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Organizational Size and Change: Diversification in the Savings and Loan Industry after Deregulation

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This paper examines the relationship between organizational size and change. If organizational size indicates political insulation and degree of bureaucratization, then large organizations will change less than small organizations. If organizational size is related to the possession of slack resources, differentiated and decentralized structures, and market power, however, then large organizations will be more fluid than small organizations. I tested these hypotheses by modelling rates of change (expansion into new markets) in a population of savings and loan associations. For three of seven outcomes studied, I found a positive relationship between size and change and concluded that large organizations are more capable of taking advantage of the opportunities to enter new and promising markets than are small organizations, although the advantages of large size sometimes diminish over the range of size. In contrast, for four outcomes, I found an inverted-U-shaped relationship between size and change. These results indicate that both processes—market power and bureaucratization—operate simultaneously but that the market-power process dominates the bureaucratization process.

Recently there has been a resurgence of research on the antecedents and consequences of organizational change (e.g., Singh, House, and Tucker, 1986; Mitchell, 1989; Delacroix and Swaminathan, 1991; Haveman, 1992; Amburgey, Kelly, and Barnett, 1993). This stream of research is spurred by an interest in assessing the degree to which organizations are flexible and able to move rapidly enough to keep pace with environmental change, rather than being inert and unable to change swiftly or easily. The emergence of two competing views of organizational change—adaptation and selection—has brought this question to center stage for organizations scholars. Adaptation theories of organizational action, including structural contingency theory (Burns and Stalker, 1961; Woodward, 1965; Thompson, 1967; Lawrence and Lorsch, 1967), strategic management theory (Chandler, 1972; Rumelt, 1974; Miles and Snow, 1978), resource dependence theory (Pfeffer and Salancik, 1978; Burt, 1983), organizational learning theory (March, 1981; Levitt and March, 1988), and metamorphic change models (Miller and Friesen, 1984; Tushman and Romanelli, 1985) hold that organizational change reflects the decisions and strategic shifts of organizational leaders and dominant coalitions. Random-action theories (Cohen, March, and Olsen, 1972; Weick, 1979) suggest that under conditions of uncertainty, organizational decisions and actions have a strong random component but that organizations do exhibit great variation in strategy and structure over time. In sharp contrast to adaptation and random-action perspectives, organizational ecology (Aldrich, 1979; Hannan and Freeman, 1977, 1984, 1989) holds that organizational forms are subject to strong structural inertia, so that change in organizational structures and activities will be slower paced than environmental change and will set back the liability-of-newness clock (Stinchcombe, 1965; Amburgey, Kelly, and Barnett, 1993). As a result, change in

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organizational structure or activities will reduce the reliability of organizational performance and thereby increase the probability of organizational failure (Hannan and Freeman, 1984, 1989: 83).

Previous research has examined the effects of organizational characteristics on change in organizational structure and activities: age (Singh, Tucker, and Meinhard, 1988; Baum, 1990; Delacroix and Swaminathan, 1991; Kelly and Amburgey, 1991; Amburgey and Miner, 1992), possession of specialized assets and vulnerability of existing domain (Mitchell, 1989), performance (Baum, 1990), and experience with change (Delacroix and Swaminathan, 1991; Amburgey and Miner, 1992; Amburgey, Kelly, and Barnett, 1993). Other work has focused on external forces that impel or impede organizational change, such as environmental munificence or scarcity (Delacroix and Swaminathan, 1991; Singh, Tucker, and Meinhard, 1991), the uncertainty that follows exogenous shocks (Delacroix and Swaminathan, 1991; Amburgey, Kelly, and Barnett, 1993), incremental environmental change (Baum, 1990), and conditions at organizational founding (Tucker, Singh, and Meinhard, 1990; Romanelli, 1992). This paper extends the research program to consider how organizational size influences the speed with which organizations expand into new domains. Size has been thought of as being simultaneously an internal organizational feature that interacts with other structural properties and a feature that is strongly shaped by external conditions (Kimberly, 1976; Scott, 1992: 258), so the research reported here is relevant to both internally and externally driven models of organizational change and stability.

Which organizations are most likely to change? Conversely, which ones are inert? To answer these questions, I develop a model of organizational change and stability for organizations of differing sizes. The hypotheses generated by this model are tested on a population of financial services firms—savings and loan associations in California—during a period when those organizations were beginning to take advantage of the broader investment opportunities offered by deregulation. Organizational change is conceptualized as shifts in an organization's activity set or strategic domain and is operationalized as diversification into new product markets.

Change and Stability

How flexible are organizations? Any model of organizational change must be reconciled with the concept of structural inertia (Hannan and Freeman, 1984, 1989). If inertial pressures are weak, then organizations will be plastic enough to alter their forms freely; they will change rapidly enough to adapt to shifting and uncertain environmental conditions. By contrast, if inertial pressures are strong, then organizations will not be able to transform themselves successfully; they will not adjust quickly enough to keep up with shifting environmental conditions. Inertia is a variable property of organizations whose strength may differ from population to population, within a population over time, and with cross-sectional variations in organizational features (Hannan and Freeman, 1984, 1989). Eight constraints on

change in organizational form are proposed: investment in plant, equipment, and specialized personnel; limits on the internal information received by decision makers; internal political constraints; organizational history or culture, which justifies past action and prevents consideration of alternative strategies; legal and economic barriers to entry into new markets; constraints on external information; legitimacy considerations; and the problem of collective rationality and the general equilibrium (Hannan and Freeman, 1977, 1984).

Organizational learning theory (Cangelosi and Dill, 1965; Argyris and Schon, 1978; Hedberg, 1981; Levitt and March, 1988) offers a compelling explanation for the development of stability in organizational structures and activities. Competency traps (Levitt and March, 1988) develop when organizations accrue favorable experience with procedures or technologies. Prior experience involves sunk costs that make it less rewarding for organizations to shift to a novel procedure or technology, even a superior one. A good example of a pervasive competency trap is the continued use of the QWERTY typewriter keyboard despite the availability of a more efficient alternative (David, 1985). The learning that accumulates with experience with any procedure or technology generates inertia and makes it difficult to change, even when alternatives offer superior performance potential.

Obviously, not all changes that organizations can make are equivalent. There is considerable variation in the degree to which different aspects of organizational structure and strategy are stable and resistant to change. Hannan and Freeman (1984) suggested that the organizational core, consisting of the organization's goals, authority structure, technology, and marketing strategy, is the least malleable part of an organization's form. Other researchers have used different terminology to describe the organizational core: relatively fixed repertoires of highly reproducible routines (Nelson and Winter, 1982: 14–19); competence elements, including both organizational records and the skills, knowledge, and experience of organizational members (McKelvey, 1982); and core activity domains (Romanelli and Tushman, 1993). As it has been conceived in past research, the organizational core encompasses the strategic domain—clients served, products offered, and technologies employed (Levine and White, 1961; Thompson, 1967). Core change occurs through domain shift. Diversification—the development of new products or services, often for new client groups and frequently requiring the implementation of new administrative, production, or distribution technologies—is one way in which organizations can change their domains and hence transform their core structures and activities (Fligstein and Dauber, 1989).

Organizational Size

Organizational size is arguably the dominant variable in the sociological literature on organizational structure (see Kimberly, 1976; Scott, 1992: 258–267, for reviews). Hence, examining its influence on organizational change is a reasonable undertaking. The relationship between organizational size and the speed and extent of

organizational change depends on the degree to which there are differences in structure and behavior between organizations of different size. Penrose (1959: 19) proposed that organizational growth is attended by metamorphosis of organizational structure and activities akin to the metamorphosis of caterpillars into butterflies:

> . . . with increasing size both the managerial function and the basic administrative structure have undergone fundamental changes which profoundly affect the nature of the "organism" itself. The differences in the administrative structure of the very small and the very large firms are so great that in many ways it is hard to see that the two species are of the same genus. We say they are because they both fulfill the same function, yet they certainly fulfill it differently, and it may be that in time the difference will be so great that we should consider in what sense they can both be called industrial "firms."

Similarly, Caplow (1957) observed that large organizations in different industries seem to resemble each other more closely than do small organizations in different industries. There is a great variety of small organizations, but all large organizations tend to resemble each other in terms of functional arrangement and status patterns.

The sociological literature on organizational size and growth addresses the issue of size-based differences in organizational structure and behavior. Early sociologists speculated that group size affects the structure and pattern of social interaction (Spencer, 1898, 1: 525–528; Simmel, 1902; Durkheim, 1933: 262; Graicunas, 1933). The general viewpoint shared by these scholars was that groups with a large number of members require complex forms of communication. The ability of organizational members to conduct face-to-face (one-on-one) interactions with each of the other members declines with the number of members. The number of one-on-one connections increases geometrically as size increases arithmetically (Graicunas, 1933). Larger groups therefore require more complex forms of communication. Hence, in larger organizations interpersonal interactions must assume a more impersonal and more formal style. This change in communication style is accompanied by fragmentation, which creates differentiation of authority.

More recently, the vast stream of research focusing on the impact of size on formal organization, which builds on Weber's (1958: 196–244) theory of bureaucracy, has considered the relationship between size and several aspects of organizational structure. First, larger organizational size is generally attended by greater differentiation and therefore greater structural complexity (e.g., Caplow, 1957; Grusky, 1961; Pugh et al., 1969; Blau, 1970; Blau and Schoenherr, 1971). Second, larger organizations are subject to greater formalization of behavior (e.g., Chapin, 1951; Tsouderos, 1955; Caplow, 1957; Grusky, 1961; Pugh et al., 1969; Blau and Schoenherr, 1971). Third, larger organizations tend to have more decentralized managerial decision-making authority (e.g., Hage and Aiken, 1967; Pugh et al., 1969; Blau and Schoenherr, 1971). Fourth, larger organizations exhibit greater task specialization (e.g., Tsouderos, 1955; Grusky, 1961; Pugh et al., 1969; Blau, 1970; Blau and

Schoenherr, 1971). Together, these findings suggest that large organizations are more bureaucratic than small organizations.

Bureaucratization and Rigidity

What impact do structural differences between organizations of varying size have on organizational flexibility or stability? The relationship between size and change may be negative, because larger organizations are more bureaucratic and bureaucratic organizations are more rigid. Merton (1957: chap. 6) argued that there is an increasing emphasis on reliability of behavior in organizations, which creates a need for accountability and predictability of behavior. The technique used to secure reliability is bureaucratization: creating standard operating procedures and formalizing organizational actions by applying inflexible rules. Standard operating procedures reduce personalized relations in organizations. They increase internalization of organizational rules by organizational members. They also increase the use of categorization as a decision-making technique, thereby decreasing the extent of search for alternatives. All of these processes rigidify behavior. Tsouderos's (1955) longitudinal study of voluntary associations offers theoretical and empirical support for the stabilizing effect of growing bureaucratization. Crozier's (1964) model of a vicious cycle of bureaucratic dysfunction, which locks organizations into patterns of increasing rigidity, is similar to Merton's model of bureaucratically induced rigidity. Bureaucratization is caused by the use of impersonal rules (formalization), centralization of discretionary decisions (i.e., those decisions that are not formalized), isolation of organizational members on different strata, and increased use of parallel (informal) power. Crozier (1964: 186–187) argued that bureaucratic organizations cannot correct their behavior by learning from their mistakes. Bureaucratic patterns of activity are so stabilized that they generate a self-reinforcing equilibrium. Rather than changing in step with their environments, bureaucracies resist change until a crisis of overwhelming proportions occurs.

