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Inspectors Beyond Borders:
The Extraterritorial Governance of Food Safety in a Global Economy

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by

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DEDICATION

To my late mother, Hsiuchin Liao.

EPIGRAPH

Today we recognize that to successfully protect U.S. public health, we must think, act, and engage globally. Our interests must be broader than simply those within our own borders.

Margaret Hamburg, the former FDA Commissioner

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ABSTRACT OF THE DISSERTATION

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The Extraterritorial Governance of Food Safety in a Global Economy

by

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Doctor of Philosophy in Political Science

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Professor David A. Lake, Chair
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The Food and Drug Administration (FDA) is a regulatory agency within the United States (US) federal government. To ensure consumer health, the FDA has been responsible for inspecting domestic food facilities within the US throughout modern American history. Since 2008, the FDA's regulatory mandate has extended overseas, with the stationing of inspectors abroad. These inspectors intrusively oversee the increasingly globalized US food supply chain stretching around the world. As of 2013, the FDA inspectors have conducted inspections of registered foreign food facilities more than

5,000 times in 61 countries. It has also set up several foreign offices in Asia, Latin America, Europe, Africa and Middle East. Why are these inspectors enforcing US domestic food safety standards in foreign countries?

This anomalous pattern of US inspectors overseeing food safety standards within borders of foreign governments is best conceived as a form of "extraterritoriality." My dissertation explains this emerging US-led extraterritoriality with three general theoretical claims in chapter 2. First, food safety is a policy area in which government regulators persistently intervene because it has distributional impacts on private producers and consumers. Second, a government regulator can credibly assure consumers of food safety in international trade when its domestic political institutions empower consumers; by contrast, when domestic political institutions are biased against consumers, the government regulator cannot make it. Third, the political approval of a pro-consumer government regulator's extraterritorial regulation comes with a greater reciprocal access to its domestic market, thus giving foreign producers and their governments positive selective incentives to support the extraterritorial regulation.

I adopt a mixed-method approach to validate three general theoretical claims empirically. Chapter 3 qualitatively demonstrates that government regulators have been persistently intervening in food safety governance throughout history. Moreover, it shows that policymakers are well aware of distributional impacts of food safety on private producers and consumers. Chapter 4 experimentally shows that the US FDA can more credibly assure consumers of the safety of food in the US-China bilateral food trade than its Chinese equivalent in two coordinated surveys of American and Chinese citizens. This is consistent with my second claim about credibility. Chapter 5 constructs an interrupted time-series quasi-experiment to show that the foreign approval of US extraterritorial regulation comes with a greater reciprocal access to the US domestic market, giving foreign government regulators incentives to accept US inspectors beyond borders. This

supports my third theoretical claim about reciprocity.

Together, my dissertation makes two contributions to the field of international relations. First, it is the first systematic study on food safety, which has not been explored in previous research on world politics. Second, in order to explain the anomalous extraterritorial governance of food safety, it develops a revised open-economy politics approach to global governance that more closely integrate international political dynamics into models rooted in domestic politics.

Chapter 1

Introduction: Governing Food Safety in a Global Economy

The Food and Drug Administration (FDA) is a regulatory agency within the United States (US) federal government. To ensure consumer health, the FDA has been inspecting domestic food facilities within the US throughout the modern history. Since 2008, the FDA has significantly increased the scope of its regulatory oversight by stationing inspectors abroad. These inspectors intrusively oversee the integrity of imported food at multiple foreign points of origin. As of 2013, the FDA inspectors have conducted inspections of registered foreign food facilities more than 5,000 times in 61 countries, including such emerging markets as India and China. Meanwhile, the FDA has also set up several foreign offices in Asia, Latin America, Europe, Africa and Middle East. These international offices serve as regional hubs to coordinate inspectors' routine field activities in foreign countries under the supervision of the FDA headquarters in Silver Spring, Maryland, just a few miles from Capitol Hill, Washington D.C.

This emerging model of global food safety regulation can be conceived as a kind of *extraterritoriality*. I understand extraterritoriality as an international regime in which one sovereign state exercises political authority over another for the sake of achieving jurisdictional congruence on a given policy domain.[1] In order to ensure the integrity

[1] By "international regime," I mean a set of "implicit or explicit principles, norms, rules and decision-

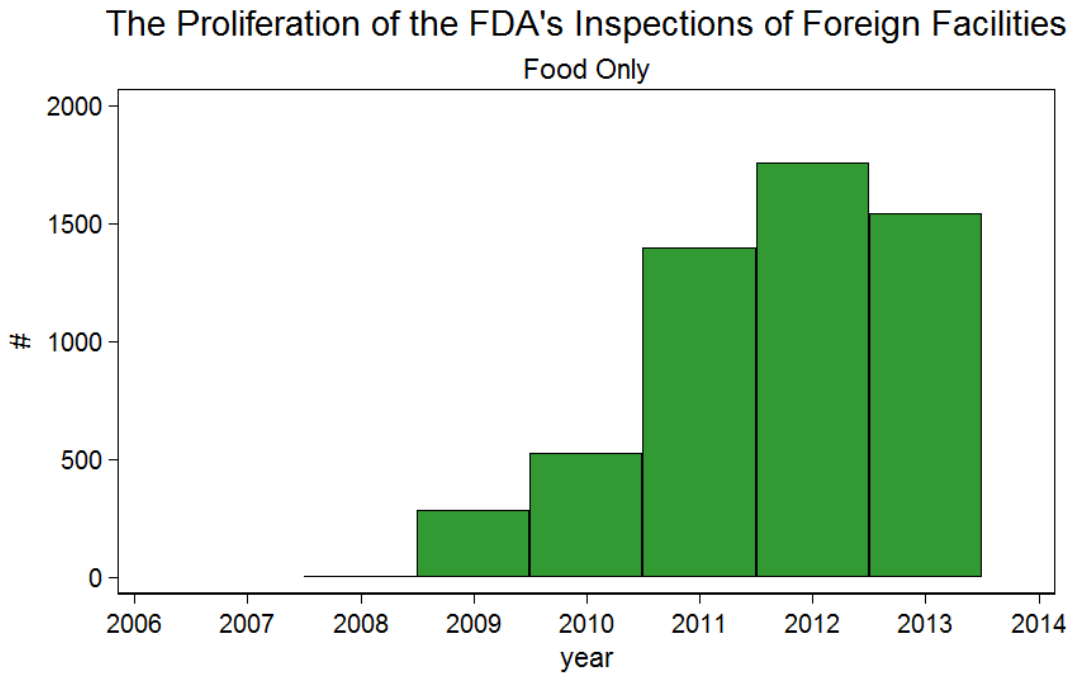

Figure 1.1. The proliferation of the FDA's inspections of foreign food facilities, 2008-2013.

Source: Author's calculation from the FDA Inspection and Classification Database.

of food supply in the context of a global economy for consumers, the FDA is sending its inspectors abroad to prescribe and proscribe the behaviors of producers around the world on the basis of domestic American standards; this model of global regulation fits the general definition of extraterritoriality as it has been developed and understood in international and American law.[2]

The extraterritorial governance of food safety has been a sudden development. Using newly released data from the FDA, Figure 1.1 plots the growing annual efforts of its inspectors in monitoring foreign food facilities from 2008 to 2013. Beyond simple frequencies of inspection activities, Figure 1.2 further displays the increasing cumulative

making procedures around which actors' expectations converge in a given area of international relations." See Krasner 1982.

[2]Raustiala 2006, 2009.

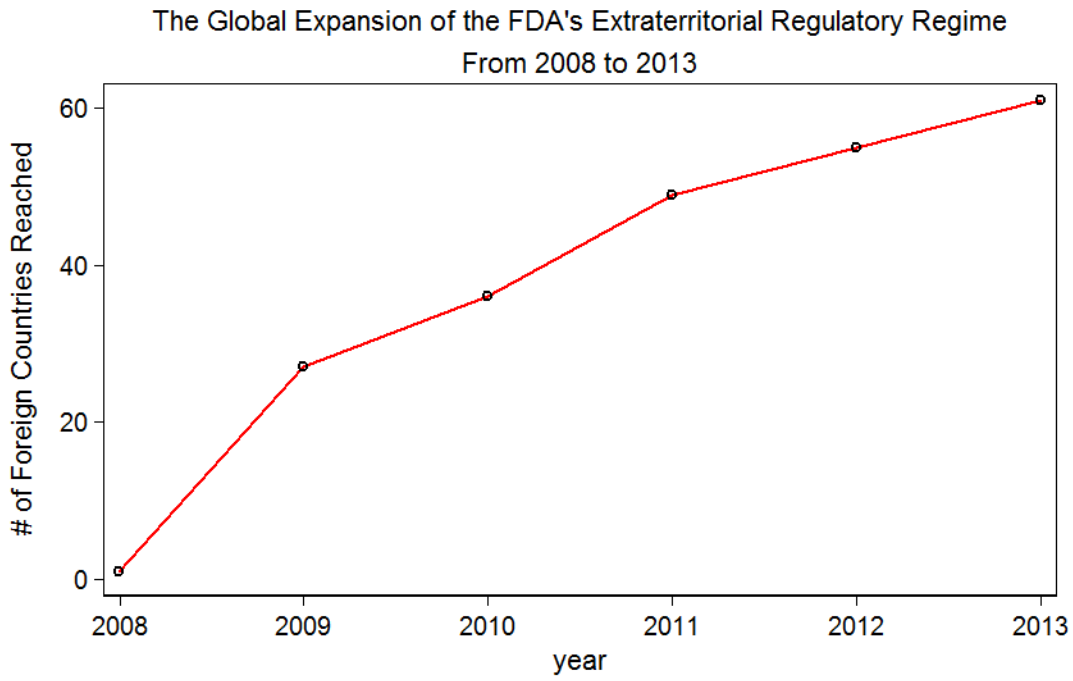

Figure 1.2. The expansion of the FDA's extraterritorial regulatory regime, 2008-2013.
Source: Author's calculation from the FDA Inspection and Classification Database.

number of foreign countries being incorporated into the FDA's offshore food inspection program within six short years.[3]

The fact that the FDA and its inspectors are increasingly enforcing the same set of domestic standards beyond the US territorial borders poses an empirical puzzle for political scientists. It also raises three broader theoretical questions in the field of international relations (IR):

1. Why is this extraterritorial governance of food safety taking place?

2. Why is the US leading the charge?

3. Given the fact that states tend to guard their sovereignty jealously, why have

[3]In 2006, the FDA only spent a total of 280 million dollars on its food inspection program. By 2012, the FDA's spending went up to 858 million dollars in total. Yet, it must be noted that this is just a small share of the total US government expenditure in a year.

other governments rapidly accepted the intrusions of the US inspectors into their territorial jurisdictions?

