detached from the chassis for loading into a vessel, a rail car or stacked in a container depot. Containers may be ventilated, insulated, refrigerated, flat rack, vehicle rack, open top, bulk liquid or equipped with interior devices. A container may be 20 feet, 40 feet, 45 feet, 48 feet or 53 feet in length, 8'0" or 8'6" in width, and 8'6" or 9'6" in height.

Container terminal: A specialized facility where ocean container vessels dock to discharge and load containers, equipped with cranes with a safe lifting capacity of 35-40 tons, with booms having an outreach of up to 120 feet in order to reach the outside cells of vessels. Most terminals have direct rail access and container storage areas, and are served by highway carriers.

Corps of Engineers: This department of the U. S. Army is responsible for flood protection and providing safe navigation channels. The Corps builds and maintains the levees, flood walls and spillways that keep major rivers out of low lying communities. The Corps is responsible for keeping navigation channels open by dredging sand, silt and gravel that accumulate on river and harbor bottoms.

Dead Weight Tonnage (DWT): Maximum weight of a vessel including the vessel, cargo and ballast.

Demurrage: A penalty charge against shippers or consignees for delaying the carrier's equipment beyond the allowed free time. The free time and demurrage charges are set forth in the charter party or freight tariff.

Dockage: A charge by a port authority for the length of water frontage used by a vessel tied up at a wharf.

Draft: The depth of a loaded vessel in the water taken from the level of the waterline to the lowest point of the hull of the vessel; depth of water, or distance between the bottom of the ship and waterline.

Drayage: Charge made for local hauling by dray or truck. Same as Cartage.

Dredge: The process of removing sediment from harbor or river bottoms for safety purposes and to allow for deeper vessels.

Dry bulk: Minerals or grains stored in loose piles moving without mark or count. Examples are potash, industrial sands, wheat, soybeans and peanuts.

Feeder Service: Cargo to/from regional ports are transferred to/from a central hub port for a long-haul ocean voyage.

Federal Maritime Commission (FMC): The U.S. Governmental regulatory body responsible for administering maritime affairs including the tariff system, Freight Forwarder Licensing, enforcing the conditions of the Shipping Act and approving conference or other carrier agreements.

First Point of Rest: the place on the terminal where cargo is placed immediately after being removed from vessel. This is where documentation is confirmed, and it is generally where the jurisdiction of the longshoremen ends.

Foreign Trade Zone: A free port in a country divorced from Customs authority but under government control. Merchandise, except that which is prohibited, may be stored in the zone without being subject to import duty regulations.

Free Time: That amount of time that a carrier's equipment or terminal storage area may be used without incurring additional charges.

General cargo: Consists of both containerized and breakbulk goods, in contrast to bulk cargo. General cargo operations produce more jobs than bulk handling.

Gross Registered Tonnage (GRT): Refers to the carrying capacity of a vessel in volume as opposed to weight.

Harmonized System of Codes (HS): An international goods classification system for describing cargo in international trade under a single commodity-coding scheme. Developed under the auspices of the Customs Cooperations Council (CCC), an international Customs organization in Brussels, this code is a hierarchically structured product nomenclature containing approximately 5,000 headings and subheadings. It is organized into 99 chapters arranged in 22 sections.

Intermodal: Used to denote movements of cargo containers interchangeably between transport modes, i.e., motor, water, and air carriers, and where the equipment is compatible within the multiple systems.

JIT (Just In Time): In this method of inventory control, warehousing is minimal; the container is a movable warehouse and must arrive neither too early nor too late.

Landbridge: Movement of cargo by water from one country through the port of another country, thence, using rail or truck, to an inland point in that country or to a third country. For example, the movement of Asian cargo to Europe across North America.

Landlord port: At a landlord port, the port authority builds the wharves, which it then rents or leases to a terminal operator (usually a stevedoring company or steamship line).

The operator invests in cargo-handling equipment (forklifts, cranes, etc), hires longshore laborers to operate such lift machinery and negotiates contracts with ocean carriers (steamship services) to handle the unloading and loading of ship cargoes.

Lift On-Lift Off (LO/LO): Cargo handling technique involving transfer of commodities to and from the ship using shoreside cranes or ship's gear.

Liner Service: cargo carried in vessels according to a fixed schedule of routes and port calls. Most containerized cargo falls into this category, although it may include breakbulk cargoes such as autos. Some statistical sources equate cargo carried in liner service with containerized cargo.

Longshoreman: Individual employed in a port to load and unload ships. In the United States, most longshoremen are unionized members of the ILA or ILWU. The I.L.A. (International Longshoremen's Association) operates on the East and Gulf Coasts. The I.L.W.U. (International Longshore and Warehouse Union) operates on the West Coast.

Neo-bulk cargo: Uniformly packaged goods, such as wood pulp bales, which stow as solidly as bulk, but are handled as general cargoes.

Operating port: At an operational port like Charleston, South Carolina, the port authority builds the wharves, owns the cranes and cargo-handling equipment and hires the labor to move cargo in the sheds and yards. A stevedore hires longshore labor to lift cargo between the ship and the dock, where the port's laborers pick it up and bring it to the storage site.

Project cargo: The materials and equipment to assemble a special project overseas, such as a factory or highway.

Pure Car Carrier (PCC): ro/ro vessels designed to transport cars and light commercial vehicles, with limited possibilities to accommodate higher and heavier units.

Pure Car/Truck Carrier (PCTC): ro/ro vessels designed to transport cars and trucks and heavy ro/ro units. A PCTC will normally have two or more hoistable and strengthened decks, and a stern ramp capable of carrying heavy loads.

Ramp: Railroad terminal where containers are received or delivered and trains loaded or discharged. Originally, trailers moved onto the rearmost flatcar via a ramp and driven into position in a technique known as "circus loading." Most modern rail facilities use lifting equipment to position containers onto the flatcars.

Reefer: A container with refrigeration for transporting frozen foods (meat, ice cream, fruit, etc.).

Ro/Ro: A shortening of the term, "Roll On/Roll Off." A method of ocean cargo service using a vessel with ramps which allows wheeled vehicles to be loaded and discharged without cranes.

Service Contract: As provided in the Shipping Act of 1984, a contract between a shipper (or a shippers association) and an ocean common carrier (or conference) in which the shipper makes a commitment to provide a certain minimum quantity of cargo or freight revenue over a fixed time period, and the ocean common carrier or conference commits to a certain rate or rate schedule as well as a defined service level (such as assured space, transit time, port rotation or similar service features). The contract may also specify provisions in the event of nonperformance on the part of either party.

Shipper: The person or company who is usually the supplier or owner of commodities shipped. Also called Consignor.

Stevedore: Individual or firm that employs longshoremen and who contracts to load or unload the ship.

Terminal: An assigned area in which containers are prepared for loading into a vessel, or are stacked immediately after discharge from the vessel.

Terminal operator: The company that operates cargo handling activities on a wharf . A terminal operator oversees unloading cargo from ship to dock, checking the quantity of cargoes versus the manifest, storing the cargo, checking documents authorizing a trucker to pick up cargo, overseeing the loading/unloading of railroad cars, etc.

Through Rate: The total rate from the point of origin to final destination.

TEU: twenty-foot equivalent unit, a standard linear measure used to quantify container flows. Containers generally come in three sizes; twenty, forty and forty-five feet.

Tramp service: cargo carried in chartered vessels. Most bulk cargoes, as well as some breakbulk cargoes including autos in some cases, are carried by such vessels.

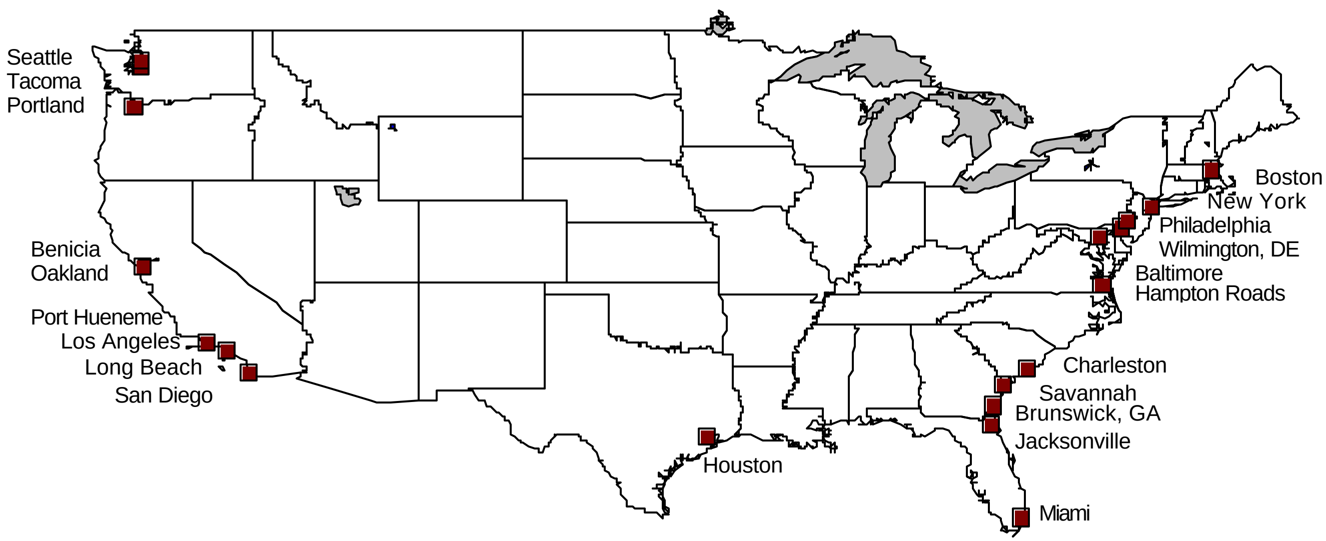
Tramp Line: An ocean carrier company operating vessels not on regular runs or schedules. They call at any port where cargo may be available.

Transshipment: The unloading of cargo at a port or point where it is then reloaded, sometimes into another mode of transportation, for transfer to a final destination.

Wharf: The place at which ships tie up to unload and load cargo. The wharf typically has front and rear loading docks (aprons), a transit shed, open (unshedded) storage areas, truck bays, and rail tracks.

Wharfage: Charge assessed by a pier or dock owner or port authority against freight handled over the pier or dock or against a steamship company using the pier or dock.

Figure 2.1 Reference ports



Source: NDC Publications and US Waterway CD, Volume 5 (1999); US Army Corp of Engineers.