This model of bureaucratic rigidity implies that larger organizations can be expected to undertake change less readily than small organizations because greater organizational mass leads to bureaucratization and thus to structural ossification (Downs, 1967: 158–160). In larger organizations, the effort required to control and coordinate the actions of organizational members is greater. The larger the scale of operations, the more difficult control and coordination become, which increases internal information constraints on change. Formalization, standardization, and differentiation of function all serve to facilitate control. The byproduct is diminished flexibility, for established control systems must be overruled to change structure or activities (Tsouderos, 1955; Aldrich and Auster, 1986). Thus, internal political constraints and difficulties in coordinating change decisions result in fewer change efforts being undertaken. As a result, large, bureaucratic organizations tend to be more rigid than small organizations.

There is a second, ancillary reason why larger organizations can be expected to be more rigid than small organizations.

Larger size means greater leverage in exchange relations with external partners (Starbuck, 1965; Pfeffer and Salancik, 1978: 52–54). The less an organization depends on its exchange partners, the less it needs to adjust these relations to fit environmental fluctuations. Larger organizations may be buffered from the need to change. Size may thus have a negative effect on the likelihood of attempting any change in organizational structure or activities.

The effect of size on organizational change for a large organization will likely diminish with increased size. This argument parallels the structuralist argument about the diminishing effects of organizational size on structural differentiation and the administrative component of the firm (e.g., Blau, 1970; Blau and Schoenherr, 1971). Past some point, bureaucratization will not increase with size.

Considering the buffering effects of power and the impact of increasing bureaucratization leads to the proposition that larger organizations are less likely to change, giving us the *rigidity of size* hypothesis of organizational change:

Hypothesis 1a: Large organizations will change more slowly than small organizations.

Market Power and Fluidity

There is also considerable theoretical and empirical support for the idea that organizational size has the opposite effect; i.e., that larger organizations are more fluid. Correlates of organizational size—structural complexity, differentiation, specialization of personnel, decentralization, and slack resources—have been found to be positively related to the adoption of innovations (e.g., Mohr, 1969; Aiken and Hage, 1971; Corwin, 1972; Moch and Morse, 1977). Differentiation is associated with change because diverse specialists are more likely to seek novel solutions to organizational dysfunctions. The specialization of personnel that accompanies structural differentiation increases expertise and access to cutting-edge knowledge, which both impel and facilitate change (Moch and Morse, 1977). At the same time, structural differentiation increases pressures to adopt innovations, and integration facilitates innovation through the use of mechanisms for overcoming the conflict that accompanies change (Mohr, 1969). Grusky (1961) has proposed that the bureaucratization accompanying large size nullifies, or at least cushions, the otherwise disruptive consequences of change. Change is routinized in bureaucratic organizations and therefore happens more easily.

Larger organizations, which generally have greater slack resources, are better able to withstand setbacks that occur during the change process. The substantial literature on the consequences of organizational slack for strategic action (e.g., Cyert and March, 1963; Thompson, 1967) suggests that slack resources can ease adaptation to changing circumstances. Slack has been described as a cushion that enables organizations to initiate strategic change in response to shifting environmental demands (Bourgeois, 1981). The more slack an organization has, the less it is constrained by sunk costs—previous investment in plant, equipment, and

specialized personnel. This implies that undertaking change is easier for large organizations. Slack resources facilitate experimentation with new strategies, new products, and new markets because slack buffers organizations from downside risks, thereby lowering the likelihood of failure during the process of change (Hannan and Freeman, 1989: 83–84). If large organizations have more slack resources than small organizations, they are less likely to fail after undertaking change.

Successful implementation of change may be directly related to the magnitude of resources applied to the task (Hannan and Freeman, 1989: 84). Large organizations may also find it less onerous to devote a critical mass of resources to launching a new activity if, as some theorists have proposed, there is a fixed cost associated with new activities, a cost that does not vary with firm size (Kimberly and Evanisko, 1981; Ansoff, 1988). For a large organization, the investment required to become proficient in any new domain is a relatively small proportion of its asset base. If this conjecture holds, then larger organizations may be more successful than small ones at effecting change once the process is underway.

Furthermore, large size increases the power wielded by a firm in its relations with its task and institutional environments (Starbuck, 1965; Pfeffer and Salancik, 1978: 52–54). Greater size relative to other actors in the task and institutional environments lowers two inertial forces: external political considerations and economic barriers to entry. External political considerations are attenuated by market power (Pfeffer and Salancik, 1978). Economic barriers to entry, which stem from scale economies, absolute costs, and product differentiation, are more easily overcome by large organizations that have substantial market power (Bain, 1956; Pfeffer and Salancik, 1978; Kimberly and Evanisko, 1981; Aldrich and Auster, 1986). Greater power extends an organization's capacity for effecting change, thereby lowering the likelihood that organizations will fail during the change process. Thus, large organizations are more likely than small organizations to complete change successfully once it has begun.

A final rationale for a positive relationship between size and change takes the form of a reinforcing momentum. Building on Downs's (1967: 11–12) notion of growth acceleration, Child and Kieser (1981) suggested that organizations often grow by innovating and developing new markets. Successful innovation may have a reinforcing tendency, so that the rate of subsequent change for firms that have grown through innovation is high.

Considering the facilitative effects of differentiated, formalized, specialized, and decentralized structures, along with the effects of market power and slack resources, leads to the expectation that larger firms are more likely to undertake and be successful with domain change. This is the *fluidity of size* model:

Hypothesis 1b: Large organizations will change faster than small organizations.

The discussion above offers two opposing, universal, and unconditional hypotheses about the impact of size on organizational change and inertia. This unconditional approach may be the reason why previous studies have yielded inconsistent and ambiguous findings. Another reason for this ambiguity may be that the structuralist research program has largely ignored process theories of change, which has limited the explanatory power of structural models of organizational change. While formalization and bureaucratization are stability-inducing processes (Starbuck, 1965; March, 1981), these processes can create either stably inert or stably changing organizations:

> The formal structure is commonly associated with the rigid and change-resistant aspects of organization. Since one objective of the formalization process is the stabilization of behavior patterns, . . . some degree of association is logically necessary. However, one should not assume that formalization and resistance to change are the same thing. Resistance to change is a reaction against alteration of a familiar state of affairs. Since informality and instability can become familiar and can provide inducements, they too are associated with resistance to change. (Starbuck, 1965: 480–481)

Kimberly (1978) offered one way to reconcile previous theoretical and empirical work on the size-change relationship. He argued that size facilitates change if the innovation is relevant to a current area of activity but that size hinders change in areas in which there is no such connection to current operations. Size alone cannot explain rates of change; instead, the organizational context must also be considered. Thus the search for an unconditional and universal relationship between organizational size and change may be doomed to fail. If the relationship between size and change depends on structural or environmental constraints (e.g., current organizational strategy, macrostructural factors such as embeddedness in resource networks, and population processes such as competition and legitimacy), then no consensus can be reached about the connection between size and change until these contextual factors are considered. This viewpoint is consistent with contingency theory models that treat size as balancing on the interface between the organization and its environment. Size is simultaneously an internal organizational feature that interacts with other structural properties and a feature that is strongly shaped by external conditions (Kimberly, 1976; Scott, 1992: 258). Accordingly, before attempting to reconcile conflicting hypotheses about the relationship between organizational size and change, it is necessary to discuss the context in which these hypotheses will be tested: the savings and loan industry in California.

RESEARCH DESIGN

The California Savings and Loan Industry

The financial services sector, especially the savings and loan (thrift) industry, offers an excellent opportunity for testing the hypotheses developed above. Over the past decade, the loosening of regulatory constraints has provided substantial new opportunities for savings and loans to change their basis of activities and to expand into new domains. Savings

and loan associations are being forced by a combination of technological progress and economic change to alter their strategies and investment activities. They are caught between the proverbial rock and a hard place and must change or die (Haveman, 1992).

From the early 1800s through the 1960s, the core savings and loan business consisted of taking in small deposits and lending out this money as mortgages on single-family homes. External changes, primarily interest-rate volatility during the 1970s and 1980s and the development of electronic data processing after the 1950s, dramatically shifted the competitive pressures for savings and loans and threatened this population with extinction. On the liability side, rising interest rates led depositors to shift their accounts from regulated thrifts and commercial banks to unregulated money-market accounts in securities firms. On the asset side, technological advances created a secondary market for mortgages and greatly increased competition for mortgage lending, as specialized mortgage brokers entered this market.

One response to these new competitive dynamics was deregulation. The allowed scope of savings and loan activities was broadened considerably by legislation enacted between 1980 and 1982. Together, these acts phased out the interest-rate ceilings that had acted as competitive barriers separating banks from thrifts and greatly enlarged the degree to which thrifts could participate in such markets as commercial mortgage lending, real estate development, and commercial and consumer nonmortgage loans. These acts created an abrupt discontinuity in the regulatory environment of the savings and loan industry (Balderston, 1985), which can be treated as a quasi-experiment (Cook and Campbell, 1979). A naturally occurring experiment-like setting makes it possible to control a far greater number of extraneous factors than is usually possible outside the laboratory. It is difficult to overemphasize the value of studying change in a system in which all actors can begin their transformations at the same time. In such a situation, detecting differences in the timing of change is possible, and disentangling cause from effect is, consequentially, easier.

Since the early 1970s, savings and loans have been ripe for domain shift. Their traditional residential mortgage business has become unlikely to yield satisfactory profits or opportunities for growth, due to rising and increasingly volatile interest rates and to the competitive pressures created by technological change. Deregulation has opened up a host of new and potentially more profitable markets. To what extent have savings and loans taken advantage of these new market opportunities? Table 1 presents descriptive statistics on savings and loans in California showing how these firms have abandoned their traditional business lines and moved into new domains. Over time, thrifts have become less intensively involved in residential mortgage lending. On average, the proportion of assets devoted to this market has fallen. By the end of 1986, the average California thrift held exactly half of its assets as residential mortgages, down from 77.4 percent in 1977. In the last column, a measure of the overall diversity of thrifts'

Table 1

California Savings and Loan Associations, 1977–1986

Year	Density*	Average assets (in $ billions)	Average % assets in residential mortgages	Average diversity†
1977	166	493.3	77.4	.372
1978	173	500.7	76.6	.367
1979	180	504.1	74.4	.383
1980	202	457.7	69.5	.397
1981	202	473.7	66.1	.449
1982	184	568.2	54.1	.563
1983	183	650.2	51.1	.598
1984	201	738.4	47.5	.627
1985	227	710.6	48.0	.629
1986	226	795.2	50.0	.634

* The total number of firms operating in that year.