1.1 Approach and Argument in Brief

This dissertation develops a political-economy explanation for this emerging US-led extraterritorial governance of food safety. I argue that a system in which each country adopts its own food safety regulations is inadequate, and that extraterritorial regulation is necessary for the effective regulation of a global food supply, because of the existence of cross-national heterogeneity in the credibility of domestic regulatory systems. While domestic consumers and regulatory officials may trust the willingness and ability of some foreign governments to regulate the quality of their food exports, they will be skeptical of the regulatory competence of others, which undermines faith in the integrity of the broader global food supply chain and in turn leads to welfare-diminishing reductions in food trade. An extraterritorial regulatory regime to govern world trade in food addresses the problem of global heterogeneity in the credibility of domestic regulatory standards by, in effect, eliminating this heterogeneity. An extraterritorial governance regime allows government regulators in countries with non-credible regulatory institutions to send a costly signal of their commitment to ensuring the quality of their food exports. As a result, all parties win. Consumer friendly regulators in countries with credible food regulations are reassured about the quality of food from countries with non-credible domestic regulatory systems, and allow this food to enter their markets; consumers in the importing country enjoy access to cheaper food and greater variety without worrying about potential safety concerns, while exporters in the country with less credible regulatory institutions benefit from an expanded export market.

My approach is distinct from extant alternative explanations for global regulation

in the broad literature on international organization. Some scholars put forward functional explanations for the genesis of international regimes, wherein the need to solve a common problem in a given issue area leads to the creation of an international regime in a particular regulatory domain. That is, anticipating an international regime can solve a problem, self-interested governments take actions to establish it.[4] This functional approach has evolved into several variants to explain a variety of international institutions in world politics.[5] Yet, as Stephen Kranser correctly points out, there are multiple agreements that self-interested governments could achieve on the Pareto frontier in a given policy issue.[6] Because the impacts of these potential agreements on self-interested governments are distributional, the collective intention to create an international regime can be defeated when governments have heterogeneous preferences. The functionalist theory thus fails to explain why it is *this extraterritoriality* that is taking place now to govern food safety but not other issue areas. My argument complements this functionalist explanation by clarifying the *political* logic that makes the US-led extraterritoriality an effective solution to the strategic problem of ensuring the integrity of the global food supply chain.[7]

Other political scientists believe that international regimes serve as focal points that allow countries with similar domestic regulatory institutions and preferences to coordinate their actions while reducing the domestic adjustment costs associated with global regulation (as well as the transaction costs of creating and operating a regulatory institution).[8] The implication of this argument is that common regulatory standards will emerge among regional clubs of governments with similar regulatory institutions and preferences (though regulations between these different regional clubs may differ

[4]Keohane 1984: chapter 6, especially 88; Martin and Keohane 1995.

[5]These variants includes the "rational design" school and "regime complexity" school. For the rational design, see Koremenos et al 2001; as for regime complexity, see Raustiala and Victor 2004; Alter and Meunier 2009.

[6]Krasner 1991; Raustiala 1997; Mosley 2010.

[7]Lake and Powell 1999.

[8]Mattli and Büthe 2003.

considerably). This argument– that regimes serve as regulatory focal points that allow like– minded nations to coordinate on common standards-works well to explain the transatlantic divide on regulatory standards. However, it cannot explain the extraterritorial regulation of food quality, since the members of the extraterritorial food safety regime are extremely diverse along regional, economic, political and cultural lines. My argument makes sense of the regime's diverse membership where scholarship on regional clubs coordinating around focal points cannot.

For still others, the coercive use of material power resource rooted in the territorial market size is the driving force behind the creation of international regimes for global regulation. On this account, a country can leverage a large internal market to emerge as a global standard setter; even if a country with such market power unilaterally changes behind-the-border rules and regulations for domestic purposes, government regulators in the rest of the world must follow suit, since the negative network externalities or political pressures stemming from the great power's choice could otherwise leave the rest of the world worse off.[9] One way or another, a great power's domestic regulatory change can produce a corresponding international regulatory change through the implicit or explicit power to hurt.

This power-to-hurt argument is much more compelling than the regional club argument to the extent that it can explain how regulatory standards can converge at the global level among countries with divergent preferences. As Daniel Drezner formally shows, a great power can coerce others into compliance even if there are divergent preferences of governments that could possibly lead to a coordination failure.[10] However, despite the strengths of the market coercion approach, it cannot explain why it is *the US* that has assumed the leading role in the emerging extraterritorial governance of food

[9]Simmons 2001.
[10]Drezner 2007.

safety but not the other great powers, such as the one that is in the process of overtaking the US in the global economy: China.[11] Moreover, when applying the power-based explanation to the emerging extraterritorial governance of food safety, it also lacks a face validity. It is simply not plausible that the US alone could have coerced a total of 61 countries, including nearly all great powers, into compliance within six short years (not to mention that the coercive use of power resources can sometimes lead to a counter-productive outcomes, most seriously a shooting war in international politics).[12] My dissertation fills both gaps by emphasizing how domestic political institutions contribute to the credibility of the FDA, which in turn incentives other countries to willingly accept the authority of the FDA inspectors to oversee the safety of its food.

In short, while IR scholars have developed a set of theoretical explanations for why governments may create an international regime based on the functionalist logic, the regional clubs, and the coercive use of market power to hurt, none of these is well equipped to explain the emerging US-led extraterritorial governance of food safety. The functionalist logic omits the distributive nature of global regulation, the regional clubs argument generates a contradictory prediction of global divergence by region, and the power-to-hurt explanation forgets that not all great powers can attract followers to rapidly contribute to the joint creation of an interna- tional regime. More importantly, extant approaches all take Westphalian sovereignty as an unchangeable organizing principle of the contemporary international political system,[13] which suggests that the reluctance of governments jealous of their sovereignty to cede control over their regulatory authority is a central obstacle to the creation of an international regime.[14] The previous approaches

[11] Ikenberry 2008.

[12] Slantchev 2003.

[13] See Waltz 1979; Keohane 1984; Wendt 1992. Reggie 1993 raised the evolutionary nature of territoriality. For an alternative conceptualization of international organization, see Lake 2009.

[14] Chayes and Chayes 1993; Mearsheimer 1994; Downs, Rocke and Barsoom 1996; Fearon 1998; von Stein 2005; Simmons and Hopkins 2005.

in the literature therefore fail to explain the willingness of foreign governments to compromise their sovereignty by participating in the extraterritorial food safety regime.[15] My argument instead conceives the political compromise over sovereignty as a costly action governments with non-credible regulatory institutions take to credibly signal the equivalence of their standards with American ones, so as to obtain more market access in the US. It is this logic of signaling that produces this change in the territorial organization of international relations within the particular policy jurisdiction of food safety.

1.2 Why Food Safety Matters

The last three decades have witnessed a remarkable increase in cross-border trade in food. According to statistical estimates from the World Trade Organization (WTO), the total value of world food trade was about 200 billions in current dollars in 1984; by 2008, it quadrupled to 800 billion dollars. As Figure 1.3 shows, the growth of international food trade has generated an enormous amount of commercial values for international businesses. The exploding number of imported food products has quietly supplemented the food locally produced for domestic consumption.

The globalization of the food supply is particularly evident in open economies long committed to free trade, like the US. The average import share of the US domestic food consumption was around 12 percent in 1990; by 2008, about 17 percent of all food consumed by US households was imported from abroad. Beyond the two years of observations, the import share of the US domestic food consumption has also been gradually moving upward over time. Using estimates from the US Department of Agriculture (USDA) Economic Research Services (ERS), Figure 1.4 plots this incremental globalization of the US food supply since the end of Cold War. When the import share is further broken down by specific food categories, today, approximately 20 percent of

[15] Krasner 1995/1996; Krasner 1999.

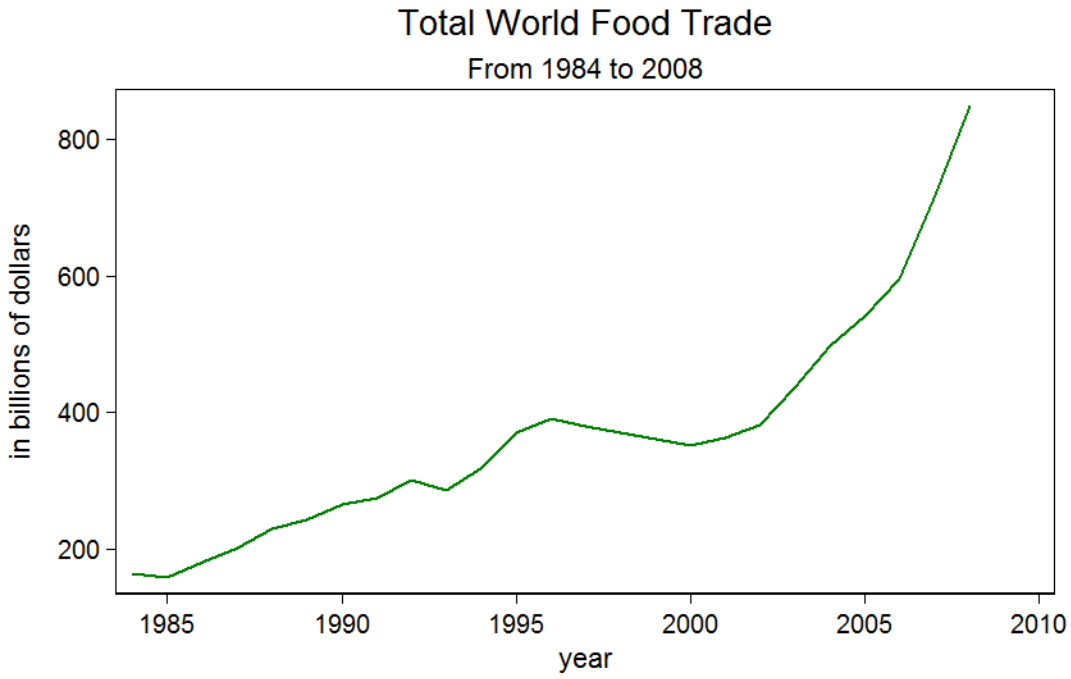

Figure 1.3. Total value of world food trade, 1984-2008.

Source: World Trade Organization (WTO) Statistical Database (SDB).

fresh vegetables, 50 percent of fresh fruits, and 80 percent of seafood eaten domestically is shipped from other countries to the US. Without doubt, American food system has become increasingly dependent on those of the other countries'.

However, as the national food systems become more interdependent with one another in a global economy, marked by increases n the international food trade, governments tasked with overseeing the integrity of national food supply face unprecedented challenges. More specifically, with growing global food trade, the failure of one government to effectively regulate food safety within its territorial borders can spill over across borders more easily. This may endanger the domestic public health of its trading partners and further engender widespread social dissatisfaction with the potential race to the bottom in food safety, sowing an additional seed of restrictive trade policies and protectionist sentiments.