Table 2.10 Correlation (1) between growth in Cargo handling and growth in sectoral employment in Port Hinterlands, 1980-00

	Share of Automobiles			Competitive Growth Effect in Adjusted Cargo Tons (2)			Adjusted Cargo Tons		
	Broad	Narrow	Jurisdiction	Broad	Narrow	Jurisdiction	Broad	Narrow	Jurisdiction
Marine Cargo Handling and Terminal Operations	0.107	0.064	0.013	0.204	0.077	0.080	0.226	-0.025	-0.074
Water Transportation	0.180	-0.087	-0.014	0.189	-0.173	-0.217	0.334	-0.118	-0.158
Land Freight Transportation	0.138	0.018	0.018	-0.076	-0.107	-0.231	0.071	-0.058	-0.245
All Transportation	-0.096	-0.205	-0.353	0.312	-0.134	-0.294	0.216	-0.087	-0.338
Automobile Assembly	-0.408	-0.386	-0.203	-0.227	-0.037	0.261	-0.395	-0.166	0.092
Automobile Parts Manufacture	0.135	0.332	0.391	0.932**	0.682**	0.550*	0.580*	0.578**	0.442
All Manufacture	-0.187	-0.076	0.172	0.367	0.105	0.223	0.009	0.021	0.063
Automobile Distribution and Retail	-0.070	0.078	0.331	0.449	0.504*	0.659*	0.173	0.333	0.220
All Distribution and Retail	0.051	0.152	0.429	0.383	0.386	0.631*	0.097	0.347	0.230
All Sectors	-0.079	0.142	0.238	0.445	0.472*	0.413	0.022	0.363	0.037

(1) Correlation coefficient is the bivariate pearson correlation with two-tailed significance.

(2) As estimated in Dynamic Shift-Share Analysis of 1982-1999 Adjusted Cargo Handling statistics per port, see Appendix B for more details.

*=significant at the 95% level

**=significant at the 99% level

Table 2.11 Partial correlation (1) between growth in automobile/cargo handling and growth in sectoral employment in Port Hinterlands, Controlling for Overall Employment Growth, 1980-1998

1980-1998						
	Growth in share of Auto Imports			Growth in Adjusted Cargo Tons		
	Broad	Narrow	Jurisdiction	Broad	Narrow	Jurisdiction
Marine Cargo Handling and Terminal Operations	0.057	0.096	-0.005	0.188	-0.182	-0.048
Water Transportation	0.073	-0.037	0.043	0.291	-0.275	-0.178
Land Freight Transportation	0.190	0.061	0.050	-0.030	-0.280	-0.278
All Transportation	-0.188	-0.195	-0.338	0.292	-0.232	-0.212
Automobile Assembly	-0.284	-0.387	-0.423	-0.260	-0.014	0.244
Automobile Parts Manufacture	-0.111	0.108	0.133	0.620**	0.388*	0.372
All Manufacture	-0.155	-0.089	-0.031	0.065	-0.265	0.046
Automobile Distribution and Retail	-0.106	-0.065	0.083	0.207	0.047	0.158
All Distribution and Retail	0.108	0.018	0.178	0.026	0.032	0.127

(1) Partial Correlation Coefficients are the standardized beta's from a series of linear regressions estimating sectoral employment growth as a function of automobile import share growth, adjusted cargo growth and growth in employment in all sectors.
*=significant at the 90% level
**=significant at the 95% level

Table 2.12 Comparison of 1980-1998 Relative Annual Sectoral Employment Growth (1) in Port Hinterlands by Port Class (2)

	1980-98											
	Broad Hinterland				Narrow Hinterland				Jurisdictional Hinterland			
	Hub	Container	Diversified	Niche	Hub	Container	Diversified	Niche	Hub	Container	Diversified	Niche
Marine Cargo Handling and Terminal Operations	2.3%	1.9%	-0.4%	-2.2%	2.8%	3.2%	0.9%	0.4%	2.4%	2.9%	-0.6%	-0.5%
Water Transportation	1.4%	2.5%	-0.5%	-3.2%	1.8%	4.1%	0.5%	-3.0%	1.1%	3.4%	0.6%	-2.5%
Land Freight Transportation	0.1%	0.2%	-0.4%	-0.5%	0.0%	1.1%	0.3%	-0.4%	0.0%	0.6%	-0.2%	-1.0%
All Transportation	0.1%	-0.4%	-0.4%	-0.8%	0.6%	1.1%	0.7%	-1.2%	0.2%	0.5%	-0.4%	-1.3%
Automobile Assembly	-2.9%	-1.3%	0.0%	-2.1%	-2.9%	0.5%	1.0%	0.9%	-6.0%	-0.8%	1.5%	-1.4%
Automobile Parts Manufacture	0.0%	2.8%	-0.3%	-2.0%	-0.6%	2.8%	-1.0%	-1.6%	0.4%	1.1%	-0.3%	-1.0%
All Manufacture	-0.9%	0.4%	-0.5%	-1.0%	-0.9%	0.2%	-0.2%	-0.9%	-1.1%	0.0%	-0.7%	-0.8%
Automobile Distribution and Retail	0.2%	-0.1%	0.0%	0.4%	-0.3%	-0.3%	0.1%	0.1%	0.0%	-0.2%	-0.1%	0.2%
All Distribution and Retail	0.2%	-0.2%	-0.7%	0.0%	0.0%	-0.1%	-0.7%	-0.5%	0.3%	0.2%	-0.4%	-0.1%

(1) Relative Employment Growth is second difference of sectoral employment growth in region with regional and sectoral effects removed. Employment figures from analysis of County Business Patterns (see Appendix B).

(2) Port Classes derived from commodity-based cluster analysis. Hub ports are New York, Los Angeles and Long Beach. Container ports are Charleston, Savannah, Miami, Oakland, Tacoma and Seattle. Diversified ports are Baltimore, Houston, Jacksonville, Portland and Hampton Roads. Niche ports are Boston, Philadelphia, Wilmington, Brunswick, San Diego, Port Hueneme and Benicia. Where two or more ports correspond to the same hinterland, classification follows that of the largest port.

Table 2.13 Comparison of 1980-1998 Change in Employment Specialization (1), in Port Hinterlands, by Port Class (2)

	Broad Hinterland				Narrow Hinterland				Jurisdictional Hinterland			
	Hub	Container	Diversified	Niche	Hub	Container	Diversified	Niche	Hub	Container	Diversified	Niche
Marine Cargo Handling and Terminal Operations	0.61	1.28	-0.26	-0.37	1.34	3.73	1.19	0.10	0.64	1.42	-0.30	-0.04
Water Transportation	0.31	1.37	-0.23	-0.47	0.62	3.56	0.43	-0.77	0.25	1.23	0.23	-0.19
Land Freight Transportation	0.01	0.04	-0.08	-0.07	0.01	0.27	0.08	-0.05	-0.01	0.12	-0.04	-0.11
All Transportation	0.02	-0.08	-0.07	-0.12	0.14	0.33	0.18	-0.20	0.04	0.11	-0.07	-0.17
Automobile Assembly	-0.21	-0.16	0.00	-0.19	-0.22	0.10	0.13	0.13	-0.43	-0.18	0.12	-0.17
Automobile Parts Manufacture	0.00	0.08	-0.01	-0.16	-0.04	0.10	-0.04	-0.11	0.04	0.11	-0.01	-0.05
All Manufacture	-0.16	0.06	-0.05	-0.18	-0.14	0.03	-0.02	-0.11	-0.18	0.00	-0.08	-0.14
Automobile Distribution and Retail	0.03	-0.01	0.00	0.06	-0.03	-0.05	0.02	0.01	0.01	-0.04	-0.03	0.03
All Distribution and Retail	0.04	-0.04	-0.12	0.00	0.00	-0.02	-0.12	-0.08	0.05	0.03	-0.07	-0.02

(1) Change in employment specialization as measured by location quotient.

(2) Port Classes derived from commodity-based cluster analysis. Hub ports are New York, Los Angeles and Long Beach. Container ports are Charleston, Savannah, Miami, Oakland, Tacoma and Seattle. Diversified ports are Baltimore, Houston, Jacksonville, Portland and Hampton Roads. Niche ports are Boston, Philadelphia, Wilmington, Brunswick, San Diego, Port Hueneme and Benicia. Where two or more ports correspond to the same hinterland, classification follows that of the largest port.

TABLE 3.1: Automobile Operations and Accounts at US Ports, 2000 (changes since 2000 in italics)

PORT	AUTOMOBILE TERMINAL OPERATORS	AUTOMOBILE ASSEMBLERS IMPORTING	AUTOMOBILE ASSEMBLERS EXPORTING	OTHER FACILITIES	NOTES
Hub Ports					
New York/ New Jersey	DAS, FAPS, NEAT, Toyota Motor Sales.	Nissan, Mazda, Kia, Volvo, Hyundai, BMW, Daewoo, Saab, Toyota	Honda, Ford, GM		Proposing to move auto terminals inland; NEAT identified for future container terminal expansion
Long Beach, California	Toyota Motor Sales	Toyota	Toyota, GM	Toyota processing facility	Ended leases with other car companies in early 1990s
Los Angeles, California	Auto Warehousing Company; DAS	Suzuki, Daewoo, Nissan, Mercedes, Hyundai	Honda	DAS Processing facilities	Automobile trade not regarded as core business
Container Ports					
Oakland, California	None	POV only	POV only	-	Parts only, with strong links to NUMMI plant
Seattle, Washington	DAS	Nissan	-	Storage and processing facility	Currently investing in container terminals
Tacoma, Washington	Port Authority	Kia, Isuzu, Mazda, Mitsubishi, Suzuki,	Chrysler, GM	Auto Warehousing Company operates storage and processing services	Regard automobiles as medium term growth area
Miami, Florida		POV only	POV only		Mostly island trade.
Savannah, Georgia			BMW	WWL (Brunswick office) handle exports	Mainly container and bulk port. Car exports here only because there is no service to Australia from Brunswick

PORT	AUTOMOBILE TERMINAL OPERATORS	AUTOMOBILE ASSEMBLERS IMPORTING	AUTOMOBILE ASSEMBLERS EXPORTING	OTHER FACILITIES	NOTES
Charleston, S Carolina	Terminal is owner-operated by SC State Ports Authority	BMW	BMW	Processing off-site	State insisted that BMW use Charleston in exchange for Spartanburg plant incentives.
Diversified Ports					
Virginia Ports Authority (Hampton Roads, Norfolk)	DAS	Nissan			
Portland, Oregon	Toyota Motor Sales; Hyundai; Honda (Auto Warehousing Company)	Toyota, Hyundai, Honda	Honda	Toyota and Hyundai processing facilities; Auto Warehousing processing services	Port regards automobiles as a core business
Houston, Texas	VW	VW/Audi	-	Turning Basin Processors Inc	
Jacksonville, Florida	DAS, SE Toyota, Amports	Nissan, Mazda, Isuzu, Suzuki, Volvo *(departed 2001)*, Toyota Kia, Daewoo, Mercedes	Toyota, GM, Honda, BMW, Chrysler, Ford	Toyota, DAS and Amports processing facilities; Mercedes processing off-site	
Baltimore, Maryland	Quality Port Processors (Toyota), Amports, Premier, ATC Logistics, Predelivery Service Corp	Toyota *(departing 2003)*, Land Rover, Isuzu, Mazda, Suzuki, Mitsubishi Fuso, Mercedes, Jaguar, *Porsche, Hyundai, Honda*	Daimler-C, GM Mercedes, *Ford, Honda*	Mercedes processing is off-site; others is on-site.	Regards automobiles and ro-ro as core business areas.