† The index of diversity used here is calculated as $D = 1 - \Sigma(P_i^2)$ where P_i is the proportion of assets invested in market i (Berry, 1972; Blau, 1977). If all assets are concentrated in one market, $D = 0$; if assets are spread evenly across all n markets, $D = 1 - 1/n$.

Source: *Federal Home Loan Bank Board Thrift Financial Reports,* 1977–1986. All figures are given for 31 December. All dollar amounts are corrected for inflation using the GNP deflator index and are given in constant 1977 dollars.

asset portfolios shows that thrifts' assets have become more evenly spread across investment markets and much less concentrated on residential mortgages.

There is considerable evidence that California savings and loans have responded to the opportunities created by deregulation to extend their domains beyond their traditional business, residential mortgage lending. But which firms—small or large—have moved faster? One industry analyst contended that the structural transformation of the conditions of competition for the savings and loan industry would affect the industry's size distribution (Balderston, 1985: 173–175). He predicted that small firms would survive only to the extent that they moved into sheltered, specialized niches, where pressures for market promotion, price competition, and product innovation are low. He also predicted that large, multioffice, diversified firms that gained competitive advantage from economies of scale and scope would thrive. This implies that large thrifts can take advantage of the opportunities created by deregulation to enter nontraditional markets, while small thrifts are constrained by lack of market power and operating efficiency to competing in one or two new markets.

Studying the pattern of change in savings and loan association activities following shifts in government regulation is one way to investigate how social-structural constraints influence organizational diversity. Changes in government regulation have been posited to influence the size distribution of organizations, either by selecting out small organizations or selecting out medium-sized organizations (Hannan and Freeman, 1977: 945–946). In particular, studying this industry provides an opportunity to investigate how organizational size mediates organizational response to discrete shifts in environmental conditions, such as those embodied in regulatory change.

Data Sources

The Federal Home Loan Bank (FHLB) of San Francisco, the regulatory body that governs savings and loans in California, publishes annual *Directories of Members* that contain data on each firm, including its date of incorporation and legal structure. In addition, extremely detailed *Financial Reports* are filed by all thrifts regulated by the FHLB. These reports were gathered semiannually from 1977 to 1983 and quarterly thereafter. The data used here were taken from these two sources and cover the period from June 1977 to December 1986.

Because of the confusion created by frequent firm name changes and mergers, other sources were used to validate the information presented in the FHLB *Directories.* It is not uncommon for one firm to acquire another and for the new firm to keep the subordinate partner's name, especially if the dominant partner's name has regional connotations. When Madera-Guarantee S&LA merged with World S&LA in 1974, for example, the merged firm took the name World S&LA, even though Madera-Guarantee was the dominant partner in the merger. When neither the FHLB *Directories* nor the California State Department of Savings and Loan Associations' *Annual Reports* explained the apparent disappearance of a firm, I turned to a merger file provided by the FHLB Board of Washington, DC, and to the FHLB of San Francisco's Public Information Office. Together, these sources enabled me to draw up accurate histories of all 308 California thrifts that operated from June 1977 to December 1986.

Organizational Form and Diversification

Organizational form is embodied in the core activities of the organization. For savings and loan associations, change in form involves movement away from the traditional domain—residential mortgage lending—into new product/client markets. There are eight investment markets in which savings and loan associations operate. Beyond the traditional domain of residential mortgages, deregulation loosened constraints on the amount thrifts could invest in seven new markets: (1) *nonresidential mortgages* (*NRM*), including mortgages on commercial, industrial, and undeveloped property; (2) *mortgage-backed securities* (*MBS*), securities consisting of bundles of residential mortgages; (3) *consumer nonmortgage loans* (*CNL*), including education, car, and vacation loans, credit cards, and overdraft services; (4) *commercial loans* (*CML*), primarily short- and medium-term commercial paper; (5) direct investment in *real estate* (*RE*), land held for development and resale; (6) *investment securities* (*IS*), including securities issued by government agencies and corporate stock; and (7) equity investments in *service corporation subsidiaries* (*SCo*), which operate in such businesses as real estate development and sales, property management, appraisal services, and escrow and trustee services. The categories used here conform to those used by other industry analysts, like the U.S. General Accounting Office (1991: 63–67). Each of these markets differs, to varying extents, from the

traditional residential mortgage lending market in terms of product characteristics, clientele served, technology used, or some combination of the three (see Haveman, 1992).

I modelled movement away from the traditional domain by studying changes in the amounts invested in each of these new product/client markets. Competitive pressures in the new markets are likely to affect rates of expansion. These pressures vary between the new markets, depending on the characteristics of the new markets.

Nonresidential mortgage lending includes mortgages on commercial, industrial, and undeveloped property. It differs from residential mortgage lending in one important respect: The clientele consists of corporations and small businesses rather than individual home buyers. The product (long-term loans secured by real property) and the financial intermediation technology (management of long-term, steady-payment loans) are similar to those of the traditional residential mortgage market. The competitive pressures in this market are strong, for California commercial banks are large and generally healthy.

Mortgage-backed securities are securities whose basic asset consists of residential mortgage loans. Diversification into securitized mortgage instruments involves products similar to the traditional residential mortgage but involves different clients and somewhat different technology—the securitization of bundles of mortgages rather than the management of an aggregate of many individual mortgage loans. The competitive pressures in this market derive mainly from mortgage brokers and financial institutions that invest in these securities, primarily insurance firms and pension funds, as well as other savings and loan associations.

Consumer nonmortgage loans include both secured automobile loans and home equity loans; unsecured education, car, and vacation loans; and open-ended credit card and overdraft services. Expanding into this market involves offering new products to savings and loans' traditional clients, consumers. These loans are attractive to thrifts because their average maturity is short. Expanding their investments in this market enables thrifts to achieve closer matches between the maturity of their liabilities (generally passbook savings accounts) and their assets (formerly residential mortgages). In this market, thrifts are subject to competition from commercial banks, credit unions, and from consumer financing agencies (e.g., General Motors Acceptance Corporation).

Commercial lending includes very short-term unsecured commercial paper and longer-term secured loans. This market has traditionally been dominated by commercial banks, for whom it has been the central business activity. Although moving into commercial lending offers thrifts higher interest rates and shorter-term assets, which means both greater potential profits and greater flexibility, thrifts' primary competitors in this market—commercial banks—have strong ties to commercial clients. Hence, the conditions of competition in the commercial lending market

are very different from those in the traditional residential mortgage market (Eichler, 1989).

Real estate investment has been identified by some critics as a risky move away from thrifts' traditional strengths (Eichler, 1989). The potential returns are great, but these are accompanied by a high probability of failure. Investing in real estate entails shifting both product portfolio and client base and, so, requires reorientation of the technical core. California thrifts have not historically had large direct holdings in real estate. A sharp rise in the percentage of assets held by California thrifts in this market occurred in 1982, a direct result of passage of the Garn-St. Germain Act that year.

Investment securities include such diverse assets as securities issued by government agencies (primarily the General National Mortgage Association and the Federal National Mortgage Association), corporate stock, and corporate bonds. Thrifts' main competitors in this market are commercial banks and institutional investors, such as pension funds and mutual funds managed by securities firms.

Service corporation subsidiaries are vehicles for moving into activities not otherwise allowed to thrifts, such as real estate development and sales, property management, insurance, accounting and tax services, and escrow and trust services. Service companies generally operate in markets from which thrifts are barred by law but that are closely related to residential mortgage lending. Thus many service companies serve thrifts' traditional clients, home-purchasing consumers, and offer products and services that complement residential mortgage lending. The amount of a thrift's assets invested in service companies provides a good measure of diversification into unregulated markets. The number of service corporation subsidiaries established by California savings and loans rose sharply after 1980, due to the increased attractiveness of service companies created by the Depository Institutions Deregulation and Monetary Control Act.

There are reasons to study changes in the amounts invested in nontraditional markets rather than the rates of entry into these markets. Many thrifts had small investments in several of these markets before deregulation raised investment ceilings. Of the 165 thrifts operating in June 1977, 150 had small investments in nonresidential mortgages (averaging 5 percent of assets); 77 invested in mortgage-backed securities (averaging 2 percent of assets); almost all (163) held consumer nonmortgage loans (averaging 2 percent of assets); 62 held commercial loans (averaging 0.4 percent of assets); 103 owned development real estate (averaging 0.4 percent of assets); 161 held investment securities (averaging 8 percent of assets); and 136 had equity investments in service corporations (averaging 0.2 percent of assets). Given the fact that most California thrifts operated in most nontraditional markets, albeit generally on a very small scale, the question to be answered about the response of this population to regulatory change does not involve rates of

entry into these markets, but, rather, which thrifts expanded fastest into nontraditional markets?

At this point, it is appropriate to explain how the hypotheses, generated from abstract sociological theory, apply in this specific context. Circumstances unique to organizations in this industry will constrain the size-change relationship. First, all California thrifts are subject to intense regulatory scrutiny. Consequently, all have developed substantial bureaucracy to manage relations with regulators. In this industry, the level of bureaucratization does not vary much across the size range. Hence, the association between organizational size and level of bureaucratization, which has been hypothesized to impede change, will be attenuated in this industry. Second, small savings and loan associations tend to focus on relational financial intermediation services, while large thrifts concentrate on transactional services and seek to reap economies of scale and scope. Because of this feature of the industry, small size is likely to be an impediment to expansion into markets that are primarily transactional—almost all new markets, with the possible exceptions of consumer lending and service corporation businesses. The likely consequence of these contextual factors is that the fluidity of size model will better fit the savings and loan industry than the rigidity of size model. Hence, large savings and loan associations will expand faster into the seven nontraditional markets than will small thrifts.

By contrast, it is possible that some inertial pressures do operate on large thrifts. If this is so, then both the negative effect due to bureaucratization and the positive effect due to market power and economies of scale may operate simultaneously. Smaller thrifts lack the power to expand rapidly, but large ones are overly bureaucratized. Medium-sized firms strike the right balance between power and structural ossification and, therefore, are best positioned to change rapidly. Together, these arguments imply a curvilinear relationship between size and expansion into nontraditional markets.

The size-change relationship thus may be monotonically increasing, if the fluidity of size model holds. I would expect to see that larger organizations change more but that the returns to size diminish at the upper end of the size distribution. Alternatively, the relationship may prove to be nonmonotonic, if both the fluidity and rigidity of size models hold simultaneously. In this case, I would expect to see an inverted-U-shaped effect as medium-sized organizations expanded more rapidly into new markets than did either large or small thrifts.