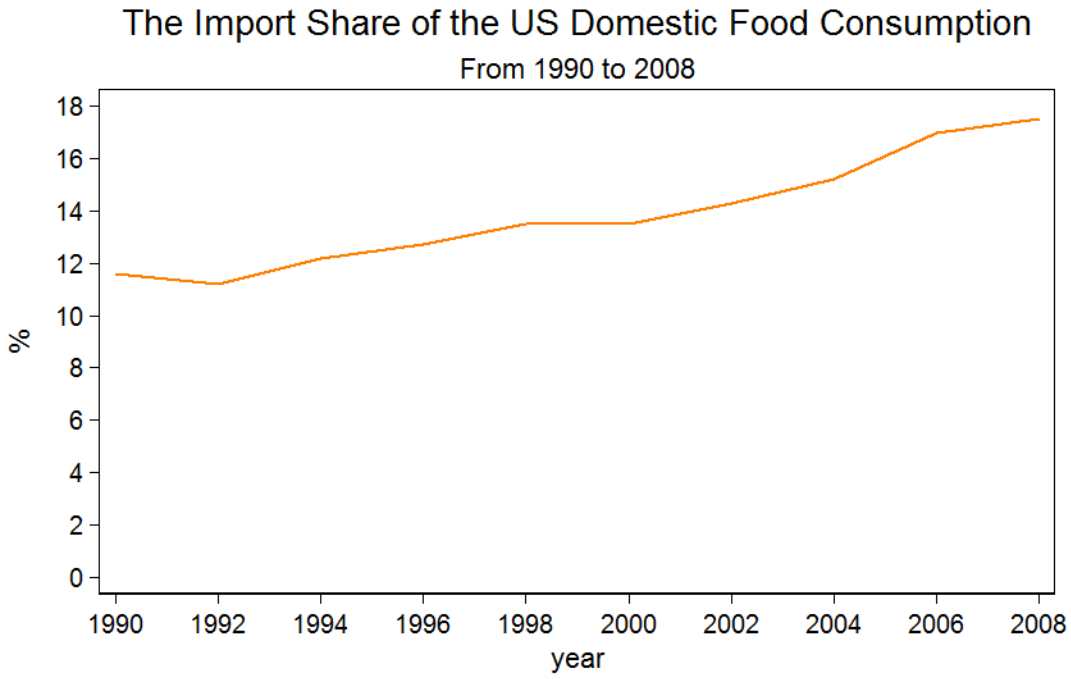

Figure 1.4. The import share of US domestic food consumption, 1990-2008.
Source: United States Department of Agriculture (USDA) Economic Research Service (ERS).

The international spillover of China's domestic failure in regulating food safety well illustrates the point. On December 1, 2008, when most people around the world remained sympathetic towards local victims of the industrial adulteration of milk products in the People's Republic of China, the World Health Organization (WHO) revealed that as a result of international trade, those tainted food products made in China may have been in their kitchens and stomachs through growing global food trade. In fact, Chinese milk products adulterated with the synthetic chemical of melamine had been distributed to a total of 50 destination economies around the world until being officially linked to the deaths of six infants and 294,000 illnesses in China. Using data collected from the WHO and official websites of national food regulatory agencies, Figure 1.5 shows the disclosed international distribution of melamine-tainted products by the end of 2009.[16]

[16]Gossner et al 2009.

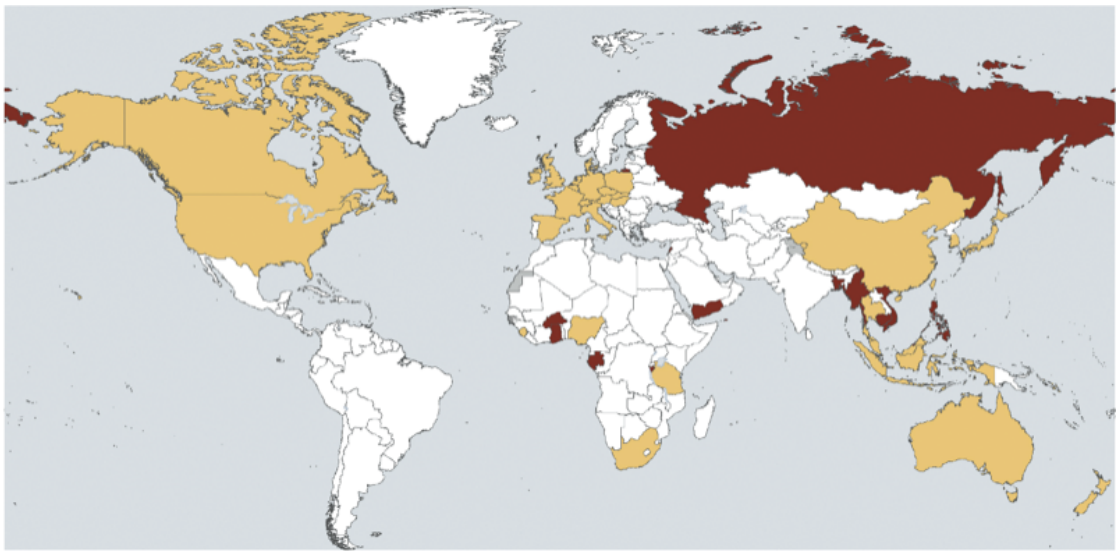

Figure 1.5. The publicized international distribution of melamine-tainted products, 2009.

Note: Light shading areas are countries that reported melamine findings in products originating from China or containing ingredients from China. Dark shading areas are countries, where import of melamine-tainted products occurred in absence of clear attribution to the Chinese origin. The list of light shading countries includes Australia, Austria, Belgium, Canada, China, Hong Kong, Macao, Taiwan, Czech Republic, Denmark, France, Germany, Hungary, Indonesia, Ireland, Italy, Japan, Malaysia, Malta, Netherlands, New Zealand, Nigeria, Poland, Republic of Korea, Singapore, Slovakia, Slovenia, Solomon Islands, South Africa, Spain, Switzerland, Thailand, United Kingdom, Tanzania, and United States. The list of dark shading countries covers Bangladesh, Brunei, Burkina Faso, Burundi, Cambodia, Gabon, Ghana, Lebanon, Myanmar, Palau, Philippines, Russian Federation, Seychelles, Viet Nam, Yemen.
Source: Reproduced from Gossner et al 2009.

While the Chinese government halted the local production of milk, investigated 109 milk manufacturers, and banned sales of 77 milk products contaminated with melamine, the other governments continued to publish on their official websites or report to the WHO International Food Safety Authorities Network (INFOSAN) that melamine was detectable across a wide range of product categories beyond narrowly targeted Chinese milk products. For example, melamine was pervasively detected in processed confectionary and snack foods, including some whose use of milk as a food ingredient was not so obvious to consumers, including potato crackers and rice crisps. Even whole eggs born “natural” were tested positive for melamine. As some physicians

and pediatricians nicely put, the local melamine contamination in China had become "an emerging epidemic in the era of globalization."[17]

In response to the globally widespread Chinese melamine contamination, national governments took varying degrees of unilateral behind-the-border regulatory measures to reserve, if not completely reverse, their commitments to international economic integration. Some imposed testing requirements for all imported food products from China. Others established new standards for tolerable levels of melamine in food and feed. Still others took the most draconian approach to ban or recall foods suspected of containing any melamine. These measures delighted protectionists by raising transaction costs for cross-border food trade. Newly placed health and safety rules and regulations within borders have made world economy as whole not as laissez-faire as it were before.

Beyond that, consumers became increasingly suspicious of the safety of imported foods, especially those shipped from China. Around six months after the world widely knew of the Chinese regulatory failure, the Pew Charitable Trusts conducted a public opinion survey of 1,005 nationally representative American adults with respect to food safety in the States. The 2009 Pew Food Safety Survey revealed that about 71 percent of the American adult population thought that foods produced and sold in the States were always or usually safe while only 33 percent expressed similar levels of confidence in the safety of food imported from other countries and sold within the US borders.[18] Six years later, approximately half of the American adult population remained suspicious about the safety of Chinese food imports as discovered in the author's own 2015 Globalization and Food Safety Survey of a nationally representative sample of 800 American voters. The shadow of China's disreputable past of tainted foods continues to adversely affect quality and safety assessments of food "made in China" and sold in the US as time goes by.

[17] Bhalla et al 2009.

[18] I thank the Pew Charity Trust and its manager of food safety campaign, Colin Finan, for sharing the data to generate estimates.

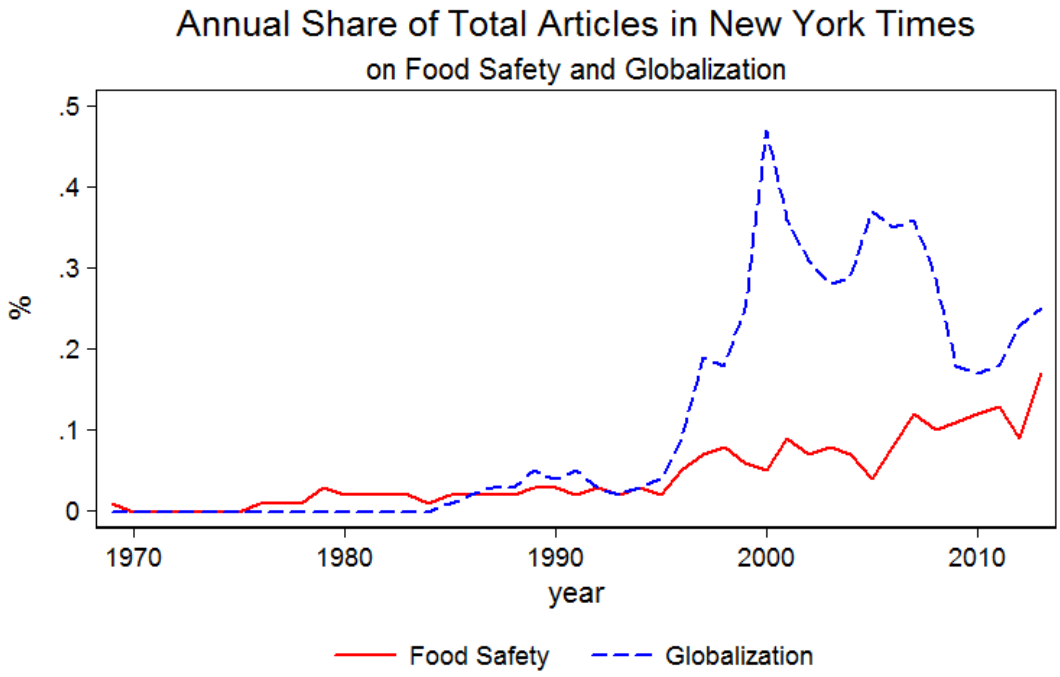

Figure 1.6. The annual share of total articles in New York Times on food safety and globalization, 1969-2013.