PORT	AUTOMOBILE TERMINAL OPERATORS	AUTOMOBILE ASSEMBLERS IMPORTING	AUTOMOBILE ASSEMBLERS EXPORTING	OTHER FACILITIES	NOTES
Niche Ports					
Brunswick, Georgia	Atlantic Vehicle Processors (WWL), International Auto Processing, Amports	Audi, Cadillac, Saab, Hyundai, Jaguar, Land Rover, VW, Mitsubishi, *Porsche, Volvo*	Ford, GM, Saturn, Daimler-Chrysller, BMW		Growing and actively sought business in automobiles. Port authority is operator for all cargo except automobiles.
Philadelphia & Camden, PA	Pasha	POV only	POV only		
Wilmington, Delaware	Autoport Transworld Diversified Services	VW / Audi	GM, Ford, POV		Positive – currently building new auto terminal
Port Hueneme, California	Port Authority and Wilhelmsen-Wallenius Lines (WWL)	BMW, Jaguar, Land Rover, Mazda, Saab, Mitsubishi, Suzuki, Daewoo, Volvo	POV only	BMW, Mazda, Pacific Vehicle Processors (WWL), PNY Enterprises	Core business – no container prospects
San Diego, California	Pasha Services	Acura, Honda, Hino, Isuzu, Mitsubishi, Volkswagen	Isuzu and Honda to Japan, Taiwan, Australia	Pasha Vehicle Processing and Accessories Center	View automobiles as medium term growth area
Benicia, California	Amports (privately owned terminal)	Kia	Toyota, Ford, GM, Chrysler	Auto processing facility operated by Amports	Automobiles are the core business
Boston, Mass	Boston Autoport (partnership of Foreign Auto Service and Diversified Automotive)	Subaru Volkswagen and Audi *(departed 2002)*	None	Diversified Automotive and Foreign Auto Services	Port authority if operator for all cargo except automobiles

Source: Authors interviews, Port web sites and promotional documents, Thuermer (2001a).

Table 3.7: US Public Port Governance Structures

Port	When Public Port Created (current form)	Jurisdictional location	Administratively coterminous region	Organizational form	Board size	Appointed or Elected	Mode
Hub Ports							
Los Angeles, California	1907	City of Los Angeles	City	Department	5	Appointed by Mayor	Landlord
Long Beach, California	1909	City of Long Beach	City	Department	5	Appointed by Mayor	Landlord
New York /New Jersey	1921	Bi-State (Port Authority of New York and New Jersey)	Bi-state	Compact	12	Appointed by Governors	Landlord
Container Ports							
Charleston, S Carolina	1942	State (South Carolina State Ports Authority)	State	Authority	9	Appointed by Governor	Operator
Savannah, GA	1945	State (Georgia Ports Authority)	State	Public Corporation	7	Appointed by Governor	Operator
Oakland, California	1926	City of Oakland	City	Department	7	Appointed by Mayor	Landlord
Miami, Florida	1960	County of Miami-Dade	County	Department	None	None	Landlord
Seattle, Washington	1911	Special Municipal District (King County)	County	Public Corporation	5	Elected	Landlord
Tacoma, Washington	1918	Special Municipal District (Pierce County)	County	Public Corporation	5	Elected	Landlord, Operator
Diversified Ports							
Jacksonville, Florida	1963	Special Municipal District (City of Jacksonville and State of Florida)	State	Authority	7	Appointed by Gov./Mayor	Landlord
Portland, Oregon	1971	Unified Special District (Clackamas, Multnomah and Washington Counties)	Metropolitan area	Public Corporation	9	Appointed by Governor	Landlord, Indirect Operator

Port	When Public Port Created (current form)	Jurisdictional location	Administratively coterminous region	Organizational form	Board size	Appointed or Elected	Mode
Houston, Texas	1910	Special Municipal District (Cities of Houston and Pasadena, the Harris County Commissioners Court and Mayor's and Council's Association)	Metropolitan area	Commission	7	Appointed	Operator
Hampton Roads	1970	State (Virginia Ports Authority)	State	Authority	12	Appointed	Operator, Limited Landlord
Baltimore, Maryland	1956 (1987)	State (Maryland Port Administration)	State	Department	7	Appointed by Governor	Landlord, Indirect Operator
Niche Ports							
Philadelphia	1931 / 1989	Bi-State (Delaware River Port Authority) and State (Philadelphia Regional Port Authority)	Bi-state	Compact / Commission	16 / 11	Appointed by Governors / Appointed various state and local governments	Landlord
Wilmington, Delaware	1923 (1994)	State (Diamond State Port Corporation)	State	Public Corporation			Operator
San Diego, California	1962	Unified Special District (Cities of Chula Vista, Coronado, Imperial Beach, National City and San Diego)	Metropolitan area	Public Corporation	7	Appointed	Landlord
Hueneme, California	1937	Special Municipal District (Cities of Oxnard and Port Hueneme)	Metropolitan sub-area	Public Corporation	5	Elected	Landlord
Brunswick GA	1945	State (Georgia Ports Authority)	State	Public Corporation	7	Appointed by Governor	Operator
Boston, Mass	1956	State (Massachusetts Port Authority)	State	Authority	7	Appointed by Governor	Operator, Limited Landlord

Source: Olson (1992) and Sherman (2002), updated and amended by author.

Table 6.5 Summary of MPA Terminal Services Tariff

Tariff No.	Effective	Non-containerized cargo ($ / ton)	Containerized cargo ($ / ton) [1]	Auto wharfage ($ / unit)	Autos landside ($ / unit) [2]	Auto / container storage ($ / unit) [3]	Ro-ro ($ / ton)	Ground lease ($ / acre) [4]	Comments [5]
15	12-1-95	2.32	2.22	5.48	6.60	11.07 / 27.69	0.56	19,935	
15	3-1-94	2.25	2.15	5.31	6.40	10.73 / 26.83	0.54	19,319	
14A	10-1-93	2.25	2.15	5.31	6.40	10.73 / 26.83	0.54	19,319	
14	10-1-92	2.18	2.08	5.15	6.20	10.40 / 26.00	0.52	18,720	
13	10-1-89	2.10	2.00	4.95	5.95	10 / 25	0.50	18,000	Free time allowed before this date; AUIP
12	7-3-89	2.00	2.00	4.55	3.00	10 / 25	0.50	15,000	AUIP
11	2-22-89	2.00	2.00	4.55	3.00	10 / 25	0.50	15,000	AUIP
10	2-10-88	2.00	2.00	4.55	3.00	10 / 25	0.50	15,000	AUIP
10	3-19-87	2.00	2.00	4.55	3.00	10 / 25	0.50	15,000	AUIP
10	10-1-86	2.00	2.00	4.55	3.00	10 / 25	0.50	15,000	AUIP; Ro-ro Added
9	7-15-86	2.00	2.00	4.55	3.00	10 / 25	-	15,000	AUIP
9	10-1-85	2.00	2.00	4.55	3.00	10 / 25	-	15,000	AUIP
8	10-1-84	2.00	2.00	4.55	3.00	10 / 25	-	15,000	AUIP
7	10-1-83	1.83	1.83	4.30	3.00	10 / 25	-	14,000	WVDP in all tariffs from this date
6	10-1-82	1.75	1.75	4.10	3.00	10 / 25	-	14,000	No volume discount for cargo before this
5	10-1-81	1.75	1.57	3.70	3.00	10 / 25	-	11,400	
5	10-1-80	1.40	1.40	3.30	1.50	10 / 25	-	11,400	
5	10-1-79	1.25	1.25	3.00	1.50	10 / 25	-	9.500	
4	3-12-79	1.00	1.00	2.70	1.50	10 / 25	-	7,000	
4	10-1-78	1.10	1.10	2.70	1.50	10 / 25	-	7,000	
3	11-13-75	1.00	1.00	2.70	1.50	10 / 25	-	-	
3	10-15-75	1.00	1.00	2.40	1.50	10 / 25	-	-	No ground lease before this date
2	10-15-74	0.73	1.23	2.50	1.00	10 / 25	-	-	

Source: Rates, Rules and Regulations of MPA Marine Terminals at Baltimore, Maryland

1. Highest charges reported – volume discounts available from 1982.
2. Charge for automobiles brought onto port property from land-side for subsequent distribution on land-side.
3. Per day charge for autos outside authorized area for first 10 days, then thereafter.
4. Light paving at Dundalk Marine Terminal, per acre/year.
5. AUIP – Acreage Utilization Incentive Program at Dundalk Marine Terminal. WVDP – Wharfage Volume Discount Program.

Table A2.1: Bivariate (pearson) correlation between growth in automobile/cargo handling and growth in sectoral employment in Port Hinterlands

1980-1990									
Annual Growth Rates Correlated....	Share of Automobiles			Competitive Growth Effect in Adjusted Cargo Tons (1)			Adjusted Cargo Tons		
Employment	Broad	Narrow	Jurisdiction	Broad	Narrow	Jurisdiction	Broad	Narrow	Jurisdiction
Marine Cargo Handling and Terminal Operations	0.090	-0.038	0.117	0.342	0.472*	0.426	0.565*	0.438	0.346
Water Transportation	0.271	0.182	0.368	0.000	0.285	0.097	-0.108	0.249	0.074
Land Freight Transportation	0.136	-0.034	0.146	-0.154	0.014	-0.104	-0.193	-0.032	-0.212
All Transportation	0.048	0.122	0.324	-0.163	0.224	0.073	0.003	0.306	0.088
Automobile Assembly	0.029	0.200	0.204	-0.629	-0.140	-0.337	-0.689**	-0.048	-0.238
Automobile Parts Manufacture	0.082	0.232	0.316	-0.190	-0.123	-0.115	-0.047	-0.013	-0.118
All Manufacture	-0.057	0.015	0.101	-0.015	0.006	-0.088	-0.202	0.043	-0.047
Automobile Distribution and Retail	-0.001	0.138	0.316	-0.414	0.266	0.243	-0.258	0.198	0.149
All Distribution and Retail	0.199	0.244	0.358	-0.081	0.122	0.071	-0.207	0.153	0.025
All Sectors	0.109	0.146	0.248	-0.231	0.135	-0.016	-0.376	0.168	-0.079