Organizational Size in the Thrift Industry

I conceptualized organizational size in terms of scale of operations and measured it as total assets, in millions of dollars (*Ass*). These data were taken from the FHLB's *Financial Reports*. Total assets, like other dollar amounts, were corrected for inflation using a GNP deflator index.

Many other measures of organizational size could have been used in place of assets; for example, number of employees,

Table 2

Means, Standard Deviations and Correlations for Investments, Size, and Control Variables*

Variable	1	2	3	4	5	6	7	8
Mean	51.52	46.40	14.18	4.72	7.66	54.90	9.81	579.87
S.D.	161.38	274.45	51.34	27.59	37.67	176.13	52.83	1636.16
1. NRM		.635	.580	.436	.657	.658	.356	.839
2. MBS			.238	.205	.752	.517	.321	.656
3. CNL				.463	.181	.443	.261	.588
4. CML					.093	.348	.203	.403
5. RE						.353	.224	.578
6. IS							.389	.846
7. SCo								.343
8. Assets								
9. Age								
10. Stock								
11. State								
12. NI								
13. D								
14. NAcqs								
15. Dens								
16. IRGap								
17. 1980–82								
18. 1983–86								

* These statistics are calculated using pooled cross-sectional and time-series data covering 308 firms and 3,425 six-month firm-periods. All dollar amounts are in millions and have been adjusted for inflation using the GNP deflator index.

number of subunits, number of clients served, or sales or production volume. Concern about what measure of size should be used is especially important in cross-industry studies (Kimberly, 1976), but for studies that are confined to one industry, the effects of size can be more easily disentangled (Blau and Schoenherr, 1971). In particular, in a study of a single industry, it is likely that the scale of operations is proportional to the assets managed. There is some evidence that this is true for the California thrifts studied here. The correlation between number of branch offices (the only available measure of structural complexity) and assets is .89, while the correlation between number of executives (the only available measure of number of employees) and assets is .46.

In most research involving organizational size, the natural logarithm of size is used. This transformation reduces the skewness of the size distribution, normalizing it, by compressing the upper tail of the distribution and expanding the lower tail. Moreover, models using the log transformation of size implicitly recognize that a one-unit change in the size of a small organization will have a greater impact on organizational structure and activities than will a one-unit change in the size of a large organization. I depart from this convention and do not use the log transformation of size in these analyses, for two reasons. I investigate the impact of size on expansion of investment in nontraditional markets. Like size, the seven variables representing investment in nontraditional markets are skewed. So, a linear relationship between size and investment would also appear as a linear relationship between log(size) and log(investment). Moreover, I cannot take the logarithm of investment in new markets, because these equal zero for a

Table 2 (*continued*)

9	10	11	12	13	14	15	16	17	18
29.51	.691	.646	2.11	.511	.033	191.53	1.61	.302	.402
29.20	.462	.478	19.61	1.62	.324	18.77	1.94	.459	.490
.284	.039	−.117	.244	−.165	.143	.100	.084	−.060	.136
.190	.063	−.055	.128	−.144	.123	.099	.078	−.035	.121
.226	−.002	−.165	.271	−.084	.187	.067	.034	−.035	.069
.177	.021	−.069	.269	−.083	.047	.050	.019	−.043	.051
.146	.094	.046	−.111	−.135	.066	.087	.076	−.036	.118
.323	.060	−.113	.375	−.101	.175	.064	.068	−.029	.089
.119	.033	.0004	.147	−.193	.067	.116	.101	−.071	.160
.369	.059	−.124	.334	−.054	.194	.045	.039	−.029	.058
	−.297	.288	.143	.138	.073	−.152	−.094	.034	−.169
		762	.064	−.178	.024	.220	.136	−.027	.236
			−.021	−.097	−.194	.114	.042	−.004	.106
				.028	−.071	−.046	−.021	−.103	.011
					−.038	−.448	−.423	.187	−.610
						.030	.012	.083	−.029
							.144	.098	.562
								−.255	.548
									−.540

substantial proportion of observations (24 percent, on average, across the seven nontraditional markets).

Control Variables

The models estimated below control for several other factors that are linked to organizational flexibility and inertia. I controlled first for *organizational age.* Age has been linked theoretically to organizational inertia (Aldrich and Auster, 1986; Hannan and Freeman, 1989), and empirical evidence supports this (Singh, Tucker, and Meinhard, 1988; Baum, 1990; Delacroix and Swaminathan, 1991; Kelly and Amburgey, 1991; Amburgey and Miner, 1992). Moreover, age and size are closely linked in theory and empirical observation.[1] I measured organizational age as the number of years since incorporation.

I also controlled for *legal form.* Firms in the savings and loan industry can be divided into several types. The first major distinction, based on capital structure, is between mutual and stock companies (*Stock*). A mutual company is owned jointly by all depositors, with an upper bound on any individual depositor's control. A stock company is owned by shareholders whose ownership stake can vary greatly in size and has no upper limit. This difference in dispersion of ownership results in differences in goals and authority structure. Mutual companies were originally designed as cooperative associations. Limitations exist on the total number of votes held by any single depositor (the maximum is 50), so no individual depositor can greatly influence management. Limitations on returns allowed and on downside risk, due to laws mandating nondistribution of excess profits and due to deposit insurance, respectively, combine to give mutual owners little interest in controlling

1
Unfortunately, indirect sample selection bias (Berk, 1983) in these data makes it impossible to place heavy reliance on the parameter estimates for age. The observation period begins in 1977. The average age of savings and loan associations alive at that time is 30 years. Thus, the sample of organizations studied is weighted heavily toward older organizations. Estimates of the impact of age on change will be biased, as shown graphically by Berk (1983: 389, Fig. 4).

their organization's administration. Mutual companies have thus evolved into organizations in which ownership is entirely separate from managerial control.

Profitability, beyond the minimum necessary to guarantee organizational survival, is of little concern to depositors. Stock companies, in contrast, work toward increased profits for shareholders and are subject to tighter control by owners. Furthermore, capital structure affects the ease with which capital can be raised to finance new operations. Stock companies can more easily offer new stock or new bond issues; mutual companies cannot. Capital structure thus affects the degree to which barriers to entry into new markets hinder thrifts' strategic reorientation.

A second dimension of organizational form, type of charter (state or federal), is also important (*State*). The type of charter determines the system of regulations that applies to a thrift's activities—state or federal. Until 1982, only state-chartered organizations could be stock companies; all federal savings and loans were mutual companies. Furthermore, for some years only federally chartered organizations could operate in more than one state. The type of charter thus influences the scope of a firm's domain and its capital structure.

I controlled for *level and type of diversification* because growth in the seven nontraditional markets may be interrelated. I measured level of diversification with an index of diversity (*D*) derived from the Herfindahl index of concentration (Berry, 1972: 62–63; Blau, 1977: 9). The formula for this index is

$$D = 1 - \Sigma(P_i^2) ,$$

where P_i is the proportion of assets invested in market *i*. Thrift assets are divided among ten categories: residential mortgages, the seven nontraditional investment markets, fixed assets, and other assets. Furthermore, to control for differences between diversification through internal growth and diversification through acquisition, I included a count of the number of acquisitions of other thrifts (*NAcqs*).

I controlled for *financial performance* with net income (*NI*), the difference between income and expenses, expressed in millions of dollars. This flow variable is the best measure of recent financial performance for savings and loan associations, after controlling for scale of operations (Cole, 1971).

I also controlled for *environmental pressures* that may push savings and loan associations into new markets, using three variables. Density, the number of savings and loan associations operating (*Dens*), has been hypothesized to encompass both competitive and legitimating forces and has been found to affect organizations' vital rates (see Hannan and Carroll, 1991). The most salient macro-economic force operating on this population is the gap between short- and long-term interest rates (*IRGap*), which is a measure of interest-rate risk and an indicator of the problems inherent in managing a portfolio of long-term mortgage loans and short-term deposit accounts. Regulatory change over the time period studied here is controlled with two period

indicator variables: 1980–1982 is a period of loosening regulatory regime; 1983–1986 is a period of relatively loose regulatory constraint; while 1977–1979, a period of tight regulation, is the reference group.

Various internal organizational mechanisms, such as the elaboration of rules and standard operating procedures, the distribution of power, structural complexity, and task specialization, are hypothesized to moderate the relationship between size and change (e.g., Meyer, 1968). Unfortunately, the data used here provide no information about internal organizational processes or structures. Thus, the models estimated below contain no controls for these possible intervening variables. To the extent that legal form affects internal structure, as described above, however, controlling for legal form attenuates the problem of not measuring such things as formalization and decentralization.

Table 2 presents descriptive statistics: means, standard deviations, and correlations for all variables used in these analyses.

Model Specification and Estimation

I investigated change in the amount of assets invested in the seven nontraditional markets using a linear partial-adjustment model (Coleman, 1968; Tuma and Hannan, 1984: chap. 11):

$$\frac{dY(t)}{dt} = r[Y^*(t) - Y(t)], \quad (1)$$

where $Y(t)$ represents the actual level of the outcome of concern (for example, the amount invested in the nonresidential mortgage market) at time t, $Y^*(t)$ is the target value of this variable for an organization with given characteristics in a given environment (the level toward which causal forces are moving Y), and r is the speed of adjustment toward this target. This model has been used in analyses of organizational size and formalization (Hummon, Doreian, and Teuter, 1975), organizational growth and decline (Freeman and Hannan, 1975), consolidation of school districts (Strang, 1987), gender integration in civil service bureaus (Baron, Mittman, and Newman, 1991), and change in the carrying capacities of organizational populations (Boeker, 1991). $Y^*(t)$ is assumed to be a time-stationary linear function of observed organizational and environmental variables:

$$Y^*(t) = \beta X(t), \quad (2)$$

where $X(t)$ is a vector of time-varying environmental and organizational variables. Substituting equation (2) into equation (1) results in a model linking organizational and environmental variables to the rate of organizational change:

$$\frac{dY(t)}{dt} = r[\beta X(t) - Y(t)]. \quad (3)$$

Equation (3) cannot be estimated directly. Instead, it must be integrated to produce a form of the model that includes terms that are directly observable. To integrate, I assumed that change in the exogenous variables was linear in time

($\Delta X = k\Delta t$). This reduced-form model was estimated on panel data with half-year time periods:

$$Y_t = \alpha Y_{t-1} + \beta_1 X_{t-1} + \beta_2 \Delta X_{(t-1,t)}, \quad (4)$$

where Y_t is the value of the dependent variable (the level of a firm's investment in a market) at the end of a six-month period; Y_{t-1} is the value of this variable at the beginning of the period; X_{t-1} is a vector of independent variables, including an intercept, measured at the beginning of the period; and $\Delta X_{(t-1,t)}$ is a vector measuring change in these independent variables during the period.