Source: *New York Times* Chronicle.

But the growing U.S. policy and public concerns over food safety is not just all about imports from China. More generally, the salience of food safety has moved concurrently with the salience of globalization in the U.S. over the past forty years. The annual share of total articles published in *New York Times* provides a proxy measure for the salience of food safety and globalization, respectively. As shown in Figure 1.6, prior to the mid-1970s, there was very little public discussion on food safety and globalization. With the political movement of international and regional economic integration throughout the 1980s to the mid-1990s, the issue salience of food safety and that of globalization continued to grow. Since the mid-1990s, with the large-scale outbreaks of the Bovine songiform encephalopathy (BSE) or so-called "mad cow disease" in nearly entire Western Europe and the advancement of biotechnology for genetically

modified organisms (GMOs) in the U.S., food safety has become a much more salient issue than the previous period. As of 2013, the annual share of total articles in *New York Times* came to the historical peak: 1.5 per 1000 articles. This was just 0.05 percent-point lower than that year's share of total articles on globalization, presumably the single most important theme of international political economy (IPE) and widely studied by many economists and political scientists. The formation of the WTO in 1995 and the follow-up accession of China and the other emerging markets in 2000 both have made globalization a much more salient theme than the past decade. But the skyrocketed salience of globalization has not fundamentally interrupted or reversed the growing salience of food safety after the international spillover of the Chinese melamine contamination in the mid-2000s. Just as the Nobel-winning economist Paul Krugman wrote for *New York Times* on May 21, 2007:

> These are anxious days at the lunch table. For all you know, there may be E. coli on your spinach, salmonella in your peanut butter and melamine in your pet's food and, because it was in the feed, in your chicken sandwich.[19]

Despite the growing salience of food safety for policy practitioners and the general public, especially after the high-profile international spread of the Chinese melamine contamination known in 2008, there is still little social science research on how governments can effectively regulate the emerging problem of tainted imported foods to preserve gains from trade in open economies. This is not to say that we have no global regulatory framework for food safety. In fact, there have been three multilateral standard-setting bodies delegated by signatory parties of the World Trade Organization (WTO) to determine international standards since 1995: namely, Codex Alimentarious (Codex), World Organization for Animal Health (OIE), and International Plant Protection

[19] Krugman 2007.

Convention(IPPC).[20] Individual governments can voluntarily adopt these international standards within their borders for domestic compliance and WTO dispute settlement panels can adjudicate on disputes involving non-tariff trade barriers based on these standards if necessary. Yet, if these international standards were effective, why has the safety of imported food become increasingly controversial in trade politics?[21] To bridge the gap, this dissertation systematically examines and explains the logic of food safety and the intriguing international regime of extraterritoriality that has rapidly emerged to regulate the integrity of the highly integrated global food chain in the twenty-first century. As the first of its sorts, this dissertation empirically contributes to the study of global governance of food safety, a substantive policy issue area long understudied in IR.

1.3 Theoretical Contributions to IR

Beyond exploring the new empirical domain of food safety, this dissertation sheds light on central theoretical debates on globalization and governance. Political scientists and economists have been disagreeing among themselves over the global regulatory policy outcomes of economic globalization. Some claim that globalization leads to a race to the bottom, resulting in poor governance outcomes. These scholars presume that international economic integration creates downward pressures on domestic regulatory standards across countries because governments must compete for mobile international capital with one another under a global game of Prisoner's Dilemma imposed by the market.[22] As a result, self-interested governments prefer being free-riders to being contributors of such global public goods as the reduction in greenhouse gas emissions and the improvement of labor conditions that would decrease their competitiveness in a global economy.

[20] Josling et al 2004; Victor 2004; Büthe 2008.
[21] See Vogel 1995, especially chapter 5; for quantitative evidence, see Kim 2015.
[22] Goodman and Pauly 1993; Edwards 1999.

Other scholars disagree. They instead argue that globalization produces a regulatory climb to the top and result in good governance in a global economy. To get there, territorial governments must transfer specific governance functions increasingly "hollowed out" by international economic integration to non-state actors.[23] Through the reallocation of political authority to no-state actors, globalization is believed to bring about somewhat positive, if not necessarily progressive, domestic changes across borders to prevent a global regulatory race to the bottom.

While IR scholars increasingly agree that a race to the bottom is not inevitable,[24] disagreements still exist over *which* non-state actors play a crucial role in a global climb to the top. In some cases, good governance is argued to go hand in hand with the delegation to functionally differentiated multilateral intergovernmental organizations (IGOs) at the supranational level for efficient global regulation.[25] In other cases, good governance is believed to rely on domestic compliance constituencies (DCCs) contributing their efforts of monitoring individual governments for compliance with international legal commitments.[26] There are still other cases that bring together multilateral IGOs and DCCs to form a transnational advocacy networks (TANs) with non-governmental organizations (NGOs) collectively governing such policy areas as human rights.[27] In short, there are diverse institutional venues through which territorial governments can transfer their political authorities to non-state actors for socially desirable good governance under economic globalization.

Put together, there are two major points in the state-of-art literature on global-

[23] Strange 1996; Avant et al 2010.

[24] Urpelainen 2010 formally proves how a global race to the bottom is unlikely under economic globalization.

[25] Abbott and Snidal 1998; Goldstein, Kahler, Keohane and Slaughter 2000; Hawkins, Lake, Nielson and Tierney eds 2006.

[26] Kalher 2000 coined the term; Dai 2005 formalizes the logic; Alter 1998 shows that litigation can be a way private actors push governments to comply with international legal commitments.

[27] Keck and Sikkink 1998.

ization and governance. First, economic globalization has weakened major regulatory functions of territorial governments believed to be the fittest form of political authority in the international political system since the Peace of Westphalia.[28] Territorial governments themselves cannot overcome the strategic nature of Prisoners' Dilemma to achieve cooperation for good governance in a global economy. Second, to prevent a race to the bottom or to reach a climb the top, territorial governments cannot but transfer certain issue-specific political authorities to such non-state actors as IOs, DCCs, and TANs. Without sharing their issue-specific political authorities with non-state actors, territorial governments are unable to deliver good governance to address challenges raised by globalization.

In contrast to the extant literature, this dissertation identifies extraterritoriality as an alternate institutional option that governments can choose to manage globalization without delegating authority to non-state actors to carry out the socially desirable regulation of food safety. Extraterritoriality as a phenomenon is not new in world politics. It prevailed in the late 19 century when industrialized great powers expanded their spheres of influences in the developing world, especially in Africa and Asia. For instance, since 1848, a series of unequal treaties were signed between the Qing dynasty of China and Western powers to establish extraterritorial jurisdictions in coastal cities and provinces.[29] Consuls were appointed by Western powers to provide legal orders equivalent to their motherlands to protect property rights and lives of their citizens in China for commerce or religious mission trips. With the return of Hong Kong from the United Kingdom in 1997, China permanently ended the extraterritoriality of the unequal treaty system, which lasted for one and a half century.

Yet, extraterritoriality of other kinds still persists in today's globalized world.

[28] Spryut 1994.

[29] For the US practices, see Raustiala 2009: 59-91.

Tanya Putnam shows that US courts have been increasingly making jurisdictional claims beyond the territorial borders to protect the integrity of domestic legal orders and basic individual rights of U.S. citizens.[30] Likewise, Sarah Kaczmareka and Abraham Newman also find that once the US prosecutors took extraterritorial actions against foreign targets for violating the U.S. foreign bribery legislation, foreign governments were more likely to enforce their national rules.[31] In the economic realm, the domestic use of the U.S dollar as legal tender for market transactions in countries, namely "dollarization," is one prominent example of extraterritoriality in international finance.[32] Focusing on a new issue area of food safety in the contemporary world, my dissertation contributes to this research topic of growing interest in international law and organization.

1.4 The Plan of this Dissertation

The rest of the dissertation is organized as follows. Chapter 2 theorizes the politics of extraterritorial governance in a global economy. It conceptualizes food safety as a credence good, developing a theory that considers the incentives of heterogeneous government regulators to explain the domestic politics of setting food safety standards. By taking a world of heterogeneous government regulators as given, it further develops a theory of extraterritorial governance to explain the international politics of setting food safety standards. This chapter derives four theoretical propositions for empirical tests in the subsequent three chapters.

Chapter 3 validates my claim that food safety is a policy area government regulators intervene because it has distributional impacts on private producers and consumers. I provide qualitative evidence on how food safety has been regulated by public authorities throughout history. I find little evidence that private producers and consumers can govern

[30] Putnam 2009.
[31] Kaczmareka and Newman 2011.
[32] Kahler and Walter 2006: 17. Lake 2009.

the issue of food safety on their own.

Chapter 4 uses two original survey experiments on US-China trade to test my theory of heterogeneous government regulators. I show that consumers are more assured of the safety of food involved in the US-China trade when it is regulated by the US FDA, a pro-consumer government regulator of a majoritarian democratic political system, than its Chinese counterpart, a pro-producer government regulator of an autocratic political system. This experimental pattern cannot be explained by the country of origin, which is held constant through the experimental control. Nor can it be explained by American patriotism because the expectations of Chinese consumers converge with those of their American counterparts. Together, this chapter shows that consumers are well aware of the difference in the institutionalized political bias among government regulators in supplying food safety in a global economy. And a government regulator is better able to assure consumers of food safety in international trade at home and abroad when it is politically pro-consumer than otherwise.

Chapter 5 tests my theory of extraterritorial governance with new macro-level data. Leveraging an interrupted time-series quasi-experiment, I demonstrate that all else equal, the average food exports to the US market discontinuously expand at a rate of 212 millions of dollars a year among countries selecting into the emerging US-led extraterritorial governance regime. These findings jointly suggest that the foreign approval of US extraterritorial regulation does come with a greater reciprocal access to the US domestic market, thus benefiting privileged foreign producers and giving foreign government regulators incentives to accept US inspectors beyond borders.

Chapter 6 summarizes the main points of the dissertation. I discuss how my argument is not just narrowly about food but yield broader theoretical implications for globalization and governance. I also speculate about how this US-led extraterritorial governance of food safety may evolve in the near future.

Chapter 2

The Politics of Extraterritorial Governance in a Global Economy

This chapter develops a theoretical explanation for the emerging US-led extraterritorial governance of food safety in world politics. My theory consists of two parts. First, building on the idea that food safety is a credence good in a territorial economy, I deduce a theory of heterogeneous government regulators. Because heterogeneous government regulators represent different winning coalitions of societal actors in the *domestic* politics of setting regulatory standards, the theory predicts that a government regulator is more credible in assuring consumers of food safety in international trade when its domestic political institution empower consumers more. Since democracies empower consumers more than autocracies, the theory further expects a democratic government regulator is more credible than a autocratic counterpart in regulating the integrity of food supply in international trade.