1990-1998									
Annual Growth Rates Correlated....	Share of Automobiles			Competitive Growth Effect in Adjusted Cargo Tons (1)			Adjusted Cargo Tons		
Employment	Broad	Narrow	Jurisdiction	Broad	Narrow	Jurisdiction	Broad	Narrow	Jurisdiction
Marine Cargo Handling and Terminal Operations	0.295	0.156	-0.021	0.291	-0.032	-0.222	0.419	0.008	-0.142
Water Transportation	-0.071	-0.269	-0.475	0.113	-0.359	-0.442	-0.106	-0.296	-0.333
Land Freight Transportation	-0.146	0.109	-0.087	-0.062	-0.101	-0.179	0.082	-0.136	-0.191
All Transportation	-0.011	-0.172	-0.361	0.354	-0.321	-0.427	0.102	-0.340	-0.431
Automobile Assembly	-0.643**	-0.231	-0.345	-0.145	-0.436	-0.506	-0.475	-0.546*	-0.571*
Automobile Parts Manufacture	-0.074	0.426	0.523*	0.086	0.351	0.262	-0.088	0.293	0.317
All Manufacture	-0.154	-0.211	-0.038	0.084	-0.115	-0.034	0.001	-0.094	-0.054
Automobile Distribution and Retail	-0.015	0.025	0.220	0.067	0.090	0.106	0.054	0.072	-0.047
All Distribution and Retail	0.097	0.018	0.152	-0.169	0.101	0.031	-0.149	0.127	-0.032
All Sectors	-0.076	0.110	-0.002	0.239	0.082	-0.219	-0.005	0.024	-0.265

(1) As estimated in Dynamic Shift-Share Analysis of 1982-1999 Adjusted Cargo Handling statistics per port, see Appendix B for more details.
*=significant at the 95% level **=significant at the 99% level.

Table A2.2: Partial correlation (1) between annual growth in automobile/cargo handling and growth in sectoral employment in Port Hinterlands, Controlling for Overall Employment Growth, 1980-1990 and 1990-2000

1980-1990						
Annual Growth Rates Correlated....	Auto Imports			Adjusted Cargo Tons		
Employment	Broad	Narrow	Jurisdiction	Broad	Narrow	Jurisdiction
Marine Cargo Handling and Terminal Operations	0.028	-0.025	0.133		0.401	0.355
Water Transportation	0.202	0.093	0.341	0.125	0.146	0.087
Land Freight Transportation	0.067	-0.112	0.053	0.041	-0.122	-0.182
All Transportation	-0.023	0.014	0.146	0.241	0.18	0.147
Automobile Assembly	-0.004	0.113	0.105	-0.559**	-0.138	-0.205
Automobile Parts Manufacture	0.024	0.149	0.191	0.149	-0.099	-0.076
All Manufacture	-0.152	-0.121	-0.123	0.123	-0.113	0.023
Automobile Distribution and Retail	-0.056	0.031	0.134	-0.065	0.074	0.209
All Distribution and Retail	0.09	0.108	0.145	0.166*	-0.003	0.095

1990-2000						
Annual Growth Rates Correlated....	Auto Imports			Adjusted Cargo Tons		
Employment	Broad	Narrow	Jurisdiction	Broad	Narrow	Jurisdiction
Marine Cargo Handling and Terminal Operations	0.168	0.148	0.01	0.35	-0.088	-0.105
Water Transportation	-0.006	-0.184	-0.448	-0.102	-0.208	-0.059
Land Freight Transportation	-0.182	0.172	-0.098	0.161	-0.233	0.028
All Transportation	0.001	-0.085	-0.276	0.106	-0.313	-0.185
Automobile Assembly	-0.559**	0.056	-0.171	-0.242	-0.574**	-0.382
Automobile Parts Manufacture	-0.059	0.382	0.512	-0.065	0.104	0.023
All Manufacture	-0.115	-0.297	-0.126	0.054	0.039	0.195
Automobile Distribution and Retail	0.031	-0.116	0.172	0.046	0.11	0.108
All Distribution and Retail	0.251	-0.137	0.076	-0.251	0.181	0.171

Partial Correlation Coefficients are the standardized beta's from a series of linear regressions estimating sectoral employment growth as a function of automobile import share growth, adjusted for cargo growth and growth in employment in all sectors.
*=significant at the 90% level **=significant at the 95% level

Table A2.3: Comparison of 1980-1990 and 1990-1998 Relative Annual Employment Growth (1) in Port Hinterlands by Port Class (2)

	1980-90											
	Broad Hinterland				Narrow Hinterland				Jurisdictional Hinterland			
	Hub	Container	Diversified	Niche	Hub	Container	Diversified	Niche	Hub	Container	Diversified	Niche
Marine Terminals	-0.6%	3.2%	0.3%	1.1%	-0.1%	3.6%	2.2%	1.4%	-0.1%	3.5%	-0.6%	0.1%
Water Transport	-0.6%	2.1%	-0.5%	-1.3%	-1.0%	4.2%	0.3%	-2.6%	1.9%	3.8%	0.3%	2.3%
Freight Transport	0.3%	-0.1%	-0.9%	-0.2%	0.3%	0.8%	-0.5%	-0.3%	0.3%	0.7%	-0.8%	-1.1%
All Transport	-0.2%	-1.4%	-0.3%	-0.6%	-0.3%	-0.5%	-0.4%	-1.3%	-0.1%	0.0%	-0.7%	-0.8%
Auto Assembly	-2.5%	-5.5%	0.3%	-3.2%	-3.5%	-2.8%	2.2%	1.5%	-5.6%	-3.3%	1.7%	-2.5%
Auto Parts	-1.3%	1.8%	0.1%	-3.7%	0.0%	3.3%	-1.2%	-3.9%	-2.1%	1.1%	0.5%	-6.3%
All Manufacturing	-0.7%	0.8%	-1.1%	-1.2%	-0.5%	0.7%	-0.7%	-0.6%	-0.8%	0.2%	-0.7%	-1.1%
Auto Distribution and Retail	0.5%	-0.3%	-0.1%	0.2%	-0.2%	-0.1%	0.3%	-0.1%	0.3%	-0.1%	-0.1%	0.1%
All Distribution and Retail	-0.1%	-0.2%	-0.7%	0.1%	-0.3%	-0.2%	-0.8%	-0.3%	-0.1%	0.3%	-0.4%	0.0%

	1990-98											
	Broad Hinterland				Narrow Hinterland				Jurisdictional Hinterland			
	Hub	Container	Diversified	Niche	Hub	Container	Diversified	Niche	Hub	Container	Diversified	Niche
Marine Terminals	6.0%	0.1%	-1.3%	-6.3%	6.7%	2.8%	-0.6%	-1.0%	5.5%	2.1%	-0.6%	-1.4%
Water Transport	3.8%	3.0%	-0.5%	-5.6%	5.6%	4.0%	0.8%	-3.5%	0.2%	2.9%	0.9%	-8.0%
Freight Transport	-0.2%	0.7%	0.1%	-1.0%	-0.3%	1.6%	1.5%	-0.6%	-0.4%	0.6%	0.5%	-0.9%
All Transport	0.6%	0.9%	-0.4%	-0.9%	1.8%	3.0%	2.0%	-0.9%	0.7%	1.0%	-0.1%	-1.7%
Auto Assembly	-3.3%	4.1%	-0.5%	-0.6%	-2.2%	4.8%	-0.6%	0.0%	-6.5%	2.5%	1.1%	0.0%
Auto Parts	1.7%	4.2%	-0.7%	0.3%	-1.4%	2.2%	-0.7%	1.4%	3.6%	1.0%	-1.4%	6.1%
All Manufacturing	-1.3%	-0.1%	0.3%	-0.8%	-1.4%	-0.3%	0.5%	-1.3%	-1.4%	-0.3%	-0.7%	-0.5%
Auto Distribution and Retail	0.0%	0.2%	0.0%	0.6%	-0.4%	-0.5%	-0.1%	0.4%	-0.2%	-0.4%	-0.2%	0.4%
All Distribution and Retail	0.7%	-0.2%	-0.6%	0.0%	0.4%	0.1%	-0.5%	-0.7%	0.8%	0.0%	-0.4%	-0.2%

(1) Relative Employment Growth is second difference of sectoral employment growth in region with regional and sectoral effects removed. Employment figures from analysis of County Business Patterns. See Chapter Two and Appendix B for details.

(2) Port Classes derived from commodity-based cluster analysis. Hub ports are New York, Los Angeles and Long Beach. Container ports are Charleston, Savannah, Miami, Oakland, Tacoma and Seattle. Diversified ports are Baltimore, Houston, Jacksonville, Portland and Hampton Roads. Niche ports are Boston, Philadelphia, Wilmington, Brunswick, San Diego, Port Hueneme and Benicia. Where two or more ports correspond to the same hinterland, classification follows that of the largest port.

Table A3.2 Specialization Index per Port for Adjusted Cargo Tons, 1982-1999 (Summary Commodity Classes)