The estimated parameters are related to those of the differential equation form of the linear partial adjustment model as follows (for details, see Coleman, 1968: 441–443; Tuma and Hannan, 1984: 341–344):

$$r = -log[\alpha]/\Delta t$$
$$\beta \approx -\beta_1 r/(\alpha - 1)$$
$$\beta \approx \beta_2 r^2/(\alpha - 1 - log[\alpha]),$$

where Δt is the length of the period between any successive observations. There are two approximations for β, which have the same asymptotic expected value. The difference between the estimates depends on the extent to which the assumption of linear temporal change in X was violated and the extent to which the model was specified correctly. As suggested by Tuma and Hannan (1984), an arithmetic average of the two estimates was taken to obtain a final estimate of β.

Although it is relatively easy to obtain point estimates of β, estimates of standard errors are more difficult to obtain. Although the delta method (Rao, 1973) can be used to find standard errors for any $g(x,y)$ where x and y are normally distributed, no statistical package currently performs this sort of calculation. Testing the significance of the individual parameters is therefore problematic. The approach followed here is to use F-tests (jointly on the lagged independent variables and their one-period change values) to see whether the addition of each new variable significantly increases the fit of a model.

Pooling multiple observations over time for each organization increases the likelihood that the assumption of independence required for ordinary least squares (OLS) regression is violated. This violation may result in biased parameter estimates. To correct this bias, I estimated fixed-effects models. I subtracted the value of each variable from its mean across all observations on an organization and suppressed the intercept. This is equivalent to introducing one dummy variable for each organization but is easier to estimate, since it eliminates the addition of a large number of variables (in this case, 308) to the data set (Judge et al., 1982: 481). Fixed-effects models offer a very conservative test of my hypotheses because they model only within-firm variation over time and eliminate across-firm variation (Judge et al., 1982: 478–488). Fixed-effects models are thus equivalent to pooled, within-firm regressions. Such models assume that the effects of the independent variables are the same for all firms and that only the intercepts are different.

I also corrected for autocorrelation of errors. Autocorrelation of errors for individual firms over time occurs when unobserved factors that vary greatly between firms and that change slowly over time influence the outcomes. Model misspecification caused by not including such variables introduces errors whose effects are felt in the coefficient estimates for the lagged dependent variable and the independent variables. For models that include the lagged dependent variable, as these do, autocorrelation confounds the disturbance term with the effect of the lagged dependent variable. OLS estimation then yields biased and inconsistent estimates of the coefficients of the lagged dependent variable. When exogenous variables are correlated with the lagged dependent variable, estimates of all parameters are biased and inconsistent (see Ostrom, 1978; Judge et al., 1982; Greene, 1990).

One other issue must be dealt with before testing and correcting for autocorrelation. When a model contains a lagged dependent variable and error terms are autocorrelated, OLS will not yield accurate estimates of the error term and hence will not provide consistent estimates of autocorrelation. To deal with this problem, the instrumental variables technique should be used (see Ostrom, 1978: 53–55; Green, 1990: 440–445). This involves estimating the lagged dependent variable using variables that are not correlated with the error term and substituting this estimate into equation (4) above. The most common suggestion in econometrics texts is to regress the dependent variable on current and lagged independent variables (e.g., Ostrom, 1978: 55; Greene, 1990: 448):

$$Y_t = \alpha_1 X_t + \alpha_2 X_{t-1} . \tag{5}$$

The lagged values of the predictions of Y_t are substituted into the reduced form of the linear partial-adjustment model (equation 4 above), which then yields consistent estimates of the errors.

Because these data comprise pooled time series, one time series for each organization, it is necessary to correct for autocorrelation within each organization's time series. In addition, because the data are at half-year intervals, it is logical to test for and correct both first- and second-order autocorrelation, the latter to control for the effects of annual cycles. Thus, the models estimated assume that the error term is of the form

$$\epsilon_t = \rho_1 \epsilon_{t-1} + \rho_2 \epsilon_{t-2} + \mu_t , \tag{6}$$

where ρ_1 and ρ_2 are the first- and second-order autoregressive parameters, respectively. I used a pseudo-generalized-least-squares estimation technique to correct for autocorrelation (see Ostrom, 1978: 53–55; Judge et al., 1982: 442–446; Greene, 1990: 440–445). Estimates of ρ_1 and ρ_2 were used to transform the data for each firm's time series as follows:

$$Z_1^* = \{[(1 + \rho_2)\{(1 - \rho_2)^2 - \rho_1^2\}]/(1 - \rho_2)\}^{.5} Z_1$$

$$Z_2^* = (1 - \rho_2^2)^{.5} Z_2 - \{[\rho_1 (1 - \rho_1^2)^{.5}]/(1 - \rho_2)\} Z_1$$

$$Z_t^* = Z_t - \rho_1 Z_{t-1} - \rho_2 Z_{t-2} \; (t > 2) ,$$

Table 3

Structural (Differential Equation) Form of LPA Models of Change in Investment in Nontraditional Markets, 1977–86*

Variable	Model 1 NRM	2 NRM	3 MBS	4 MBS	5 CNL	6 CNL
r	.111•	.079•	.232•	.114•	.199•	.200•
Ass	.248•	.283•	.081•	.003	.051•	.059•
$Ass^2/10^6$		−10.88•		21.65•		−2.42•
Age	.713	.738	.285	.448	.003	.014
Stock	−24.23•	−21.25•	.678	−4.09	−2.76	−2.18
State	−83.07•	−74.22•	15.10•	−3.54	−13.75•	−12.33•
NI	−.028	.022	−.114•	−.141•	−.022	−.009•
D	−15.68•	−14.63•	−1.41	−5.46	−2.16	−2.13
NAcqs	−19.81•	−24.91•	9.81•	22.16•	−6.04•	−7.00•
Dens	.093	.100	−.146•	−.170•	−.002	.001
IRGap	.004•	.057	−.093	−.194	−.188	−.173
1980–82	−4.18	−4.31	−.698	1.14	.388	.352
1983–86	−5.04	−5.73	−1.97	−.801	.221	.139

• $p < .05$, two-tailed *t*-test.
* There were 308 firms and 3,425 six-month observations. All variables are deviated from firm means in order to estimate firm-specific fixed effects. Weighted least squares estimation was used to correct heteroskedastic errors.

where *Z* is used for *Y* and *X*, and *t* represents observations 3, 4, . . . , *n* for each firm's time series. This transformation, which is more complex than the Cochrane-Orcutt technique, preserves the first two observations for each time series and yields more efficient estimates when each time series is short (Greene, 1990: 443). When only first-order autocorrelation was found (for direct investments in real estate only), I corrected, using these formulae:

$$Z_1^* = (1 - \rho_1^2)^{.5} Z_1$$

$$Z_t^* = Z_t - \rho_1 Z_{t-1} \; (t > 1).$$

The problem of heteroskedasticity must also be addressed. When the variance in the error term of the estimated model is not constant across observations, the variances of the coefficients are biased upward. Heteroskedasticity often occurs when there is a wide disparity between the largest and smallest observed values. The larger the disparity between the size of observations in a sample, the greater the likelihood that their errors will have different variances. If the error variance is proportional to one of the independent variables (typically, size), that proportionality variable can be used to stabilize the error variance. Each variable in the regression can be divided by the proportionality variable (Ostrom, 1978; Judge et al., 1982; Greene, 1990), and weighted least squares are estimated. That is the strategy followed here. The weight used is the square root of assets, since the error variance is proportional to organizational size.

RESULTS

Models of each of the seven new markets are discussed in sequence below. Table 3 presents results for the structural (differential equation) form of the model, which corresponds to equation (3) above.[2] For each market, I present two models. All models include the lagged dependent variable plus organizational and environmental control variables. The first model for each market includes a linear term for

2
Results for the reduced (integral equation) form of the model are available from the author upon request. They are omitted here for the sake of clarity.

Table 3 (*continued*)

Model							
7	8	9	10	11	12	13	14
CML		RE		IS		SCo	
.500•	.583•	.019•	.028•	.220•	.258•	.00003•	.010•
.042•	.053•	.021•	.021•	.197•	.223•	.030•	.038•
	−2.36•		.043		−4.93•		−1.37•
.125	.098	.315	.316	−.072	−.128	.281	.254
3.91•	4.58•	1.36	1.34	5.14	6.58	.215	.645
13.75•	16.29•	7.31•	7.24•	20.97•	26.76•	4.47	6.63
.132•	.142•	−.014•	−.018•	.253•	.349•	.251•	.235•
−1.04	−.819	−2.33•	−2.45•	.930	1.43	−3.96•	−3.62•
−10.75•	−12.60•	−2.60•	−2.55•	−26.08•	−30.29•	−7.12•	−8.68•
.019	.021	−.025•	−.025•	−.186•	−.183•	−.078•	−.078•
.049	.057	.020	.020	.278	.301	−.043•	−.033•
−.142	−.178	−.568•	−.572•	3.42•	3.31	.066	.014
−.915	−1.06	−.824	−.798	−.790•	.255•	−.295	−.487

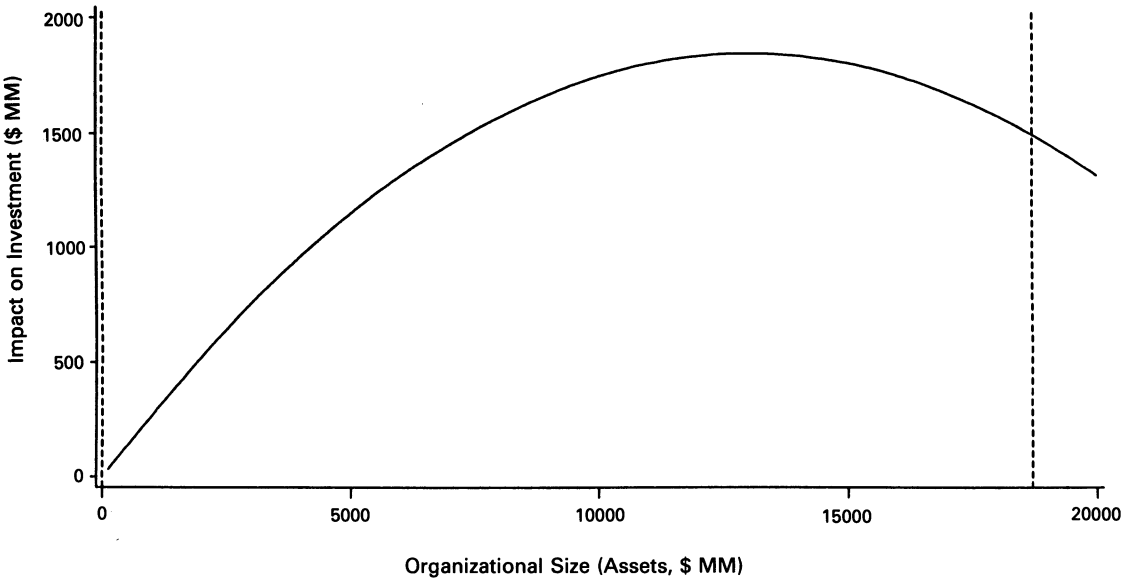
organizational size, while the second model adds a quadratic term for size. This second model tests for curvilinearity in the relationship between size and expansion into new markets.