The second half of this chapter takes heterogeneous government regulators as given in a global economy to develop a theory of extraterritoriality in the *international* politics of setting regulatory standards. This second theory predicts that pro-consumer government regulators can credibly assure the other government regulators that extraterritorial enforcement of their domestic standards is not simply a regulatory protection

but a reciprocal cooperation that keeps its domestic market open to a large number of heterogeneously regulated producers in a global economy; as a consequence, heterogeneous government regulators that have more export potentials to the credibly open market are more likely to accept inspectors from the pro-consumer government regulator and to obtain reciprocal market accesses after accepting those inspectors appointed by the pro-consumer government regulator for extraterritorial law enforcement beyond borders.

Together, I adopt a bottom-up approach to explain the incipient US-led extraterritorial governance of food safety in a global economy. This approach is rooted in the so-called "open-economy politics (OEP)" as a micro-foundation.[1] Yet, it enriches OEP scholarship by theorizing how domestic political institutions systematically structure the implicit international interaction between heterogeneous government regulators to assure consumers of food safety in international trade and the explicit international interaction among heterogeneous government regulators to form extraterritorial governance of food safety in an integrated global economy. This way, the OEP framework can progressively integrate international politics into domestic politics by studying this new empirical domain of food safety. This revised, two-level OEP approach thus avoids so-called "reductionist gamble" that unjustifiably isolates domestic politics from international politics.[2] And it also points to a promising way for OPE scholars to address growing scholarly concerns about its intellectual monoculture in the study of international relations:[3] Exploring understudied issue areas such as food safety can generate new empirical leverages in addressing conceptual or theoretical shortcomings in current approaches to political science.[4]

In what follows, I first discuss the logic of food safety and the interests of most

[1] Lake 2009.
[2] Oatley 2011.
[3] McNamara 2009.
[4] For a similar line of argument, see Cox 1990.

relevant private actors in it. I conceptualize food safety as a distinct type of the lemon problem in a highly decentralized, competitive market. Then, I move to analyze the fundamental political problem in ensuring the integrity of the food supply within a territorial economy. I argue that a market failure sparked by the exogenous development of technologies for food production has distributional impacts on private actors. This in turn paves the way for the intervention of a government regulator to resolve the distributional conflict among these private actors by setting biased standards. That is, the government regulator can set domestic standards in ways that privilege different coalitions of private actors in a territorial economy. The third section presumes that heterogeneous government regulators contain institutionalized biases in the standard-setting process through privileged political representation. It then deduces several testable propositions with regard to implicit and explicit international interactions between heterogeneous government regulators governing food safety in international trade.

2.1 The Logic of Food Safety

The logic of food is rooted in the concept of a *credence good*. According to its original use in economics, a credence good is a good whose certain unobserved attribute cannot be learned by individual consumers on their own.[5] Thus, a credence good is conceptually different from a search good, whose certain unobserved attribute can be examined by individual consumers themselves through informational searches before a purchase. Nor is a credence good analytically similar to an experience good, whose certain unobserved attribute can be realized by individual consumers themselves through personal experiences after a purchase.

Food is in some sense the purest example of a credence good. The safety of food is a particular unobserved attribute that poses a problem for efficient market exchanges.

[5] Darby and Karni 1973.

Back to 1990, when the former British Minister of Agriculture John Gummer fed his four-year-old daughter Cordelia a beefburger in front of press cameras to reassure Britons that British beef products were safe for human consumption, no Briton could ascertain whether the beefburger was tainted by BSE– also known as "mad cow disease"– to sicken or kill her at that moment. Twenty-five years later, Britons still cannot rule out the possibility that the beefburger was already tainted to have unknown long-term adverse effects on Cordelia even if she is still alive. The point here is clear: consumers cannot learn about food safety through informational searches and personal experiences, since information about safety is unobservable.

By contrast, a used car is not a credence good. Widely known as the lemon problem in economics,[6] the quality of a used car also poses a problem for efficient market exchanges because it is unobserved for individual consumers. However, unlike the safety of food, the quality of a used car can be learned by consumers on their own. There are at least two ways that an individual consumer can figure out the unobserved quality of the used car. First, the consumer can experience the unobserved quality after the purchase. That is, once a lemon breaks down on the road soon after the purchase, the consumer learns the exact type of the used car. This way, a used car is an experience good. Second, before making a purchase, the consumer can also learn whether the used car is a lemon by searching for more information based on experiences of other consumers. If the used car is not a lemon, there should be no serious accident in the known history of the car shared by other buyers. This way, the consumer can learn the unobserved quality of a used car as a search good. As long as consumers can learn the unobserved quality of a used car through personal experiences or informational searches, there is a room for sellers to solve the lemon problem and to correct the market failure potential through private efforts

[6] Akerlof 1970.

to develop reputation-based brand names or providing risk-sharing warranty programs.[7]

However, neither brand names nor warranty programs are effective in solving this distinct type of lemon problem in food as a credence good in a national or international economy. Imagine you are eating a colorful garden salad made with romaine lettuce, tomato, purple onion, cucumber, and carrot for today's lunch. And your salad dressing consists of salt, pepper, olive oil, and white wine vinegar. You obviously cannot tell if your ingredients for the salad dressing contain no synthetic chemical. Moreover, while you can learn where all four kinds of vegetables are from, you still cannot ascertain whether your romaine lettuce, tomato, purple onion, cucumber, and carrot in the salad are not micro-biologically tainted. Even if you are sickened, you still have limited ability to sort out which ingredient in your "healthy" garden salad is exactly tainted with chemicals or pathogens. This makes it difficult for you to hold irresponsible companies liable even if these companies have recognized brand names and invested in warranty programs to assure you of food safety and quality. In sum, brand names and warranty programs are insufficient for consumers to make not informative judgments about their food. This further poses a fundamental political problem for producers to credibly assure consumers of food safety in domestic and international trade to prevent a market failure.

2.2 The Domestic Politics of Heterogeneous Government Regulators

Assume that there are two collective private actors in a domestic market for food safety without any government intervention: producers and consumers. Both are rational actors. Because producers manufacture food for sale, producers have private information about the quality and safety of their food. By contrast, consumers are intrinsically unable

[7]This is similar to how the Maghribi traders monitored the integrity of the long-distant trade in the medieval Europe. See Grief 1989, 1993.

to ascertain the safety of food, given its status as a credence good as discussed in the earlier section.

Moreover, suppose producers have two types pre-determined by nature: The high-quality type of producers always supplies safe food; the low-quality type of producers always supplies unsafe food. And it is common knowledge that supplying safe food is more costly than supplying unsafe food. Both types of producers also know that safe food is more popular than the unsafe food to consumers. Yet, for food with the same level of quality and safety, consumers prefer inexpensive ones to expensive ones.

With this strategic environment of asymmetric information in mind, the low-quality type of producers will have a strong incentive to mislead consumers. Not born to supply safe food which is more popular to consumers than unsafe food, the low-quality type of producers cannot afford emulating the high-quality type's costly production process. To make up for the pre-determined disadvantage, the low-quality type may use fraud and deception to mislead consumers into believing that unsafe food does not appear different from the safe counterpart at all. By doing so, the low-quality producers disguise themselves as if they were the high-quality type. When using this strategy, they also bear little risk of being caught by consumers: consumers just cannot observe the safety of fraudulently marketed food produced by the low-quality type. Doing so also allows the low-quality type of producers to artificially maintain their competitiveness. That is, the low-quality type can certainly set the price of the counterfeit and adulterated food at a level lower than what the high-quality type can ultimately afford. As a result, the low-quality type of producers can take over the domestic market and drive out the high-quality type of producers by fraudulent and deceptive means. In the end, there is no self-regulated private market for truly safe food. What is left for consumers is a self-regulated private market for counterfeit and adulterated food. Consumers are phished

as phools.[8]

Together, there is an invisible distributional conflict of food safety on private actors in a self-regulated domestic market. The high-quality producers and consumers will not know the unknown until nature exogenously discloses the low-quality producers' use of fraud and deception in food production. Yet, the disclosure of fraud and deception can spark widespread food scares, making it even harder for the high-quality type of producers to send any credible signal to consumers with regard to the unobserved quality and safety of food. As a consequence, private actors, namely producers and consumers, cannot prevent a domestic market failure in food safety as a credence good through private self-regulation.

This paves the way for the intervention of a government regulator to manage the market in response to the political demands from losers of food fraud and deception. More specifically, when consumers are phished as phools, the high-quality type of producers subsequently lose the market share to the low-quality type. Thus, the high-quality type of producers ally with consumers to support rigorous public standards that restrict the unethical business practices of the low-quality producers. However, this does not mean that the low-quality producers cannot take political action to protect their vested interest in unethical business practices. Like the high-quality type, the low-quality type of producers can also organize themselves to influence the government regulator. But unlike the high-quality type, the low-quality type counter-lobbies the government regulator for deregulation. Thus, because food safety has strong distributional implications for private producers and consumers, it is a policy area government regulators usually intervene to regulate.

Proposition 1 *Food safety is a policy area in which government regulators intervene because of its distributional impacts on private producers and consumers.*

[8]For the terminology of phishing for phools, see Akerlof and Shiller 2015.

How the government regulator sets domestic standards to resolve the political conflict of food safety is ultimately a function of its domestic political institutions. Domestic political institutions are not neutral; they politically empower some private actors but not others in the policymaking process.[9] Building upon this insight form the institutional literature, we can consider the following three scenarios of setting standards to resolve the distributional conflict of setting domestic food safety standards among private actors in domestic politics.

First, when the government regulator is constrained by domestic political institutions that empower the low-quality type of producers, it will set domestic food safety standards sufficiently low to give the low-quality type non-stringent passes of inspections. Under this circumstance, the government regulator makes no welfare improvement for consumers and the high-quality type of producers. And the low-quality type continues to extract rents from the counterfeit and adulterated food by undermining public interests. This also fits the most strict definition of "regulatory capture" developed by Daniel Carpenter and David Moss.[10]

Second, when the government regulator is constrained by domestic political institutions that empower the high-quality type of producers, it will set domestic food safety standards sufficiently high to drive out the low-quality type that cheats with fraud and deception. Under this scenario, the government regulator makes a welfare improvement for the high-quality type of producers that takes the market share. Consumers also benefit from this regulatory behavior because food safety is better ensured.However, this regulatory behavior does not come without expense. That is, when safe food is produced under high standards, consumers must pay more for food produced solely under costly procedures. This raises an issue of affordability for consumers. Thus, while the

[9]Rogowski 1999.
[10]Carpenter and Moss 2013.

high-quality type of producers clearly becomes winners under this circumstance, the welfare impact on consumers is conditioned by their incomes.