Port Class	Port	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Change (1982 to 1999)
Hub	New York	17.97	16.81	16.42	15.27	14.26	15.23	15.32	15.66	18.06	18.34	17.42	17.49	18.07	17.77	15.50	15.03	13.99	13.49	-4.49
	Long Beach	15.58	14.59	15.33	15.60	15.52	15.63	16.32	15.85	17.73	16.13	15.44	14.46	14.59	14.29	15.97	15.22	15.68	15.42	-0.16
	Los Angeles	29.87	28.39	23.61	17.04	16.05	15.94	19.03	18.11	19.25	18.60	16.94	17.09	16.79	19.01	18.99	16.67	16.26	15.14	-14.73
Container	Charleston	23.25	20.84	20.14	18.01	18.75	18.71	18.38	19.63	20.13	20.79	21.34	22.24	22.45	20.26	20.58	26.05	23.95	23.96	0.71
	Savannah	24.89	20.80	21.64	19.51	20.28	20.40	22.00	20.88	19.20	21.25	21.40	22.54	21.92	21.72	21.37	21.74	20.44	19.46	-5.43
	Miami	30.21	28.00	27.40	23.24	22.14	21.02	23.38	21.83	24.54	23.57	25.23	23.91	22.26	21.26	21.64	21.21	20.06	20.78	-9.43
	Oakland	26.33	23.90	23.76	23.61	23.84	25.57	26.76	24.42	25.49	22.06	20.36	20.66	22.47	21.81	24.61	25.36	25.89	25.72	-0.61
	Tacoma	24.02	23.19	22.56	18.21	17.72	16.93	15.95	15.16	14.55	15.84	14.98	15.43	16.51	15.60	16.61	15.43	17.69	16.57	-7.45
	Seattle	25.42	22.34	23.10	22.81	24.25	21.66	21.38	18.32	21.20	18.18	19.12	21.18	21.21	17.68	17.67	16.92	17.70	16.70	-8.72
Diversified	Baltimore	14.01	14.91	14.80	12.95	16.21	18.98	15.87	15.84	16.20	16.73	15.64	16.29	18.97	17.91	19.64	17.82	16.85	19.78	5.77
	Houston	14.23	13.52	13.77	13.76	14.01	13.73	14.99	15.20	16.08	16.15	16.13	15.86	15.41	15.03	14.40	13.96	14.12	13.77	-0.46
	Jacksonville	30.88	28.29	30.69	24.17	25.63	23.09	24.20	18.13	17.58	16.37	14.13	15.84	16.75	17.52	17.96	16.75	19.31	19.15	-11.73
	Portland	14.21	12.94	13.05	13.03	13.91	13.26	14.20	14.15	12.31	13.23	12.85	14.15	12.88	13.59	13.73	13.76	15.40	15.69	1.48
	Hampton Roads	27.13	32.64	31.28	29.95	32.29	31.24	30.83	28.55	30.31	29.89	31.64	33.95	34.03	31.75	30.51	31.58	31.97	31.79	4.67
Niche	Boston	24.36	25.76	25.54	23.88	20.60	21.63	20.79	20.27	20.82	21.72	23.64	22.96	25.08	28.31	26.59	25.20	26.13	22.22	-2.14
	Philadelphia	15.38	16.54	18.81	19.57	21.53	19.63	19.09	17.70	19.08	18.41	20.36	21.57	21.32	20.93	20.02	20.42	19.34	20.54	5.16
	Wilmington	21.10	19.44	21.50	19.40	21.42	19.63	21.71	21.49	21.80	20.84	19.38	20.53	21.96	20.27	21.44	19.50	18.86	20.90	-0.19
	Brunswick	47.94	45.76	41.95	39.05	36.31	34.13	32.72	49.52	57.60	55.03	58.27	52.36	49.83	52.37	55.43	46.65	51.44	43.08	-4.86
	San Diego	46.83	62.77	60.94	45.33	42.33	52.72	51.09	50.45	50.82	51.57	42.13	38.66	33.10	32.25	29.80	27.40	25.26	29.16	-17.67
	Port Hueneme	29.34	30.51	31.49	27.05	30.25	29.04	28.72	29.98	28.04	28.07	25.61	25.38	24.89	26.64	27.47	25.94	24.72	24.55	-4.80
	Benicia	17.27	16.84	16.50	15.97	16.89	18.28	15.94	13.41	15.82	17.03	17.37	17.88	15.36	16.92	18.16	20.01	18.55	18.53	1.27

Source: Authors analysis of adjusted tons of imports and exports from the US Army Corp of Engineers Commodity Movement Database.

Table A3.3: Specialization Index per Port for Adjusted Cargo Tons, 1982-1999 (Detailed Commodity Classes)

Port Class	Port	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Change (1982 to 1999)
Hub	New York	176.1	162.3	150.8	153.1	138.9	140.9	145.8	145.5	143.6	159.9	156.3	157.2	146.9	152.8	138.4	135.7	134.8	135.7	-40.4
	Long Beach	131.8	126.5	133.0	124.5	131.6	143.3	149.3	143.9	148.5	142.5	133.4	124.0	133.2	141.0	146.5	135.0	135.0	132.5	0.7
	Los Angeles	159.5	160.0	158.8	156.8	150.6	151.6	163.0	148.7	142.2	142.0	151.1	145.5	144.5	142.1	130.7	128.8	126.6	122.9	-36.6
Container	Charleston	189.4	190.1	173.7	154.5	162.8	188.7	191.4	192.1	183.0	179.9	176.3	191.6	189.1	179.1	167.7	158.8	159.6	165.6	-23.8
	Savannah	141.8	173.4	198.9	181.2	212.9	211.5	199.4	183.2	178.6	170.3	171.5	176.0	164.1	166.2	158.2	161.0	153.2	170.1	28.4
	Miami	312.1	320.9	305.8	263.9	259.2	314.1	292.5	242.4	225.7	217.2	196.3	182.4	192.8	180.8	195.4	161.2	174.8	174.7	-137.4
	Oakland	204.9	195.8	193.8	176.9	169.9	174.0	200.7	156.9	158.5	156.9	151.9	151.4	152.1	144.4	154.3	152.7	153.8	156.6	-48.3
	Tacoma	105.5	119.2	109.0	93.0	100.5	96.3	90.5	89.4	102.1	89.9	92.8	97.3	95.5	96.3	95.6	100.6	96.7	93.2	-12.3
	Seattle	213.2	160.4	173.1	165.4	174.9	168.1	181.1	146.7	147.0	145.2	132.6	127.8	126.0	117.9	128.5	120.8	130.0	131.0	-82.1
Diversified	Baltimore	127.3	152.9	151.0	133.8	153.6	147.7	133.3	124.4	111.7	122.7	121.6	128.2	128.2	120.7	125.3	141.0	142.5	158.2	31.0
	Houston	115.9	123.4	115.4	122.2	122.0	118.9	125.1	129.6	133.4	126.1	126.3	131.0	126.5	125.1	120.4	119.4	113.1	113.9	-2.1
	Jacksonville	265.5	193.2	179.8	202.8	154.3	144.9	233.4	284.0	194.4	176.3	163.7	139.1	120.4	134.7	125.0	119.3	126.8	131.3	-134.2
	Portland	129.0	125.4	117.7	134.9	126.9	126.3	117.0	129.8	128.1	125.4	117.7	114.4	114.6	123.6	138.5	146.9	176.8	184.3	55.3
	Hampton Roads	118.3	136.1	135.8	132.5	129.2	138.1	140.6	118.8	122.6	148.2	127.6	146.1	134.3	124.4	121.9	130.9	128.2	140.4	22.1
Niche	Boston	167.3	149.9	165.2	151.9	133.9	142.1	122.8	147.1	152.1	151.2	152.8	152.4	156.9	161.3	156.4	158.5	153.1	150.7	-16.7
	Philadelphia	127.6	137.0	134.6	128.5	138.4	124.3	127.5	123.4	123.5	119.8	121.1	118.9	111.4	113.7	120.0	124.4	121.0	136.5	8.9
	Wilmington	162.4	155.6	156.3	135.0	127.3	134.9	131.4	133.0	119.7	124.0	120.6	122.4	121.8	121.6	117.4	120.8	111.7	119.0	-43.4
	Brunswick	215.7	228.4	177.8	165.8	284.1	368.4	441.8	202.9	241.0	300.5	216.1	230.5	196.6	197.2	207.4	206.4	276.4	225.6	9.9
	San Diego	531.6	534.8	873.6	531.7	389.8	261.8	196.1	192.0	255.1	506.8	616.9	432.3	272.6	308.8	233.3	264.4	178.0	236.8	-294.9
	Port Hueneme	156.9	143.3	154.7	136.2	237.1	139.4	143.0	144.6	139.1	139.6	136.5	139.1	132.1	131.3	135.6	152.0	135.1	137.5	-19.4
	Benicia	166.1	166.9	144.4	156.6	142.4	161.0	181.9	176.9	160.1	161.0	152.6	175.0	169.2	165.1	174.2	190.7	192.1	208.9	42.8

Source: Authors analysis of adjusted tons of imports and exports from the US Army Corp of Engineers Commodity Movement Database.

Table A3.4 Specialization Index per Summary Commodity Class for Adjusted Cargo Tons, 1982-1999

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Change (1982 to 1999)
Field Crops	12.13	12.43	13.73	13.54	15.91	15.49	15.53	14.13	14.29	13.66	14.58	14.80	15.40	16.44	16.43	16.23	15.40	15.51	3.38
Animals/Animal Pdcts	21.31	19.07	19.45	18.14	18.72	18.07	20.43	19.44	18.84	19.37	18.93	20.52	17.78	18.40	19.91	19.71	20.73	20.68	-0.64
Fish and Fish Products	27.36	25.31	22.90	21.40	21.26	21.21	20.21	17.95	20.97	17.85	16.84	18.44	19.41	19.17	19.55	16.68	18.41	18.56	-8.81
Vegetables and Fruit	30.66	32.26	31.26	27.90	26.44	29.06	29.23	29.67	31.02	31.15	27.18	26.26	26.84	27.61	30.42	26.31	27.01	26.92	-3.74
Diverse Consumables	21.76	22.27	21.67	19.60	21.38	19.26	21.88	21.64	18.37	20.13	21.20	22.36	21.24	20.71	20.40	20.76	21.65	22.33	0.57
Metal ores	25.30	20.15	21.69	21.63	23.32	22.20	23.11	20.91	19.96	21.03	20.95	22.01	22.63	21.92	21.03	21.06	21.24	21.98	-3.32
Non-metal minerals	25.12	24.97	19.37	15.81	20.01	16.54	14.82	25.43	33.32	28.41	28.71	21.90	19.61	21.12	22.85	19.93	21.57	22.51	-2.61
Coal and Lignite	28.66	31.19	30.15	30.16	31.26	32.01	31.41	29.68	30.14	30.88	32.90	35.02	36.05	34.44	35.33	32.87	34.37	32.90	4.25
Crude Petroleum	18.54	19.49	19.68	20.35	20.97	20.63	20.35	20.87	20.84	20.45	19.81	19.13	19.31	18.96	19.95	20.22	19.46	19.27	0.73
Quarried products	25.91	23.31	23.90	23.21	23.49	22.36	20.39	20.75	25.37	23.19	22.86	24.77	25.60	24.52	24.69	23.85	23.37	27.22	1.31
MineralProducts	24.75	23.01	43.00	27.46	23.83	29.60	33.05	35.54	37.98	35.80	16.18	15.12	12.15	13.15	14.99	14.95	10.64	14.92	-9.83
Rubber and Gums	24.43	26.10	26.43	25.03	26.20	25.12	23.84	20.50	25.41	25.36	23.24	25.91	26.86	23.38	21.97	29.33	25.33	25.54	1.11
Wood and Lumber	22.04	20.27	19.50	17.83	16.17	17.61	17.68	17.04	17.89	18.25	19.47	19.40	17.26	16.28	16.50	15.34	15.64	14.37	-7.67
Pulp and Waste Paper	35.12	33.76	36.46	30.49	32.38	33.01	30.53	35.16	35.63	35.24	36.16	38.23	39.58	40.31	37.12	33.27	37.20	32.15	-2.97
Paper	27.62	29.13	28.07	23.84	24.70	27.16	31.40	29.48	28.30	27.26	31.33	27.21	26.65	24.16	28.24	22.68	23.54	22.82	-4.80
Chemicals	15.48	14.22	14.14	14.59	15.35	14.08	13.65	12.37	15.55	14.59	14.34	18.58	21.54	22.71	23.07	18.83	17.90	14.61	-0.87
Fertilizer	47.41	43.41	31.22	25.74	27.25	27.52	31.79	25.74	21.29	25.48	29.76	27.06	22.80	21.31	19.19	19.98	20.14	19.50	-27.91
Petroleum Products	17.44	19.14	20.22	19.64	19.82	19.75	20.00	19.61	19.41	19.19	19.52	19.99	19.43	20.57	20.64	20.85	20.38	20.68	3.24
Metal Products	15.09	14.95	15.31	14.11	13.74	13.13	10.40	10.37	13.42	12.09	12.04	10.07	11.84	12.11	12.39	12.57	12.17	13.46	-1.63
Manufactured Products	27.22	20.96	25.44	22.87	24.71	22.09	24.06	23.27	22.31	23.01	24.54	24.78	23.62	21.97	21.43	25.23	25.53	23.34	-3.88
Scrap	26.85	43.34	30.68	24.06	17.28	20.55	14.93	14.98	16.31	17.43	18.86	18.86	20.25	23.67	21.99	21.99	21.93	17.13	-9.72

Source: Authors analysis of adjusted tons of imports and exports from the US Army Corp of Engineers Commodity Movement Database.