Nonresidential mortgage lending. In model 1, the parameter estimate for size is positive, indicating support for the fluidity of size hypothesis developed from the market-power model. Larger savings and loan associations appear to move into the nonresidential mortgage market more than do small firms. In model 3, which introduces a quadratic term for size, the estimate for the linear term remains positive and statistically significant; for the quadratic term, it is negative and significant. Organizational size has an inverted-U-shaped relationship with expansion into this market, indicating that medium-sized thrifts move more rapidly into this market. The cumulative impact of the linear and squared terms for organizational size are plotted in Figure 1. It shows a curvilinear, inverted-U shape. The peak of this inverted U is well within the upper end of the observed range, showing that medium-sized savings and loan associations expand into the nonresidential mortgage market more than do either small or large thrifts. This result is consistent with the market-power and bureaucratization effects operating simultaneously.

Mortgage-backed securities. In model 3 in Table 3, size has a positive effect on investment in mortgage-backed securities, indicating that larger savings and loan associations diversify more into this new market. In model 4, parameter estimates for both the linear and quadratic terms are positive. Large savings and loan associations expand into this market more than do their small competitors. This result supports the market-power model. It indicates no support for the bureaucratization model.

Consumer nonmortgage lending. Model 5 in Table 3 shows that size has a positive effect on investment in this

Figure 1. Effect of organizational size on investment in nonresidential mortgage loans (vertical lines enclose the observed range).

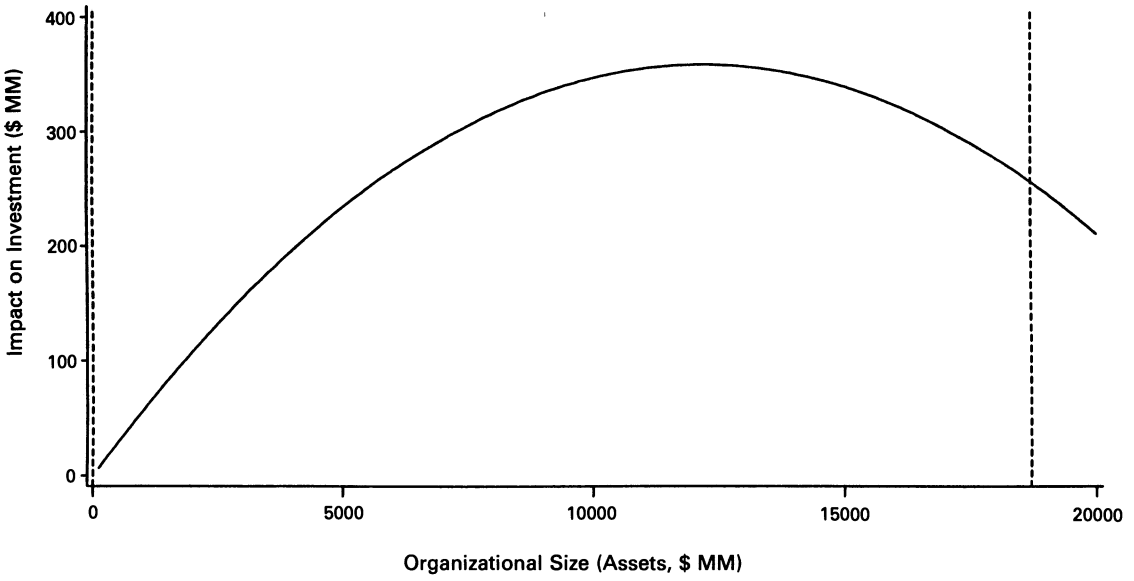


market, supporting the market-power model. Model 6 shows a curvilinear, inverted U-shaped relationship between organizational size and investment in consumer loans. The linear term is positive and the quadratic term is negative; both estimates are statistically significant. Thus, medium-sized savings and loan associations appear to expand more rapidly into consumer nonmortgage lending than do either large or small thrifts. Figure 2 plots the cumulative effect of organizational size on consumer nonmortgage lending and shows a curvilinear, inverted-U shape within the observed range for organizational size. As with nonresidential mortgages, both the market-power and bureaucratization effects appear to operate.

Commercial nonmortgage lending. Model 7 in Table 3 shows that size has a positive effect on investment by thrifts in this market, consonant with the market-power model. Model 8 shows that this effect is actually curvilinear, an inverted-U shape. Figure 3 plots the cumulative effect of organizational size on commercial nonmortgage lending. It shows a curvilinear, inverted-U shape. The peak of this inverted U is well within the upper end of the observed range, showing that medium-sized savings and loan associations tend to expand more into the commercial lending market than do either small or large thrifts. Again, the two divergent effects of size—market power and bureaucratic ossification—seem to be operating simultaneously.

Direct investments in real estate. Model 9 in Table 3 supports the market-power argument and shows no support for the bureaucratization model. Larger savings and loan associations have larger direct investments in real estate than do small thrifts. Model 10 fails to offer different evidence. The quadratic term is positive and nonsignificant, while the linear term is negative and significant. Large

Figure 2. Effect of organizational size on investment in consumer loans (vertical lines enclose the observed range).



savings and loan associations move into this market more extensively than do medium-sized or small thrifts.

Investment securities. Model 11 in Table 3 shows a positive effect of organizational size on expansion into this new market. Model 12, which includes a quadratic term for size, shows that this effect is actually curvilinear, an inverted-U shape. The effect for the linear term is positive and statistically significant; the effect for the quadratic term is negative and statistically significant. This indicates that medium-sized savings and loan associations invest in this market more than do either large or small firms. Figure 4, however, tells a different story. It plots the cumulative effect

Figure 3. Effect of organizational size on investment in commercial loans (vertical lines enclose the observed range).

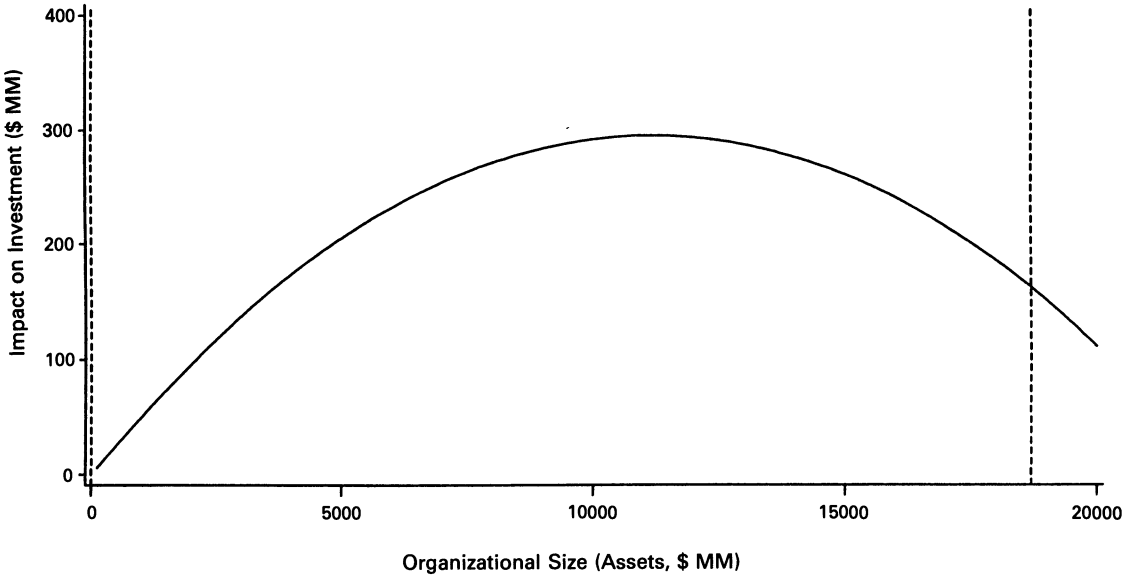
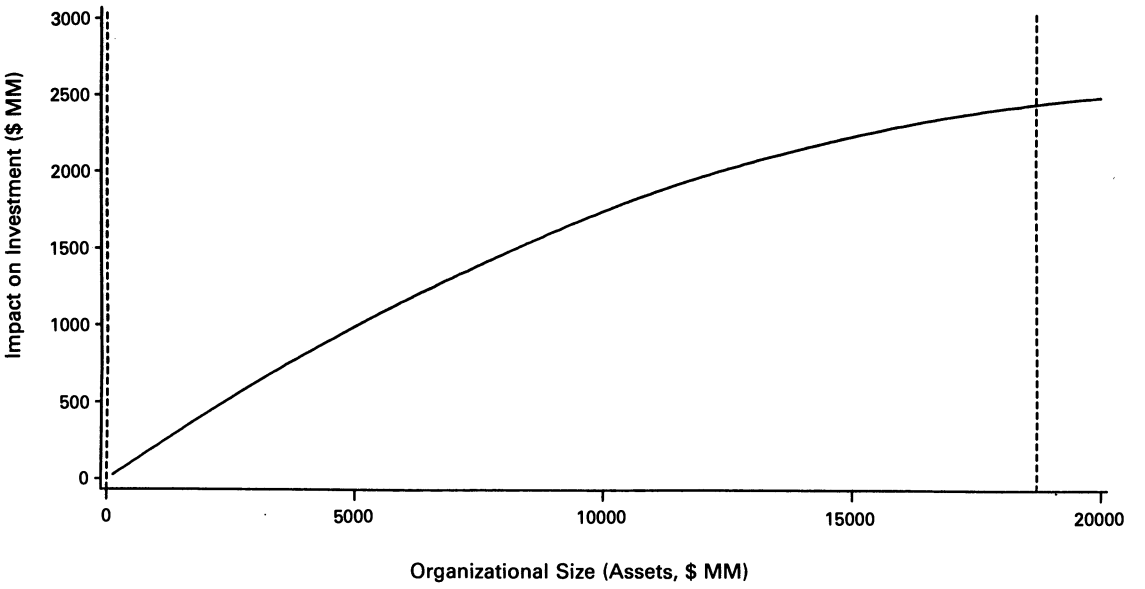