Finally, when the government regulator is constrained by domestic political institutions that empower consumers, it will set domestic food safety standards in the middle range that is sufficiently high to drive out the low-quality type and yet not too high to give the high-quality type of producers no incentive to compete with one another. This way, consumers can enjoy not only safe but also affordable food resulting from competition among the high-quality producers. As a consequence, economic competition among the high-quality producers can lower food price without a domestic race to the bottom in food safety.

Together, when a government regulator institutionally privilege consumers or high-quality producers, the domestic political conflict of setting food safety standards can be effectively resolved within a country. As a result, the government regulator privileging consumers or high-quality producers can credibly assure consumers of food safety in the domestic market with its standards. By contrast, when a government regulator institutionally privilege low-quality producers, consumers are phished as phools. As a result, the government regulator privileging low-quality producers cannot credibly assure consumers of food safety in the domestic market with its standards.

This line of reasoning points to a world of heterogeneous government regulators. Heterogeneous government regulators set different food safety standards that represent different dominant interests of private actors rooted in domestic politics of setting food safety standards. Thus, difference in the domestic political institutions can structure the implicit interaction between government regulators and individual consumers in a bilateral food trade. That is, consumers will be better assured about food safety in international trade when relevant government regulators privilege interests of consumers directly or indirectly. Because democracies politically empower consumers more than

autocracies,[11] this leads to another testable theoretical proposition: All else equal, a democratic government regulator can more credibly assure consumers of food safety in international trade than an autocratic counterpart. With heterogeneous government regulators in mind, we will be turning to develop a theory of extraterritoriality to explain the anomalous mode of global food safety regulation led by the US FDA.

Proposition 2 *All else equal, a democratic government regulator can more credibly assure consumers of food safety in international trade than an autocratic counterpart.*

2.3 The International Politics of Extraterritorial Governance

Heterogeneous government regulators give regulatory policy priorities to different privileged domestic private actors. Some privilege consumers, others high-quality producers and still others low-quality producers. This regulator heterogeneity produces conflicts of domestic interests in the international politics of setting food safety standards because government regulator privileging consumers or high-quality domestic producers cannot ascertain whether foreign standards are equivalent to their domestic counterparts. It follows that no single international food safety standard can satisfy all three domestic private actors whose interests are selectively privileged by different government regulators in an integrated global economy.[12]

This makes the multilateral approach to the international regulation of food safety inadequate in a world of heterogeneous government regulators. The reason is twofold. First, there will be a long delay of mutually agreed international standards if some

[11] For the theoretical model, see Rogowski and Kayser 2002. A few empirical papers have established this regularity: Linzer and Rogowski 2008; Chang et al 2008, 2010; Weinberg 2012.

[12] This is similar to the currency politics in international finance. There is no single currency that works for all national economies. Likewise, there is no single food safety standard that works for all national food systems. Frieden 2014.

heterogeneous government regulators bargain hard to defend their domestic food safety standards during multilateral negotiations.[13] Starting a multilateral negotiation from a small group of heterogeneous government regulators as a pragmatic forum may speed up coordination.[14] However, this does not prevent Condorcet's paradox from happening. That is, collective preferences of heterogeneous government regulators can still be cyclic in a small group, resulting in no international standard. Second, even if heterogeneous government regulators can obtain some international standards from multilateral negotiations, the standards will be at best the lowest common denominator. That is, some heterogeneous government regulators may reserve their sovereign rights to opt out. Or, they may commit to the international standards insincerely, thus leaving domestic compliance Achilles' heel for international regulatory cooperation on food safety.[15] One way or another, the multilateral regulation of food safety is clearly inadequate to block the low-quality producers from entering the global food supply chain stretching around the world. As a result, while the multilateral regulation of food safety has been developed for the resolution of interstate trade disputes over food safety,[16] government regulators continue to pursue alternate strategies to make up for the inadequacy of multilateralism. In fact, recent empirical research has found that the multilateral regulation of food safety under international trade law is not as effective as policymakers would expect in terms of the permanent resolution of this particular type of trade disputes.[17]

However, the absence of a global regulation under international economic integration has distributional impacts on domestic private actors whom heterogeneous government regulators selectively privilege. No global regulation of food safety helps

[13] For this logic, see Fearon 1998.

[14] This essentially is the logic of regime complexity. See Raustiala and Victor 2004; Alter and Meunier 2009. It is foundation is Olson 1965.

[15] Downs, Rocke, and Barsoom 1996.

[16] Victor 2004.

[17] Kim 2015.

the low-quality type of domestic producers artificially maintain their competitiveness in the international economy. However, this hurts consumers and the high-quality type of domestic producers by creating loopholes in the domestic regulation of expanding cross-border food trade. Without any doubt, government regulators privileging consumers and the high-quality type of domestic producers have strong incentives to intervene and to reverse a race to the bottom in food safety in international trade within respective territorial jurisdictions.

The unilateral enforcement of domestic standards at the border is one common strategy that government regulators privileging consumers or the high-quality type of domestic producers can adopt. By implementing domestic standards that are in the middle range or sufficiently high at the border, these government regulators are supposed to block the low-quality type of foreign producers from entering their territorial markets. This unilateral approach is sufficiently optimal for the high-quality type of domestic producers because it limits foreign competition anyway. Thus, government regulators privileging he high-quality type of domestic producers are satisfied with the unilateral enforcement at the border, with little incentive to deviate from this unilateral approach.

Yet, the unilateral regulation of food safety in international trade is not the most optimal policy choice for domestic consumers. In fact, domestic consumers could have had more affordable safe food from abroad if any of the following two conditions meets. First, the high-quality type of foreign producers could be more accurately separated from the low-quality type within territorial jurisdictions of other government regulators before shipments. Second, the low-quality type of foreign producers could have a more compatible material incentive to voluntarily comply with the pro-consumer government regulator's domestic standards. Thus, a pro-consumer government regulator will not be pleased by the unilateral regulation of food safety in international trade at borders. Instead, it may actively engineer an international food safety regime that maximizes consumer

welfare in an interdependent global economy through multiple bilateral agreements on the extraterritorial enforcement of the pro-consumer government regulator's domestic standards.

When deciding to take a lead, how can a pro-consumer government regulator get the other heterogeneous government regulators agree to enhance consumer welfare? A bilateral approach is a promising way to go. Unlike the pro-consumer government regulator, the other heterogeneous government regulators may lack intrinsic interests in maximizing consumer welfare. This is especially the case when they have institutionally privileged foreign producers. Thus, to obtain mutually agreed bilateral agreements with the other heterogeneous government regulators on the extraterritorial regulation, the pro-consumer government regulator must credibly provide side payments to foreign producers, thus inducing their interests in enhancing domestic consumer welfare reciprocally. Through this kind of reciprocal exchange, or reciprocity, the other government regulators privileging interests of foreign producers will instrumentally take interests of domestic consumers into account by accepting the extraterritorial regulation.[18] In turn, the pro-consumer government regulator can more accurately assess the equivalence of foreign standards to domestic counterparts for consumer protection.

Thus, reciprocity paves a way for the pro-consumer government regulator to implement its domestic standards outside its territorial borders. Because the pro-consumer government regulator can credibly provide domestic market access as a side payment to foreign producers, the other government regulators, no matter which type of foreign producers they privilege, will have positive incentives to select into the extraterritorial enforcement of the pro-consumer government regulator's domestic standards when they have more export potentials. And once the pro-consumer government regulator's domestic standards are enforced abroad, foreign producers will have discontinuous average gains

[18] Axelord and Keohane 1985; Keohane 1986.

from exports to its domestic market over time, all else equal.

Proposition 3 *All else equal, heterogeneous government regulators are more likely to select into the extraterritorial enforcement of a pro-consumer government regulator's domestic standards when they have more export potentials.*

Proposition 4 *All else equal, once a pro-consumer government regulator's domestic standards are enforced abroad, foreign producers will have discontinuous average gains from exports to its domestic market over time.*

2.4 Discussion

I have used the revised OEP approach to develop a theory of heterogeneous government regulators and a theory of extraterritorial governance. The former theorizes the domestic political origin of heterogeneous government regulators and the latter theorizes extraterritorial governance as one anomalous international political consequence of heterogeneous government regulators. Together, my approach provides a new theoretical angle to explain the emerging US-led extraterritorial governance of food safety as a new empirical development in world politics.

This revised OEP approach allows me to combine the traditional OEP with the earlier research program on interdependence to explain the international process embedded in the domestic politics,[19] or the so-called "New Interdependence" research program in the recent literature.[20] It also helps us bring back the increasingly suppressed "international dimension" of the IPE scholarship.[21]

In the following three chapters, I provide empirical analyses for theoretical propositions deduced in this chapter. Chapter 3 validates my claim that food safety is

[19] Haggard and Simmons 1988.
[20] Ferrell and Newman 2014a; 2014b.
[21] Keohane 2011; Katzenstion 2011; Cohen 2011; 2014.

a policy area government regulators intervene because of its distributional impacts on private producers and consumers. I provide qualitative evidence on how food safety has been regulated by public authorities to manage private food scares throughout history. I find little evidence that authorities are transferred from governments to private actors in the issue of food safety as in the environment.

Chapter 4 tests my second claim that a democratic government regulator can more credibly assure consumers of food safety in the domestic market than an autocratic counterpart, all else equal. I provide experimental evidence from two coordinated surveys in the US and China to validate the causal mechanism of credibility.

My third and fourth claims are validated in chapter 5. I construct a new macro-level dataset to examine causes and consequences of the US-led extraterritorial governance of food safety. I show that countries that selected into the US-led extraterritorial governance of food safety tend to have greater export potential to the US market. I also validate the casual mechanism of reciprocity through demonstrating the discontinuous average gains from exports to the US before and after the extraterritorial enforcement of the US food safety standards began.

Chapter 3

Heterogeneous Government Regulators and Food Safety in History

This chapter gives readers an empirical flavor of how food safety as a credence good has posed a problem for societies and governments throughout history. It also shows that food safety is a policy area in which government regulators intervene because of its distributional impacts on private producers and consumers.

The rest of the chapter is organized as follows. I first provides an overview, starting from pre-modern history of government regulatory interventions to govern food safety. Then, Then, I use the American experience as a case to illustrate how different kinds of government regulators had been in charge of overseeing food safety until the founding of the FDA and its modern food inspection regime during the Progressive era. The third section looks into the current globalization challenge to food safety since the end of the Cold War. It provides details about how US policymakers have conceptualized food safety as a credence good to justify more active pro-consumer government intervention.

3.1 Food Safety in the Pre-modern World

Assuring the integrity of the food supply has been the essential regulatory challenge to societies and governments for centuries. This can be dated back to ancient

Greece, the root of modern Western civilization. As Pliny the Elder (23-79 AD) wrote: "So many poisons are employed to force wine to suit our taste – and we are surprised that it is not wholesome!... [T]he greatest aid to health is moderation in food."[1] Moderating the integrity of the food supply soon became government's responsibility. Under the Roman civil law, fraud in the sale of food was considered a civil offense, subject to not only a private right of action for liabilities but also government prosecution for resulting punishments.