Table A3.5: Specialization Index per Detailed Commodity Class for Adjusted Cargo Tons, 1982-1999 (selected commodities)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Change (1982-1999)	Percent Contain-erized (1999)
Manufactured Products																				
Motor Vehicles, Parts and Equipment	49.91	45.28	44.42	40.68	43.35	38.83	45.20	44.98	43.33	46.87	52.66	49.85	47.32	45.14	49.69	68.63	68.64	63.28	13.37	36.4%
Machinery, Exc. Electrical	27.11	29.07	31.29	26.62	27.13	27.81	31.00	26.14	26.97	27.68	28.43	28.76	28.11	26.42	24.71	23.62	23.76	24.64	-2.47	80.4%
Aircraft and Parts	38.34	38.36	38.06	36.40	35.58	34.64	36.61	31.05	28.41	27.31	29.13	28.04	28.64	27.81	28.10	30.70	29.73	28.53	-9.81	87.2%
Manufactured Wood Prod.	27.83	27.51	28.39	25.95	26.30	25.33	24.19	22.46	30.55	27.62	27.90	25.80	25.30	25.27	25.43	26.79	28.82	26.59	-1.24	90.0%
Electrical Machinery	37.66	20.13	36.13	32.73	33.41	32.74	33.36	30.78	28.46	28.45	30.61	30.75	28.93	27.66	28.00	27.65	29.10	26.82	-10.83	94.7%
Textiles, Fibers and Apparel	49.51	44.48	45.42	38.82	38.72	38.91	39.27	36.73	35.67	34.67	35.34	36.40	32.82	31.82	30.35	29.42	30.17	29.40	-20.11	97.4%
Selected Commodities																				
Fruit	51.35	55.28	51.91	46.46	47.18	51.12	55.68	52.05	50.10	49.99	45.57	43.51	43.08	45.80	48.12	42.81	44.28	41.54	-9.81	75.1%
Vegetables	31.35	32.87	31.15	30.15	28.03	29.67	28.88	28.08	28.73	28.25	26.34	27.19	27.00	25.32	28.10	29.54	30.75	29.79	-1.55	94.3%
Crude Petroleum	18.77	19.88	20.06	20.93	21.38	21.01	21.02	21.24	21.27	20.92	20.39	19.52	19.72	19.25	20.34	20.48	19.66	19.48	0.71	0.1%
Coal and Lignite	29.87	32.67	31.45	32.01	32.84	33.42	32.96	30.96	31.65	32.24	34.19	36.24	37.13	35.32	36.35	33.50	34.96	33.10	3.23	0.2%
Lumber	25.72	26.29	27.67	28.80	31.56	25.23	24.95	23.19	21.43	20.90	21.31	23.13	23.29	19.49	22.58	22.82	22.15	25.64	-0.07	81.5%
Paper & Paperboard	31.00	37.54	34.31	30.14	28.35	29.86	33.00	29.80	30.15	28.36	27.81	27.33	27.55	27.14	31.05	27.60	28.96	25.97	-5.03	82.4%
Phosphate Chem. Fertilizers	80.86	28.74	29.69	22.83	26.97	22.80	21.59	52.71	20.90	20.38	20.92	20.41	20.62	20.97	19.84	20.81	20.61	20.57	-60.29	14.3%
Gasoline	33.61	36.85	31.17	31.81	29.28	26.71	26.77	29.06	31.45	34.89	31.84	33.51	35.30	38.63	31.83	29.59	30.75	31.76	-1.85	15.2%
Paints, Varnishes, etc	37.04	51.74	24.77	26.16	26.70	29.22	24.88	29.21	24.49	24.46	25.11	29.61	30.79	30.92	24.05	26.70	25.50	22.98	-14.06	95.4%
Drugs/Pharmaceuticals	26.51	29.50	25.78	28.77	27.62	27.90	28.92	22.69	22.29	35.14	24.12	48.96	19.57	15.78	25.85	21.66	22.81	27.37	0.86	95.4%
Iron&Steel Plate and Sheet	21.66	22.41	20.36	20.68	22.38	21.64	29.31	16.80	21.13	19.25	23.37	20.88	17.52	19.80	19.26	18.87	17.29	20.32	-1.34	20.6%
Iron&Steel Pipe and Tube	22.83	22.13	22.52	22.01	20.08	22.78	22.02	20.47	20.94	20.70	16.86	19.00	22.56	17.54	17.90	16.33	16.50	16.55	-6.29	24.1%

Source: Authors analysis of adjusted tons of imports and exports from the US Army Corp of Engineers Commodity Movement Database. Containerization rate from authors analysis of US Maritime Administration Import/Export Database.

Appendix B3: Waterborne Commerce of the US (WCUS) Commodity Classification System

23 SUMMARY COMMODITIES		126 DETAILED COMMODITIES		WCUS PRE 1990		WCUS POST 1990	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
1	Field Crops	1	Cotton, Natural Fibers	101	Cotton, Raw	6893	Cotton
1	Field Crops	1	Cotton, Natural Fibers			6894	Natural Fibers NEC
1	Field Crops	2	Barley and Rye	102	Barley and Rye	6443	Barley & Rye
1	Field Crops	3	Corn	103	Corn	6344	Corn
1	Field Crops	4	Oats	104	Oats	6445	Oats
1	Field Crops	5	Rice	105	Rice	6442	Rice
1	Field Crops	6	Sorghum Grains	106	Sorghum Grains	6447	Sorghum Grains
1	Field Crops	7	Wheat	107	Wheat	6241	Wheat
1	Field Crops	8	Soybeans	111	Soybeans	6522	Soybeans
1	Field Crops	9	Flaxseed	112	Flaxseed	6534	Flaxseed
1	Field Crops	10	Hay and Fodder	122	Hay and Fodder	6781	Hay & Fodder
1	Field Crops	11	Field Crops, NEC	129	Field Crops, NEC		
1	Field Crops	12	Wheat Flour and Semolina	2041	Wheat Flour and Semolina	6746	Wheat Flour
1	Field Crops	13	Animal Feeds	2042	Animal Feeds	6782	Animal Feed, Prep.
1	Field Crops	14	Grain Mill Products, NEC	2049	Grain Mill Products, NEC	6747	Grain Mill Products
1	Field Crops	15	Sugar	2061	Sugar	6861	Sugar
1	Field Crops	16	Molasses	2062	Molasses	6865	Molasses
1	Field Crops	17	Oilseeds and Peanuts	119	Oilseeds, Not Elsewhere Classified	6590	Oilseeds NEC
1	Field Crops	17	Oilseeds and Peanuts			6521	Peanuts
1	Field Crops	18	Coffee	133	Coffee, Green and Roasted	6871	Coffee
1	Field Crops	19	Cocoa	134	Cocoa Beans	6872	Cocoa Beans
2	Animals and Animal Products	20	Animals and Animal Products	151	Live Animals (Livestock) Excl Zoo Animal		
2	Animals and Animal Products	20	Animals and Animal Products	161	Animals and Animal Products, NEC	6839	Animals & Prod. NEC
2	Animals and Animal Products	20	Animals and Animal Products	2015	Animal By-Products, NEC		
2	Animals and Animal Products	20	Animals and Animal Products	2014	Tallow, Animal Fats and Oils	6838	Tallow, Animal Oils

23 SUMMARY COMMODITIES		126 DETAILED COMMODITIES		WCUS PRE 1990		WCUS POST 1990	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
2	Animals and Animal Products	20	Animals and Animal Products	2092	Animal Oils and Fats, NEC		
2	Animals and Animal Products	21	Meat	2011	Meat, Fresh, Chilled, or Frozen	6811	Meat, Fresh, Frozen
2	Animals and Animal Products	21	Meat	2012	Meat & Meat Products Prepared, Preserved	6817	Meat, Prepared
2	Animals and Animal Products	22	Dairy	2021	Dairy Products, Except Dried Milk and Cream	6822	Dairy Products
2	Animals and Animal Products	22	Dairy	2022	Dried Milk and Cream		
3	Fish and Fish Products	23	Fresh Fish, Except Shellfish	911	Fresh Fish, Except Shellfish	6134	Fish (Not Shellfish)
3	Fish and Fish Products	24	Shellfish, Except Prepared or Preserved	912	Shellfish, Except Prepared or Preserved	6136	Shellfish
3	Fish and Fish Products	25	Fish & Fish Products, Incl Shellfish, Prepared	2031	Fish & Fish Products, Incl Shellfish, Prepared	6835	Fish, Prepared
4	Vegetables and Fruit	26	Vegetables	141	Fresh and Frozen Vegetables	6654	Vegetables & Prod.
4	Vegetables and Fruit	26	Vegetables	2034	Vegetables & Preparations, Canned, Prepared		
4	Vegetables and Fruit	27	Vegetable Oils	2091	Vegetable Oils, All Grades; Margarine &	6653	Vegetable Oils
4	Vegetables and Fruit	28	Fruit	132	Bananas and Plantains	6856	Bananas & Plantains
4	Vegetables and Fruit	28	Fruit	2039	Fruit, Fruit & Vegetable Juices	6858	Fruit Juices
4	Vegetables and Fruit	28	Fruit			6857	Fruit & Nuts NEC
4	Vegetables and Fruit	28	Fruit	131	Fresh Fruit		
5	Diverse Consumables	29	Tobacco	121	Tobacco, Leaf	6891	Tobacco & Products
5	Diverse Consumables	29	Tobacco	2111	Tobacco Manufactures		
5	Diverse Consumables	30	Alcoholic Beverages	2081	Alcoholic Beverages	6885	Alcoholic Beverages
5	Diverse Consumables	31	Farm and Food Products NEC	191	Miscellaneous Farm Products	6899	Farm Products NEC
5	Diverse Consumables	32	Miscellaneous Food Products	2099	Miscellaneous Food Products	6889	Food Products NEC
5	Diverse Consumables	33	Groceries	2094	Groceries	6887	Groceries
5	Diverse Consumables	34	Water and Ice	2095	Ice	6888	Water & Ice
5	Diverse Consumables	34	Water and Ice	4111	Water		
6	Metal ores	35	Iron Ore and Concentrates	1011	Iron Ore and Concentrates	4410	Iron Ore
6	Metal ores	36	Copper Ore and Concentrates	1021	Copper Ore and Concentrates	4630	Copper Ore