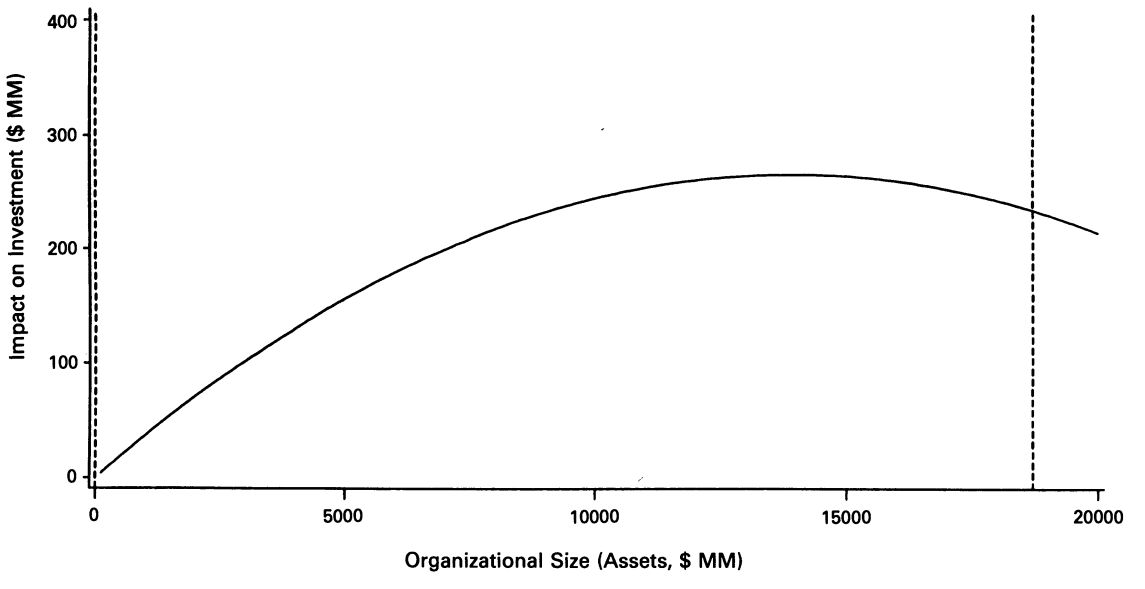
Figure 4. Effect of organizational size on investment in investment securities (vertical lines enclose the observed range).



of organizational size on thrifts' holdings of investment securities. It shows a nonlinear effect, but one that is always positive within the observed range of data. As with the market for mortgage-backed securities, larger savings and loan associations expand into the investment securities market more than do small firms. This result is consistent with a pure market-power explanation.

Investments in service corporation subsidiaries. Model 13 shows positive and significant effects for organizational size. To assess whether this effect is actually curvilinear, model 14 introduces a quadratic term for size. It shows statistically significant effects. The coefficient estimate for the linear

Figure 5. Effect of organizational size on investment in service corporation subsidiaries (vertical lines enclose the observed range).



term is positive, while that for the quadratic term is negative, adding to an inverted-U-shaped effect. Medium-sized savings and loans are more likely to invest in service corporation subsidiaries than are their small or large competitors. This finding offers further support for the idea that both positive and negative effects of size operate simultaneously. Figure 5 plots the cumulative effect of organizational size on equity investments in service corporation subsidiaries. It shows a curvilinear, inverted-U shape, with the downturn coming well within the observed size range.

DISCUSSION AND CONCLUSIONS

This paper has shown that organizational size affects the degree to which organizations diversify—shift strategy and structure—through two distinct processes. In four out of the seven markets examined here—nonresidential mortgages, consumer nonmortgage loans, commercial loans, and service corporation subsidiaries—medium-sized organizations expanded faster than did small or large organizations. These results support the existence of two diametrically opposed effects of organizational size. On the one hand, larger organizations have more market power and slack resources (Cyert and March, 1963; Starbuck, 1965; Thompson, 1967; Pfeffer and Salancik, 1978: 52–54); hence, they will tend to expand more rapidly than small organizations. On the other hand, large organizations are more bureaucratic and thus more prone to inertia (Tsouderos, 1955; Merton, 1957; Crozier, 1964; Downs, 1967); hence, small organizations are more likely to enter new markets following deregulation. Taking these two arguments together, smaller thrifts lack the resources to diversify rapidly, but large ones are overly bureaucratized. In this industry, medium-sized organizations strike the right balance between having sufficient resources and being flexible enough to change, and thus medium-sized thrifts diversify most rapidly because they are most advantageously situated to do so.

In the three remaining markets—mortgage-backed securities, real estate, and investment securities—large thrifts expanded faster than did their small competitors. These results indicate that organizations in this industry are subject to a fluidity of size. Relative to small thrifts, large thrifts have greater slack resources (Cyert and March, 1963; Thompson, 1967) and greater market power (Starbuck, 1965; Pfeffer and Salancik, 1978: 52–54). Slack resources and market power attenuate three inertial pressures: sunk costs, external political considerations, and economic barriers to entry. Large organizations in this industry also exhibit differentiated and decentralized structures, features that both facilitate and impel change (Grusky, 1961; Mohr, 1969).

Taken together, these results fit a model in which resource constraints vary according to organizational size. Small savings and loan associations do not have the resources to open new lines of business. They cannot, therefore, enter the new markets opened by deregulation at a scale sufficient to be cost-competitive. The rate at which thrifts expand into these markets generally increases with size. Very large savings and loan associations, however, do not

need to change, because they can reap economies of scale and scope from their current operations and dominate their traditional market, residential mortgage lending. Large thrifts can pick and choose among the new markets opened up by deregulation. They expanded into three markets that industry analysts describe as offering great profit potential, albeit at high risk (e.g., Eichler, 1989). The positive relationship between organizational size and movement into these three nontraditional markets may result as much from resource constraints as from competitive pressures. The effect estimates for net income fit with this explanation. Prior performance has consistent significant and negative effects on expansion into two markets—real estate and mortgage–backed securities. These are the markets that have been identified as particularly risky (Eichler, 1989). These areas are generally avoided by thrifts that are performing well.

The implications of these findings for organizational theory are broad. Organizations undergo substantial changes during their lifetimes. Over ten years, the proportion of assets California savings and loan associations devoted to mortgage lending fell about one-third from their pre-deregulation base. Furthermore, forces for stability and inertia appear to be variable, not uniformly strong across firms within this industry. The strength of inertial pressures depends on organizational size; more, the direction of the size-change relationship depends on the degree to which the beneficial effects of market power and slack resources outweigh the drag created by bureaucratic ossification.

These results suggest that size should not be conceptualized as solely an organizational characteristic. Instead, the context in which organizational size has an effect must be considered. In this industry, organizational size is primarily an indicator of the extent to which organizational action is externally constrained. The relationship between size and change thus depends on external constraints that vary from setting to setting. Moreover, in other settings, organizational size may be more directly related to internal forces that drive bureaucratization. Knowledge of context is crucial for understanding the impact of size on organizations' propensity to expand into new domains.

This study investigated domain shift for a population of organizations whose environment underwent fundamental restructuring (Balderston, 1985). This analysis revealed how organizational size mediates organizational responses to sudden, discrete shifts in environmental conditions. Regulatory change is by no means the only engine of dramatic environmental change. Fundamental restructuring of environmental conditions can occur through technological innovation, sudden shifts in macroeconomic forces, and political upheaval (Astley, 1985; Carroll, 1987). Regardless of the nature of the driving force, when industries or economic sectors face rapid and dramatic transformation, the relationship between organizational size and change in organizational activities depends on which of the warring processes dominates: bureaucratization or market power. The analysis reported here suggests that these two

processes are fairly evenly balanced but that the market-power process is slightly stronger.

The relationship between organizational size and organizational change may also vary in different contexts. The pace of environmental change varies along a continuum running from placid environments through environments undergoing slow, incremental change to environments undergoing rapid, discontinuous change. It may be that in placid environments and in environments undergoing incremental change, small organizations will modify their activity bases more rapidly than large organizations, because the structural ossification process is more influential than the market-power process. If the tempo of environmental variation is slow, large organizations may not be aware of the need for diversification or the opportunity to modify activities and may not use their slack resources and power to ease the transition into new domains. Because of their limited resource base, small organizations are buffeted by even tiny shifts in environmental conditions and thus may be sensitive to the opportunities for expansion into additional lines of business that are created by incremental industry change.

When organizational environments are undergoing rapid restructuring and organizations' current domains are threatened, the benefits of large size may outweigh the problems, so that large organizations grow faster than their small counterparts. As this analysis has shown for the process of growth through diversification, the key to the size-growth relationship is organizational context.

REFERENCES

Aiken, Michael, and Jerald Hage
1971 "The organic organization and innovation." Sociology, 5: 63–82.

Aldrich, Howard E.
1979 Organizations and Environments. Englewood Cliffs, NJ: Prentice-Hall.

Aldrich, Howard E., and Ellen Auster
1986 "Even dwarfs started small: Liabilities of age and size and their strategic implications." In Barry Staw and Larry Cummings (eds.), Research in Organizational Behavior, 8: 165–198. Greenwich, CT: JAI Press.

Amburgey, Terry L., Dawn Kelly, and William P. Barnett
1993 "Resetting the clock: The dynamics of organizational change and failure." Administrative Science Quarterly, 38: 51–73.

Amburgey, Terry L., and Anne S. Miner
1992 "Strategic momentum: The effects of repetitive, positional, and contextual momentum on merger activity." Strategic Management Journal, 13: 335–348.

Ansoff, Igor H.
1988 The New Corporate Strategy. New York: Wiley.

Argyris, Chris, and Donald A. Schon
1978 Organizational Learning. Homewood, IL: Irwin.

Astley, W. Graham
1985 "The two ecologies: Population and community perspectives on organizational evolution." Administrative Science Quarterly, 30: 224–241.

Bain, Joe S.
1956 Barriers to New Competition. Cambridge, MA: Harvard University Press.

Balderston, Frederick E.
1985 Thrifts in Crisis: The Structural Transformation of the Savings and Loan Industry. Cambridge, MA: Ballinger.

Baron, James N., Brian S. Mittman, and Andrew E. Newman
1991 "Targets of opportunity: Organizational and environmental determinants of gender integration within the California civil service, 1979–1985." American Journal of Sociology, 96: 1362–1401.

Baum, Joel A. C.
1990 "Inertial and adaptive patterns in organizational change." In L. R. Jauch and J. L. Wall (eds.), Best Papers Proceedings: 165–169. San Francisco: Academy of Management.

Berk, Richard A.
1983 "An introduction to sample selection bias in sociological data." American Sociological Review, 48: 386–398.

Berry, Charles H.
1972 Corporate Growth and Diversification. Princeton, NJ: Princeton University Press.

Blau, Peter M.
1970 "A formal theory of differentiation in organizations." American Sociological Review, 35: 201–218.
1977 Inequality and Heterogeneity. New York: Free Press.

Blau, Peter M., and Richard Schoenherr
1971 The Structure of Organizations. New York: Basic Books.

Boeker, Warren
1991 "Organizational strategy: An ecological perspective." Academy of Management Journal, 34: 613–635.

Bourgeois, L. J.
1981 "On the measurement of organizational slack." Academy of Management Review, 6: 29–39.

Burns, Tom, and George M. Stalker
1961 The Management of Innovation. London: Tavistock Institute.

Burt, Ronald S.
1983 Corporate Profits and Cooptation. New York: Academic Press.