The responsibility of government in regulating food safety continued to expand in medieval Europe. By 1266, the English Parliament codified regulatory enactments to prohibit the sale of "corrupted wine" or other food that was "not wholesome for Man's body" or that was kept so long "that it loseth its natural wholesomeness" in the Assize of Bread and Ale. With periodic amendments, these laws continued to affect the European food system until being repealed in the 19th century.

The medieval English regulatory enactments were increasingly obsolete under the pressure of science-based chemical analysis of food. Led by Robert Boyle's *The Sceptical Chymist* in 1661, the new science of "chymistry" had gradually emerged from its old alchemical forerunners. With the subsequent development of modern chemistry as a scientific discipline, various methods for chemical analysis of food became available to detect numerous kinds of adulteration practiced by food providers over time. By 1820, Friedrich Accum, a German chemist working for a laboratory at the Royal Institution in England, published the groundbreaking *Treatise on Adulterations of Food and Culinary Poisons: Exhibiting the Fraudulent Sophistications of Bread, Beer, Wine, Spirituous Liquors, Tea, Coffee, Cream, Confectionery, Vinegar, Mustard, Pepper, Cheese, Olive Oil, Pickles, and Other Articles Employed in Domestic Economy, and Methods of Detecting Them*. The treatise had immediate and worldwide impact on public awareness of food

[1]This section is largely based on Hutt 1984.

safety oversight. A thousand copies of the Treatise were sold within a month of the first edition. With strong demand for the treatise, he quickly published the second edition in the same year, the third edition a year later, the fourth edition two years later. This landmark work was also reprinted in Philadelphia and translated into German to meet demands for scientific knowledge of food safety oversight outside England at that time. Ultimately, the Treatise resulted in the repeal of the 1266 Assize of Bread and Ale and the replacement of it with new statues in 1860, 1872 and 1875 to broadly prohibit any form of food adulteration and assure that food reaching consumers was wholesome based upon scientific evidence.

The English experience gave rise to the science-based regulation of food safety in the mid-19th century. It also inspired US lawmakers to broadly prohibit any form of food adulteration in the Pure Food and Drugs Act of 1906 and the Federal Food, Drug and Cosmetic Act of 1938.

3.2 The Founding of the FDA During the Progressive Era

The FDA was a regulatory institution that gradually emerged to govern growing food trade in America since Industrialization took off in the mid-19th century. At this time, American households no longer consumed foods produced at home by keeping livestock and maintaining their own garden. People increasingly went to local public markets for fresh foods. As cities developed, local food markets grew. Growing food markets encountered the similar problem of ensuring the quality and safety of foods as credence goods in cities and states. But the U.S. federal government had not established the Chemical Division (renamed as the Bureau of Chemistry in 1901) within the Department of Agriculture, as the prototype of the FDA, to carry out chemical analyses of agricultural products until around 1848.

In colonial America, the government's responsibility to ensure the integrity of the food supply had been very decentralized at the city level. Thomas De Voe,[2] a butcher by trade, provided a detailed historical account of how the City of New York regulated several local public markets to keep them functioning ever since the establishment of the West India Company's store in 1630s. In his follow-up work on incidents that occurred to every food item sold in Cities of New York, Boston, Philadelphia, and Brooklyn, Thomas De Voe further advocated for more local public regulation to protect both producers and consumers with growing trade:[3]

> A great trade has imperceptibly grown upon us (particularly in New York), which I have sometimes thought, would have been more profitable to both producer and consumer, if proper laws, and practical, honest heads, had been placed over these vast interests, which so much affect the general health and comfort, as well as the *pockets* of our over-taxed citizens; and I cannot avoid the conclusion, that if our public markets were properly conducted, they would be highly advantageous, not only to the city and citizens, but to all who have occasion to obtain supplies, as they facilitate the voluntary inspection, as well as the comparison of every article offered for sale in them, and they also concentrated the trade by which the people are protected from imposition.

Indeed, the local public regulation of food for market exchanges proliferated thereafter. Many state-level laws and regulations required the proper disclosure of food ingredients to reduce uncertainty about food quality and safety in the late 19th century. Evidence from Marc Law's analysis of roll call votes in state legislatures is consistent with De Voe's conjecture: The state-level food regulations were not only in the interests of politically motivated consumers but also producers of high-quality food.[4]

But it turned out that the increased local public regulations of food across American cities, counties and states were not enough. First, local public standards were individually developed to solve narrower problems specific to local markets. Growing

[2]De Voe 1862.
[3]De Voe 1867, 9.
[4]Law 2003.

interstate food trade across state borders increasingly dragged these local public standards into regulatory conflict with one another. Under American federal system, states could not unilaterally extend their rigorous standards to the others for regulatory enforcement. As a consequence, sellers would rather exploit different local public standards to minimize production costs and to maximize profits by intrastate regulatory arbitrage.

In addition, influenced by Friedrich Accum's Treatise, some American journalists were increasingly warning the general public about adulteration of food. The *Illustrated Newspapers* and *New York World* launched campaigns to increase public awareness of food quality and safety problem in the U.S. in the 1850s and 1860s, long before the *Muckraker Magazine* in the Progressive Era. By the late 1870s, a public outcry against the adulteration of food was full-fledged in America. This aggravated the fear of eating and created more political pressures on the federal government to ensure the integrity of the food supply in major cities and states. As the director of New York's food and drug regulatory body said,[5]

> [I]t is very certain that the widely differing statues relating to our food supply in the different States have worked much mischief, been the cause of much confusion, and seriously embarrassed some useful industries. I think all who have studied the matter will be included to admit that uniformity in our food laws is much to be desired.

In response to growing public discontent about the integrity of the food supply, the federal government started to intervene in the 1878. In that year's annual fiscal report to the Commissioner of Agriculture, the Chemical Division mentioned its Chemical analyses of adulterated teas, sausages and some other poisoned food. Starting in 1883, when Dr. Harvey Wiley became the Chief of the Division, the Division began to organize a specialized section to investigate food adulteration using scientific methods. It also started issuing a series of bulletins to communicate with the public about results of its

[5]Merrill 1996.

scientific research on chemical composition, technology and adulteration of American food products. These efforts to educating the public were supported by Congress through appropriations to address social dissatisfaction with uncertainty in the American food system until 1904.

During this period, Congress also began to recognize the logic of food safety as a credence good and called for more credible enforcement of laws and regulations for food safety. As a member of the 49th Congress argued in 1885,[6]

> In ordinary cases the consumer may be left to his own intelligence to protect himself against impositions. By the exercise of a reasonable degree of caution, he can protect himself from frauds in under-weight and in under-measure. If he cannot detect a paper-soled shoe on inspection, he detects it in the wearing of it, and in one way or another he can impose a penalty upon the fraudulent vendor. As a general rule the doctrine of laissez faire can be applied. Not so with many of the adulterations of food. Scientific inspection is needed to detect the fraud, and scientific inspection is beyond the reach of the ordinary consumer. In such cases the Government should intervene.

The concept of credence good apparently did not exist at that time. But the legislator had started justifying the federal government's intervention with the distributive logic of regulating food safety as a credence good.

Yet, the Division's road to centralizing regulatory authority continued to encounter political resistance. Dr. Weiley's several vigorous attempts to regulate food preservatives and coloring additives were blocked by Agriculture Secretaries despite growing social demands during this period. Opponents were particularly concerned about the the Division's precautionary approach. The position was particularly revealed in the following quotation from the annual report in 1889:

> It is not regarded as a wise thing to absolutely prohibit the use of preservatives in foods. Since, however, all chemicals which have the proprieties of preserving foods, also have a tendency to interfere with the process of

[6]Congressional Record, 1885.

> digestion, it is held to be imperative that no food should be offered for sale which contains a preservative without having this fact plainly stated upon the label of the package. Not only should the label state that the food product contains a preservative, but it should also give the name of the preservative and the quantity employed. In this way the intending purchaser is fully informed in regard to the character of the product which he buys. While it has been established that a healthy stomach can, from time to time, receive with impunity food containing small quantities of preservatives, it is by no means certain that the continued practice of ingesting preservatives in foods would not produce serious injury. On the other hand, if is also quite certain that weak or diseased stomachs may suffer temporary or permanent injury from even minute quantities of preservatives.

Some special interest groups once hoped that the Division could change the position after setting up the famous "poison quad" as the FDA's first experiment on human subjects to evaluate health impacts of a list of politically controversial food preservatives and additives, including boric acid and borax, salicylic acid and salicylates, sulfurous acid and sulfites, etc. However, after the results of the experiment were published in five parts between 1904 and 1906 , there were increased public concerns over food safety throughout the country.

By 1906, when Upton Sinclair's description of the Chicago meat industry in *The Jungle* furthered nationwide public awareness of food safety issues, Congress passed not only the Pure Food and Drugs Act of 1906 as a symbolic victory for the Progressive movement but also the Federal Meat Inspection Act of 1906 that separated the regulatory jurisdiction of meats from foods to address growing concerns from Europeans about sanitary conditions for American meat.

But the creation of the Board of Food and Drug Inspection on April 25, 1907 under the 1906 Act remarkably increased the capacity of the federal government to oversee adulteration and mis-branding in interstate commerce. The Board quickly implemented a newly created federal inspection regime to regulate foods and drugs imported from

abroad to the U.S. or exported from American states to the District of Columbia or to foreign territories. The division of the labor within the inspection regime was as follows: Local inspectors procured samples of food and drug products for sale in the market; chemists, pharmacologists, biologists analyzed samples to disclose hard-to-know chemical and microbiological components at local food and drug inspection laboratories distributed in major cities; and the Board itself conducted hearings, dealt with legal issues and established a Food Inspection Laboratory in the Division of Foods of the Bureau of Chemistry to audit not only the results but also the methods of chemical analyses used by the branch food inspection laboratories to minimize errors occurred to the inspection regime. In August, 1907, the federal inspection regime was extended to regulate the food and drug trade between American States.

While the federal government had a tendency to centralize regulatory authority in response to social discontents generated by the increasing use of chemicals, preservatives and additives in food manufacturing for mass consumption since the mid-19th century through the early 20th century, prevalent vested interests continued to resist it. They used their political influences to partition the jurisdiction over the food chain as a whole and to limit the delegation of regulatory authority to the FDA's forerunner to enforce the law. As the Bureau of Chemistry summarized the accomplishments and limitations after a decade of the enactment of the Pure Food and Drugs Act in the 1917 report:[7]

> The Food and Drugs Act was among the first of the group of laws which today would be classed as laws for the prevention of unfair competition. The suppression of fraud upon the consumer and of unfair competition among business rials are but the two faces of the same coin. In consequence the food industries are sincerely and effectively supporting and helping the Bureau of Chemistry to enforce the law. Indeed, the Bureau is not infrequently appealed to by the industries to compel the cessation of unfair practices and the encourage the standardization of products when the industry is incapable by itself of bringing about these results...While

[7]Hutt, Merrill and Grossman 2014, 9.