23 SUMMARY COMMODITIES		126 DETAILED COMMODITIES		WCUS PRE 1990		WCUS POST 1990	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
6	Metal ores	37	Bauxite and Other Aluminum Ores and Concentrates	1051	Bauxite and Other Aluminum Ores and Concentrates	4650	Aluminum Ore
6	Metal ores	38	Manganese Ores and Concentrates	1061	Manganese Ores and Concentrates	4670	Manganese Ore
6	Metal ores	39	Nonferrous Metal Ores and Concentrates,	1091	Nonferrous Metal Ores and Concentrates,	4690	Non-Ferrous Ores NEC
6	Metal ores	39	Nonferrous Metal Ores and Concentrates,	3323	Lead and Zinc Including Alloys, Unworked		
7	Non-metal minerals excl fuels	40	Sulphur, Liquid	1493	Sulphur, Liquid	3271	Sulphur (Liquid)
7	Non-metal minerals excl fuels	41	Nonmetallic Minerals, Except Fuels, NEC	1499	Nonmetallic Minerals, Except Fuels, NEC	4900	Non-Metal. Min. NEC
8	Coal and Lignite	42	Coal and Lignite	1121	Coal and Lignite	1100	Coal Lignite
9	Crude Petroleum	43	Crude Petroleum	1311	Crude Petroleum	2100	Crude Petroleum
10	Quarried products	44	Marine Shells, Unmanufactured	931	Marine Shells, Unmanufactured	4515	Marine Shells
10	Quarried products	45	Limestone	1411	Limestone Flux and Calcareous Stone	4322	Limestone
10	Quarried products	46	Stone	1412	Building Stone, Unworked	4310	Building Stone
10	Quarried products	46	Stone	3281	Cut Stone and Stone Products		
10	Quarried products	47	Sand, Gravel and Crushed Rock	1442	Sand, Gravel and Crushed Rock	4331	Sand & Gravel
10	Quarried products	48	Phosphate Rock	1471	Phosphate Rock	4327	Phosphate Rock
10	Quarried products	49	Sulphur, Dry	1492	Sulphur, Dry	4741	Sulphur, (Dry)
10	Quarried products	50	Gypsum, Crude and Plasters	1494	Gypsum, Crude and Plasters	4323	Gypsum
10	Quarried products	51	Clay	1451	Clay, Ceramic and Refractory Materials	4782	Clay & Refrac. Mat.
10	Quarried products	51	Clay	3251	Structural Clay Products		
11	MineralProducts	52	Miscellaneous Nonmetallic Mineral Produc	3291	Miscellaneous Nonmetallic Mineral Produc	5290	Misc. Mineral Prod.
11	MineralProducts	53	Lime	3271	Lime	5210	Lime
11	MineralProducts	54	Building Cement	3241	Building Cement	5220	Cement & Concrete
11	MineralProducts	55	Glass and Glass Products	3211	Glass and Glass Products	5240	Glass & Glass Prod.
12	Rubber and Gums	56	Rubber and Gums	841	Crude Rubber and Allied Gums	4110	Rubber & Gums

23 SUMMARY COMMODITIES		126 DETAILED COMMODITIES		WCUS PRE 1990		WCUS POST 1990	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
12	Rubber and Gums	56	Rubber and Gums	2822	Synthetic Rubber		
13	Wood and Lumber	57	Fuel Wood	2413	Fuel Wood, Charcoal and Wastes	4150	Fuel Wood
13	Wood and Lumber	58	Primary Wood Products	2414	Timber,Posts,Poles,Piling & Other Wood Products	4170	Wood in the Rough
13	Wood and Lumber	58	Primary Wood Products	2416	Woodchips, Staves, Molding and Excelsior	4161	Wood Chips
13	Wood and Lumber	58	Primary Wood Products			5540	Primary Wood Prod.
13	Wood and Lumber	58	Primary Wood Products	2411	Logs		
13	Wood and Lumber	58	Primary Wood Products	2415	Logs, pulpwood		
13	Wood and Lumber	59	Lumber	2421	Lumber	4189	Lumber
13	Wood and Lumber	60	Forest Products, NEC	861	Forest Products, NEC	4190	Forest Products NEC
14	Pulp and Waste Paper	61	Pulp and Waste Paper	2611	Pulp	4225	Pulp & Waste Paper
14	Pulp and Waste Paper	61	Pulp and Waste Paper	4024	Paper Waste and Scrap		
15	Paper	62	Newsprint	2621	Standard Newsprint Paper	5110	Newsprint
15	Paper	63	Paper & Paperboard	2631	Paper and Paperboard	5120	Paper & Paperboard
15	Paper	64	Paper Products NEC	2691	Pulp, Paper and Paperboard Products, NEC	5190	Paper Products NEC
15	Paper	64	Paper Products NEC	2711	Printed Matter		
16	Chemicals	65	Sodium Hydroxide (Caustic Soda)	2810	Sodium Hydroxide (Caustic Soda)	3274	Sodium Hydroxide
16	Chemicals	66	Hydrocarbons	2811	Crude Products from Coal, Tar, Petroleum	3211	Acyclic Hydrocarbons
16	Chemicals	66	Hydrocarbons			3219	Other Hydrocarbons
16	Chemicals	67	Coloring Mat. NEC	2812	Dyes, Organic Pigment, Dyeing & Tanning	3283	Coloring Mat. NEC
16	Chemicals	68	Alcohols	2813	Alcohols	3220	Alcohols
16	Chemicals	69	Radioactive Material	2816	Radioactive & Associated Materials	3281	Radioactive Material
16	Chemicals	70	Benzene & Toluene	2817	Benzene and Toluene, Crude and Commercial	3212	Benzene & Toluene

23 SUMMARY COMMODITIES		126 DETAILED COMMODITIES		WCUS PRE 1990		WCUS POST 1990	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
16	Chemicals	71	Sulphuric Acid	2818	Sulphuric Acid	3272	Sulphuric Acid
16	Chemicals	72	Basic Chemicals & Basic Chemical Product	2819	Basic Chemicals & Basic Chemical Product		
16	Chemicals	72	Basic Chemicals & Basic Chemical Product	1491	Salt		
16	Chemicals	72	Basic Chemicals & Basic Chemical Product			3250	Organo-Inorganic Comp.
16	Chemicals	72	Basic Chemicals & Basic Chemical Product			3260	Organic Comp. NEC
16	Chemicals	72	Basic Chemicals & Basic Chemical Product			3273	Ammonia
16	Chemicals	72	Basic Chemicals & Basic Chemical Product			3275	Inorg. Elem.,Oxides, & Halogen Salts
16	Chemicals	72	Basic Chemicals & Basic Chemical Product			3276	Metallic Salts
16	Chemicals	72	Basic Chemicals & Basic Chemical Product			3230	Carboxylic Acids
16	Chemicals	72	Basic Chemicals & Basic Chemical Product			3240	Nitrogen Func. Comp.
16	Chemicals	72	Basic Chemicals & Basic Chemical Product			3279	Inorganic Chem. NEC
16	Chemicals	73	Plastics,Cellulose & Resins,Film,Sheetin	2821	Plastics,Cellulose & Resins,Film,Sheetin	3286	Plastics
16	Chemicals	74	Drugs	2831	Drugs	3284	Medicines
16	Chemicals	75	Soap,Detergents & Cleaning Preps,Perfume	2841	Soap,Detergents & Cleaning Preps,Perfume	3285	Perfumes & Cleansers
16	Chemicals	76	Paints, Varnishes, Lacquers, Enamels & A	2851	Paints, Vamishes, Lacquers, Enamels & A	3282	Pigments & Paints
16	Chemicals	77	Gum and Wood Chemicals	2861	Gum and Wood Chemicals	3298	Wood & Resin Chem.
16	Chemicals	78	Insecticides,Fungicides,Pesticides & Disinfectants	2876	Insecticides,Fungicides,Pesticides & Disinfectants	3291	Pesticides
16	Chemicals	79	Miscellaneous Chemical Products	2891	Miscellaneous Chemical Products	3292	Starches, Gluten, Glue
16	Chemicals	79	Miscellaneous Chemical Products			3297	Chemical Additives
16	Chemicals	79	Miscellaneous Chemical Products			3299	Chem. Products NEC
17	Fertilizer	80	Nitrogenous Chemical Fertilizers	2871	Nitrogenous Chemical	3110	Nitrogenous Fert.

23 SUMMARY COMMODITIES		126 DETAILED COMMODITIES		WCUS PRE 1990		WCUS POST 1990	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
					Fertilizers		
17	Fertilizer	81	Potassic Chemical Fertilizers	2872	Potassic Chemical Fertilizers	3130	Potassic Fert.
17	Fertilizer	82	Phosphatic Chemical Fertilizers	2873	Phosphatic Chemical Fertilizers	3120	Phosphatic Fert.
17	Fertilizer	83	Fertilizers and Fertilizer Materials, NEC	1479	Natural Fertilzer Materials, NEC		
17	Fertilizer	83	Fertilizers and Fertilizer Materials, NEC	2879	Fertilizers and Fertilizer Materials, NEC	3190	Fert. & Mixes NEC
18	Petroleum Products	84	Gasoline	2911	Gasoline, Including Additives	2211	Gasoline
18	Petroleum Products	84	Gasoline	2912	Jet Fuel		
18	Petroleum Products	85	Kerosene	2913	Kerosene	2221	Kerosene
18	Petroleum Products	86	Distillate Fuel Oil	2914	Distillate Fuel Oil	2330	Distillate Fuel Oil
18	Petroleum Products	87	Residual Fuel Oil	2915	Residual Fuel Oil	2340	Residual Fuel Oil
18	Petroleum Products	88	Lube Oil & Greases	2916	Lubricating Oil and Greases	2350	Lube Oil & Greases
18	Petroleum Products	89	Naphtha & Solvents	2917	Naphtha, Mineral Spirits, Solvent, NEC	2429	Naphtha & Solvents
18	Petroleum Products	90	Asphalt, Tar & Pitch	2918	Asphalt, Tar and Pitches	2430	Asphalt, Tar & Pitch
18	Petroleum Products	90	Asphalt, Tar & Pitch	2951	Asphalt Building Materials		
18	Petroleum Products	91	Coke, Including Petroleum Coke	2920	Coke, Including Petroleum Coke	1200	Coal Coke
18	Petroleum Products	91	Coke, Including Petroleum Coke			2540	Petroleum Coke
18	Petroleum Products	92	Liquified Petroleum Gases, Coal Gas, Natural Gas	2921	Liquified Petroleum Gases, Coal Gas, Natural Gas	2640	Liquid Natural Gas
18	Petroleum Products	93	Petroleum and Coal Products, NEC	2991	Petroleum and Coal Products, NEC	2410	Petro. Jelly & Waxes
18	Petroleum Products	93	Petroleum and Coal Products, NEC			2990	Petro. Products NEC
19	Metal Products	94	Pig Iron	3311	Pig Iron	5312	Pig Iron
19	Metal Products	95	Slag	3312	Slag	4860	Slag
19	Metal Products	96	Iron and Steel Ingots and Other Primary	3314	Iron and Steel Ingots and Other Primary	5320	I&S Primary Forms
19	Metal Products	97	Iron and Steel Bars, Rods, Angles, Shapes	3315	Iron and Steel Bars, Rods, Angles, Shapes	5360	I&S Bars & Shapes
19	Metal Products	98	Iron and Steel Plates and Sheets	3316	Iron and Steel Plates and Sheets	5330	I&S Plates & Sheets
19	Metal Products	99	Iron and Steel Pipe and Tube	3317	Iron and Steel Pipe and Tube	5370	I&S Pipe & Tube