Cangelosi, V. E., and W. R. Dill
1965 "Organizational learning: Observations towards a theory." Administrative Science Quarterly, 10: 175–203.

Caplow, Theodore
1957 "Organizational size." Administrative Science Quarterly, 2: 484–505.

Carroll, Glenn R.
1987 Publish or Perish: The Organizational Ecology of Newspaper Industries. Greenwich, CT: JAI Press.

Chandler, Alfred D.
1962 Strategy and Structure: Chapters in the History of the American Industrial Enterprise. Cambridge, MA: MIT Press.

Chapin, F. Stuart
1951 "The growth of bureaucracy: An hypothesis." American Sociological Review, 16: 835–836.

Child, John, and Alfred Kieser
1981 "Development of organizations over time." In Paul Nystrom and William Starbuck (eds.), Handbook of Organizational Design, 1: 28–64. New York: Oxford University Press.

Cohen, Michael D., James G. March, and Johan P. Olsen
1972 "A garbage can model of organizational choice." Administrative Science Quarterly, 17: 1–25.

Cole, David W.
1971 "Measuring savings and loan profitability." Federal Home Loan Bank Journal, October: 1–7.

Coleman, James S.
1968 "The mathematical study of change." In H. Blalock and A. Blalock (eds.), Methodology in Social Research: 428–478. New York: McGraw-Hill.

Cook, Thomas D., and Donald T. Campbell
1979 Quasi-Experimentation: Design and Analysis Issues for Field Settings. Boston: Houghton Mifflin.

Corwin, Ronald G.
1972 "Strategies for organizational innovation: An empirical comparison." American Sociological Review, 37: 441–452.

Crozier, Michel
1964 The Bureaucratic Phenomenon. Chicago: University of Chicago Press.

Cyert, Richard M., and James G. March
1963 A Behavioral Theory of the Firm. Englewood Cliffs, NJ: Prentice-Hall.

David, Paul A.
1985 Clio and the economics of QWERTY." American Economic Review, 75: 332–337.

Delacroix, Jacques, and Anand Swaminathan
1991 "Cosmetic, speculative, and adaptive organizational change in the wine industry: A longitudinal study." Administrative Science Quarterly, 36: 631–661.

Downs, Anthony
1967 Inside Bureaucracy. Boston: Little, Brown.

Durkheim, Emile
1933 The Division of Labor in Society. New York: Free Press.

Eichler, Ned
1989 The Thrift Debacle. Berkeley, CA: University of California Press.

Evans, David S.
1987 "The relationship between firm growth, size, and age: Estimates for 100 manufacturing industries." Journal of Industrial Economics, 35: 567–581.

Fligstein, Neil, and Kenneth Dauber
1989 "Structural change in corporate organization." In W. Richard Scott (ed.), Annual Review of Sociology, 15: 73–96. Palo Alto, CA: Annual Reviews.

Freeman, John, and Michael T. Hannan
1975 "Growth and decline processes in organizations." American Sociological Review, 40: 215–228.

Graicunas, V. E.
1933 "Relationships in organizations." Bulletin of the International Management Institute, March: 183–187.

Greene, William H.
1990 Econometric Analysis. New York: Macmillan

Grusky, Oscar
1961 "Corporate size, bureaucratization, and managerial succession." American Journal of Sociology, 67: 261–269.

Hage, Jerald, and Michael Aiken
1967 "Program change and organizational properties: A comparative analysis." American Journal of Sociology, 72: 503–519.

Hannan, Michael T., and Glenn R. Carroll
1991 Dynamics of Organizational Populations. New York: Oxford University Press.

Hannan, Michael T., and John Freeman
1977 "The population ecology of organizations." American Journal of Sociology, 83: 929–964.
1984 "Structural inertia and organizational change." American Sociological Review, 49: 149–164.
1989 Organizational Ecology. Cambridge, MA: Harvard University Press.

Haveman, Heather A.
1992 "Between a rock and a hard place: Organizational change and performance under conditions of fundamental environmental transformation." Administrative Science Quarterly, 37: 48–75.

Hedberg, Bo
1981 "How organizations learn and unlearn." In Paul Nystrom and William Starbuck (eds.), Handbook of Organizational Design, 1: 8–27. New York: Oxford University Press.

Hummon, Norman P., Patrick Doreian, and Klaus Teuter
1975 "A structural control model of organizational change." American Sociological Review, 40: 691–700.

Judge, George G., Carter R. Hill, William E. Griffiths, Helmut Lutkepohl, and Tsoung-Chao Lee
1982 Introduction to the Theory and Practice of Econometrics. New York: Wiley.

Kelly, Dawn, and Terry L. Amburgey
1991 "Organizational inertia and momentum: A dynamic model of strategic change." Academy of Management Journal, 34: 591–612.

Kimberly, John R.
1976 "Organizational size and the structuralist perspective: A review, critique, and proposal." Administrative Science Quarterly, 21: 571–597.
1978 "Hospital adoption of innovation: The role of integration into external informational environments." Journal of Health and Social Behavior, 19: 361–373.

Kimberly, John R., and Michael J. Evanisko
1981 "Organizational innovation: The influence of individual, organizational and contextual factors on hospital adoption of technological and administrative innovations." Academy of Management Journal, 24: 689–713.

Lawrence, Paul D., and Jay W. Lorsch
1967 Organizations and Environments: Managing Differentiation and Integration. Boston: Harvard Business School Press.

Levine, S., and P. White
1961 "Exchange as a conceptual framework for the study of interorganizational relationships." Administrative Science Quarterly, 5: 583–601.

Levitt, Barbara, and James G. March
1988 "Organizational learning." In W. Richard Scott (ed.), Annual Review of Sociology, 14: 319–340. Palo Alto, CA: Annual Reviews.

March, James G.
1981 "Footnotes to organizational change." Administrative Science Quarterly, 26: 563–577.

McKelvey, Bill
1982 Organizational Systematics: Taxonomy, Evolution, Classification. Berkeley, CA: University of California Press.

Merton, Robert K.
1957 Social Theory and Social Structure, rev. ed. New York: Free Press.

Meyer, Marshall W.
1968 "The two authority structures of bureaucratic organization." Administrative Science Quarterly, 13: 211–228.

Miles, Raymond E., and Charles C. Snow
1978 Organizational Strategy, Structure, and Process. New York: McGraw-Hill.

Miller, Danny, and Peter H. Friesen
1984 Organizations: A Quantum View. Englewood Cliffs, NJ: Prentice-Hall.

Mitchell, Will
1989 "Whether and when? Probability and timing of incumbents' entry into emerging industrial subfields." Administrative Science Quarterly, 34: 208–230.

Moch, Michael K., and Edward V. Morse
1977 "Size, centralization and organizational adoption of innovation." American Sociological Review, 42: 716–725.

Mohr, Lawrence B.
1969 "Determinants of innovation in organizations." American Political Science Review, 63: 111–126.

Nelson, Richard R., and Sydney G. Winter
1982 An Evolutionary Theory of Economic Change. Cambridge, MA: Harvard University Press.

Ostrom, Charles W.
1978 Time Series Analysis: Regression Techniques. Beverly Hills, CA: Sage.

Penrose, Edith T.
1959 The Theory of the Growth of the Firm. White Plains, NY: M. E. Sharpe.

Pfeffer, Jeffrey, and Gerald R. Salancik
1978 The External Control of Organizations: A Resource Dependence Perspective. New York: Harper and Row.

Pugh, D., D. Hickson, C. R. Hinings, and C. Turner
1969 "The context of organizational structures." Administrative Science Quarterly, 14: 91–114.

Rao, C. R.
1973 Linear Statistical Inference and Its Applications, 2d ed. New York: Wiley.

Romanelli, Elaine
1992 "Organizational imprinting: Initial conditions as constraints on subsequent organizational strategies." Working paper, School of Business, Georgetown University.

Romanelli, Elaine, and Michael L. Tushman
1993 "Organizational transformation as punctuated equilibrium: An empirical test." Working paper, School of Business, Georgetown University.

Rumelt, Richard P.
1974 Strategy, Structure, and Economic Performance. Boston: Harvard Business School Press.

Scott, W. Richard
1992 Organizations: Rational, Natural and Open Systems, 3d ed. Englewood Cliffs, NJ: Prentice-Hall.

Simmel, Georg
1902 "The number of members as determining the sociological form of the group." American Journal of Sociology, 8: 1–46.

Singh, Jitendra V., Robert J. House, and David J. Tucker
1986 "Organizational change and organizational mortality." Administrative Science Quarterly, 31: 587–611.

Singh, Jitendra V., David J. Tucker, and Agnes G. Meinhard
1988 "Are voluntary associations structurally inert? Exploring an assumption in organizational ecology." Unpublished manuscript, The Wharton School, University of Pennsylvania.
1991 "Institutional change and ecological dynamics." In Walter Powell and Paul DiMaggio (eds.), The New Institutionalism in Organizational Analysis: 390–422. Chicago: University of Chicago Press.

Spencer, Herbert
1898 Principles of Sociology. New York: Appleton.

Starbuck, William H.
1965 "Organizational growth and development." In James G. March (ed.), Handbook of Organizations: 451–533. Chicago: Rand-McNally.

Stinchcombe, Arthur L.
1965 "Social structure and organizations." In James March (ed.), Handbook of Organizations: 142–193. Chicago: Rand-McNally.

Strang, David
1987 "The administrative transformation of American education: School district consolidation, 1938–1980." Administrative Science Quarterly, 32: 352–366.

Thompson, James
1967 Organizations in Action. New York: McGraw-Hill.

Tsouderos, John E.
1955 "Organizational change in terms of a series of selected variables." American Sociological Review, 20: 206–210.

Tucker, David J., Jitendra V. Singh, and Agnes G. Meinhard
1990 "Founding characteristics, imprinting, and organizational change." In Jitendra Singh (ed.), Organizational Evolution: New Directions: 182–200. Newbury Park, CA: Sage.

Tuma, Nancy Brandon, and Michael T. Hannan
1984 Social Dynamics: Models and Methods. New York: Academic Press.

Tushman, Michael L., and Elaine Romanelli
1985 "Organizational evolution: A metamorphosis model of convergence and reorientation." In Larry Cummings and Barry Staw (eds.), Research in Organizational Behavior, 7: 171–222. Greenwich, CT: JAI Press.

U.S. General Accounting Office
1991 Thrifts and Housing Finance: Implications of a Stricter Qualified Thrift Lender Test. Washington, DC: U.S. General Accounting Office.

Weber, Max
1958 "Bureaucracy." In H. H. Gerth and C. Wright Mills (eds.), From Max Weber: Essays in Sociology: 196–224. New York: Galaxy.

Weick, Karl E.
1979 The Social Psychology of Organizing, 2d ed. Reading, MA: Addison-Wesley.

Woodward, Joan
1965 Industrial Organization: Theory and Practice. New York: Oxford University Press.