23 SUMMARY COMMODITIES		126 DETAILED COMMODITIES		WCUS PRE 1990		WCUS POST 1990	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
19	Metal Products	100	Ferroalloys	3318	Ferroalloys	5315	Ferro Alloys
19	Metal Products	101	Primary Iron & Steel Prods, NEC	3319	Primary Iron & Steel Prods, NEC	5390	Primary I&S NEC
19	Metal Products	102	Nonferrous Metals Primary Smelter	3321	Nonferrous Metals Primary Smelter	5429	Smelted Prod. NEC
19	Metal Products	103	Copper & Copper Alloys, Refined, Unrefined	3322	Copper & Copper Alloys, Refined, Unrefined	5421	Copper
19	Metal Products	104	Aluminum and Aluminum Alloys, Unworked	3324	Aluminum and Aluminum Alloys, Unworked	5422	Aluminum
19	Metal Products	105	Fabricated Metal Prods, Exc Machinery	3411	Fabricated Metal Prods, Exc Machinery	5480	Fab. Metal Products
20	Manufactured Products	106	Machinery, Except Electrical	3511	Machinery, Except Electrical	7110	Machinery (Not Elec)
20	Manufactured Products	107	Electrical Machinery, Equipment and Supp	3611	Electrical Machinery, Equipment and Supp	7120	Electrical Machinery
20	Manufactured Products	108	Motor Vehicles, Parts and Equipment	3711	Motor Vehicles, Parts and Equipment	7210	Vehicles & Parts
20	Manufactured Products	109	Aircraft and Parts	3721	Aircraft and Parts	7220	Aircraft & Parts
20	Manufactured Products	110	Ships and Boats	3731	Ships and Boats	7230	Ships & Boats
20	Manufactured Products	111	Miscellaneous Products of Manufacturing	3911	Miscellaneous Products of Manufacturing	7900	Manufac. Prod. NEC
20	Manufactured Products	111	Miscellaneous Products of Manufacturing	3791	Miscellaneous Transportation Equipment		
20	Manufactured Products	111	Miscellaneous Products of Manufacturing	3811	Instruments,Photographic / Optical Goods,		
20	Manufactured Products	111	Miscellaneous Products of Manufacturing	3111	Leather and Leather Products		
20	Manufactured Products	112	Ordnance, Explosives and Accessories	1911	Ordnance and Accessories	7300	Ordnance & Access.
20	Manufactured Products	112	Ordnance, Explosives and Accessories			3293	Explosives
20	Manufactured Products	113	Textiles, Fibers and Apparel	2211	Basic Textile Products	7500	Textile Products
20	Manufactured Products	113	Textiles, Fibers and Apparel	2212	Textile Fibers, NEC		
20	Manufactured Products	113	Textiles, Fibers and Apparel	2823	Synthetic (Man-Made) Fiber		
20	Manufactured Products	113	Textiles, Fibers and Apparel	2311	Apparel & Other Finished Textile Product		

23 SUMMARY COMMODITIES		126 DETAILED COMMODITIES		WCUS PRE 1990		WCUS POST 1990	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
20	Manufactured Products	114	Manufactured Wood Products			7400	Manufac. Wood Prod.
20	Manufactured Products	114	Manufactured Wood Products	2431	Veneer, Plywood and Other Worked Wood		
20	Manufactured Products	114	Manufactured Wood Products	2491	Wood Manufactures, NEC		
20	Manufactured Products	114	Manufactured Wood Products	2511	Furniture and Fixtures		
20	Manufactured Products	115	Rubber and Miscellaneous Plastic Product	3011	Rubber and Miscellaneous Plastic Product	7600	Rubber & Plastic Pr.
21	Scrap	116	Iron and Steel Scrap	4011	Iron and Steel Scrap	4420	Iron & Steel Scrap
21	Scrap	117	Nonferrous Metal Scrap	4012	Nonferrous Metal Scrap	4680	Non-Ferrous Scrap
21	Scrap	118	Scrap NEC	4022	Textile Waste, Scrap and Sweepings		
21	Scrap	118	Scrap NEC	4029	Waste and Scrap, NEC	8900	Waste / Scrap NEC
22	Unknown or NEC	119	Unknown or NEC	4112	Misc Shipments not Identifiable by Commodity	9900	Unknown or NEC
23	Passengers	120	Passengers	4114	Passengers Only	300	Passengers
24	Vehicles	121	Vehicles	4115	Transported Vehicles (E.G. Ferried Autos	200	Vehicles
25	Waterway Improv Mat	122	Waterway Improvement Materials	4118	Waterway Improvement Materials, Govt Mat	4335	Waterway Improv. Mat
25	Waterway Improv Mat	122	Waterway Improvement Materials			4333	Dredged Material
25	Waterway Improv Mat	122	Waterway Improvement Materials			4338	Soil & Fill Dirt
26	Other	123	Other	4116	Railway Cars (Loaded)		
26	Other	123	Other	4117	Railway Cars (Empty)		
26	Other	123	Other			7800	Empty Containers
26	Other	123	Other	9999	Dept of Defense		

Appendix B4: Port Hinterland Definitions and FIPS Codes

Port	State		Broad (Metropolitan Region)		Narrow (County)		Administrative Jurisdiction	
Seattle	WA	53	Seattle-Tacoma-Bremerton CMSA	53029 53033 53053 53061 53067	King	53033	SD - King County	53033
Tacoma	WA	53			Pierce	53053	SD - Pierce County	53053
Portland	OR	41	Portland-Salem CMSA	41005 41009 41047 41051 41053 41067 41071 53011	Multnomah	41051	SD - Clackamas, Multnomah and Washington Counties	41005 41051 41067
Oakland	CA	06	San Francisco-Oakland-San Jose CMSA	06001 06013 06041 06055 06075 06081 06085 06087 06095 06097	Alameda	06001	City of Oakland	06001
Benicia	CA	06			Solano	06095	Private	#
San Diego	CA	06	San Diego MSA	06073	San Diego	06073	SD – San Diego County	06073
Hueneme	CA	06	Los Angeles-Riverside-Orange County CMSA	06037 06059 06065 06071 06111	Ventura	06111	SD – Ventura County	06111
Los Angeles	CA	06			Los Angeles	06037	City of Los Angeles	06037
Long Beach	CA	06					City of Long Beach	
New York	NY	36	New York-Northern New	09001	Essex	34013	States of NY and NJ	36***

Port	State		Broad (Metropolitan Region)		Narrow (County)		Administrative Jurisdiction	
/New Jersey	NJ	34	Jersey-Long Island	09005 09007 09009 34003 34013 34017 34019 34021 34023 34025 34027 34029 34031 34035 34037 34039 34041 36005 36027 36047 36059 36061 36071 36079 36081 36085 36087 36103 36119 42103	Hudson Union Bronx Kings New York Queens Richmond	34017 34039 36005 36047 36061 36081 36085		34***
Charleston	SC	45	Charleston-North Charleston MSA	45015 45019	Charleston	45019	State of Carolina	45***

Port	State		Broad (Metropolitan Region)		Narrow (County)		Administrative Jurisdiction	
				45035				
Savannah	GA	13	Savannah MSA	13029 13051 13103	Chatham	13051	State of Georgia	13***
Brunswick	GA	13	None	#	Glynn	13127		
Miami	FL	12	Miami-Fort Lauderdale CMSA	12011 12025	Miami-Dade	12025	County of Miami-Dade	12025
Jacksonville	FL	12	Jacksonville MSA	12019 12031 12089 12109	Duval	12031	State of Florida	12***
Houston	TX	48	Houston-Galveston-Brazoria CMSA	48039 48071 48157 48167 48201 48291 48339 48473	Harris	48201	SD - Harris County	48201
Hampton Roads	VG	51	Norfolk-Virginia Beach-Newport News MSA	37053 51073 51093 51095 51115 51199 51550 51650 51700 51710 51735 51740 51800	Hampton Newport News Norfolk Portsmouth	51650 51700 51710 51740	State of Virginia	51***

Port	State		Broad (Metropolitan Region)		Narrow (County)		Administrative Jurisdiction	
				51810 51830				
Baltimore	MD	24	Washington-Baltimore CMSA	11001 24003 24005 24009 24013 24017 24021 24025 24027 24031 24033 24035 24043 24510 51013 51043 51047 51059 51061 51099 51107 51153 51177 51179 51187 51510 51600 51610 51630 51683	Baltimore	24005 24510	State of Maryland	24***

Port	State		Broad (Metropolitan Region)		Narrow (County)		Administrative Jurisdiction	
				51685 54003 54037				
Philadelphia & Camden	PA	42	Philadelphia-Wilmington-Atlantic City CMSA	10003 24015	Camden Philadelphia	34007 42101	SD – Delaware River (States of Pennsylvania and New Jersey)	#
Wilmington	DE	10		34001 34005 34007 34009 34011 34015 34033 42017 42029 42045 42091 42101	New Castle	10003	State of Delaware	10***
Boston	MA	25	Boston-Worcester-Lawrence CMSA	09015 23031 25005 25009 25013 25017 25021 25023 25025 25027 33011 33013 33015 33017	Suffolk	25025	State of Massachusetts	25***

= not included in employment analysis due to area definition not matching County Business Patterns.