> the accomplishments of the Food and Drugs Acts have been considerable, it must be admitted that it has its serious limitations. Especially conspicuous ones are the lack of legal standards for foods, of authority to inspect warehouese, and of any restriction whatever upon the use of many of the most virulent poisons in drugs.

And it was not until the the enactment of the Federal Food, Drug and Cosmetic Act of 1938, which granted the FDA more complete statutory authority to make rigorous standards for its regulatory oversight of the integrity of the food supply, the FDA became a modern regulatory institution. The 1938 Act authorized the FDA to inspect factories, establish safety tolerances for unavoidable poisons, and create identity and quality standards. It also required manufacturers to label food ingredients. These new regulatory measures enhanced the capacity of the federal government and set up the institutional foundation to ensure the integrity of the food supply in America.

The Federal Food, Drug and Cosmetic Act of 1938 continued to protect the health and safety of American consumers in the subsequent seventy years. While the tensions between the FDA's regulatory mission and the special interest groups' regulatory capture have led to amendments of the Act for over one hundred times, there has been no fundamental change in the institutional architecture of the federal food inspection regime until the U.S. food system became more interdependent with the world economy and was forced to address emerging globalization challenge to American food safety in the early 21st century.

3.3 Contemporary Globalization Challenge to Food Safety

U.S. policymakers became aware of the globalization challenges to American food safety in the early 1990s. During that period, the U.S. signed, ratified and started enacting the North America Free Trade Agreement (NAFTA) to facilitate economic integration

in a regional scale as her European allies had been doing since the end of World War II. However, the peaked outbreaks of Bovine spongiform encephalopathy (BSE) or so-called "mad cow disease" in Europe, especially United Kingdom, increasingly gave skeptics of globalization a more legitimate concern to oppose NAFTA beyond job losses, labor standards and environmental protection at that time: health and safety.[8] By the mid-1990s, it became really hard to dismiss health and safety concerns over BSE as a form of disguised protectionism. On March 20, 1996, the British government publicly announced the possible link between BSE and ten cases of a new variant of Creutzfeldt-Jakob Disease (nv-CJD) in humans. A few months later, more detailed scientific analyses that identified the resemblance between the agent of nv-CJD brain pathology in humans and the agent of BSE in animals came out in *Nature*.[9] The public fear of mad cow disease grew quickly and spread throughout the Europe.

Witnessing devastating impacts of the BSE crisis on European public health, the U.S. government started launching a set of food safety initiatives and reforms to upgrade the U.S. food safety regime under the Clinton Administration. On January 25, 1997, President William Clinton announced the administration's initiative of "improving the safety of the nation's food supply" in his radio address. As he said,

> Our administration has made it a top priority to protect the health and safety of all Americans. I signed into law legislation to keep harmful pesticides off our fruits and vegetables and legislation that keeps our drinking water safe and pure. We put in place strong new protections to ensure that seafood is safe. And last summer we announced steps to modernize our meat and poultry food safety system for the first time in 90 years. These new safety rules will begin to take effect next week. From now on, all meats and poultry plants will be required to test for E. Coli. We have built a solid foundation for the health of America's families. But clearly we must do more. No parent should have to think twice about the juice they pour their children at breakfast, or a hamburger ordered during dinner out.

[8] Vogel 1995: Chapter 4; Ansell and Vogel 2006; Vogel 2012.
[9] Collinge et al 1996.

To do more, Clinton administration needed a corresponding level of political approval from Congress. In late 1997, Congress requested a report from the National Academy of Sciences (NAS) to 1) determine the scientific basis of an effective food safety system, 2) assess the effectiveness of the current food safety system in the U.S., 3) identify gaps within the current system, and 4) provide recommendations on the scientific and organizational changes in federal food safety activity needed to ensure safe food from production to consumption. The Committee to Ensure Safe Food from Production to Consumption was therefore formed by the Institute of Medicine (IOM) and National Research Council (NRC) to examine and evaluate the U.S. food safety system. After the 6 months of active review of information and deliberation, the committee made a few recommendations.

One particular recommendation of the report mostly relevant to our interest here is the centralization of fragmented jurisdictions over food in America. As the committee found, the U.S. food safety system had been so fragmented that there were at least 12 primary federal agencies involving in implementing the 35 primary statutes that regulate food safety. While this fragmented federal food safety system was an unintended consequence of a series of ad hoc, crisis-driven, narrowly-focused legislative responses to high-profile food incidents in America, it made inter-agency coordination difficult and sometimes even caused coordination breakdown within the federal government as already flagged by General Accounting Office (GAO) in 1997. The committee thus recommended Congress centralize the already fragmented regulatory authorities within the federal government. As the committee put it,

> [T]o implement a science-based system, Congress should establish, by statue, a unified and central framework for managing federal food safety programs, one that is headed by a single official and which has the responsibility and control of resources for all federal food safety activities, including outbreak management, standard-setting, inspection, monitoring,

surveillance, risk assessment, enforcement, research and education.[10]

This recommendation was taken by President Clinton. The President's Council on Food Safety was formed in August 1998. This Council was charged with developing a comprehensive strategic plan for Federal food safety activities and with ensuring that all Federal agencies involved in food safety worked together to develop coordinated food safety budgets each year.

The report also highlighted the emerging challenges of regulating imported food. Just a few months before the committee started examining and evaluating the U.S. food safety system, tainted frozen strawberries imported from Mexico, processed in California, and then sent to five other states as part of the Federal school lunch program, sickened 163 children and teachers in Michigan with the hepatitis A infection (New York Times, April 4, 1997). This particular incident materialized health and safety concerns over growing trade with Mexico through NAFTA. In April 1998, the GAO concluded that the federal regulations of imported foods were "inconsistent and unreliable" in its report to Senate. As GAO put it,

> FDA does not have the authority to impose such a requirement on foreign countries for fish, fruits, vegetables, and the other foods for which it is responsible. Lacking the authority to ensure that exporting countries are adopting safe practices, FDA has to rely on labor-intensive inspections of imported products at the port of entry as its primary line of defense against the entry of unsafe foods. Because FDA is currently able to inspect less than 2 percent of the foods imported under its jurisdiction there is reason to question whether this approach adequately protects U.S. consumers.[11]

The FDA's inadequate protection of American consumers from unsafe imported food was further examined and evaluated at the operational level. As GAO identified,[12] the coordination failure between the FDA and Customs created a loophole for some importers

[10]National Academy of Sciences, 1998: 97.
[11]GAO: 1998, 21
[12]GAO 1998, 37-42.

to make nearly 70 percent of shipments that the FDA ordered returned to Customs for destruction reexport into commerce. The FDA's border inspection regime, an automatic detention system known as Operational and Administrative System for Import Support) failed for two reasons. First, detained imports were easily released by Customs as long as some third-party private laboratory results were presented. Second, and more importantly, the FDA did not have the authority to fine unscrupulous importers for non-compliance. The committee was well aware of daunting challenges foreign imports had posed to the US food safety and did a thought experiment on the ideal proposal to regulate the safety of imported food. As it stated,[13]

> [T]he production, processing, and shipment of food produced in the United States can, in theory, be subject to government monitoring from field to dinner table, but imported food is not subject to such oversight...Theoretically, Congress could forbid the importation not only of food that does not meet all domestic standards but also food whose production is not subject to oversight by US officials in the same fashion as if it were produced domestically. Such a policy would require exporting countries to allow regular inspections by US inspectors...

This is exactly the idea of establishing a regulatory extraterritoriality to guard food safety in the global supply chain as discussed earlier. While the committee regarded this extraterritorial oversight of imported food as too theoretically idealistic to be politically feasible and fiscally affordable, it took a decade for the FDA to gradually increase its capacity to complete this impossible mission.

A few months after the GAO submitted its report to Senate, the FDA began to consider internationalizing itself. On September 24, 1998, the FDA Deputy Commissioner for Policy William B. Schultz was invited to give his testimony on the safety of imported foods in Senate Committee on Government Affairs. He admitted that the FDA's import program was no longer adequate to manage the fast-growing volume of imported food

[13]National Academy of Sciences, 1998: 47-48.

and the changing composition of imported food. As a result, the FDA could physically inspect only fewer and fewer imported foods at the US ports of entry as trade grew over time. At the end of his testimony, Deputy Commissioner Schultz concluded:

> We believe that neither the current approach nor the current level of resources to handle the increasing quantities of foods that are being imported into this country are sufficient. Instead, as both the President and GAO have recognized, we must change our approach. Rather than relying solely on inspections at the border, we must place a greater emphasis on the regulatory systems of the foreign countries that are exporting to us. In addition, without a significant increase in resources...a strong import program is not possible."

This public commitment to reform the federal food inspection regime to address the globalization challenge to the U.S. food safety was gradually carried out in the subsequent 10 years.

After the terrorist attack on September 11, 2001, food safety suddenly became a non-traditional threat to national security for President George W. Bush's administration. Under the Public Health Security and Bio-terrorism Preparedness and Response Act of 2002, the FDA was empowered to make new rules to regulate imported foods. These rules require foreign food facilities to register with the FDA, to receive prior notice of imported food shipments before food arrives in the States, and for importers who receive and distribute food to keep records of their food sources and recipients. The fourth regulation establishes procedures for the FDA to detain any food for up to 30 days for which there is credible evidence or information that the food poses a threat of serious adverse health consequences or death to humans or animals. These rules increased regulatory oversight of sites of production abroad by knowing where they were located, what kinds of food products and ingredients they produced and processed, which importers they had a business relationship with, and when they actually shipped foreign produced or processed foods to the U.S. ports of entry prior to their departure from foreign countries.

Without these improvements, the FDA would not be able to identify specific foreign food facilities for inspections even if it cleared the potential political hurdles; nor could the FDA effectively detain shipments to punish noncompliance of unscrupulous traders to curb opportunism. These improvements armed the FDA with gate-keeping weapons of enforcement to defend standards, paving the way to the subsequent emergence of the FDA-led regulatory extraterritoriality. As the acting FDA commissioner Lester Crawford concluded in his testimony to the House Committee on Energy and Commerce on June 25, 2004, "thanks to the new authorities provided by the Bioterrorism Act along with HHS' other food safety activities, the nation's food safety system is stronger than ever before."

Throughout the Bush administration, the FDA continued to centralize regulatory oversight within the federal food safety system. For instance, while the authority to regulate meats, poultry and processed eggs products was separated from the FDA to USDA's Food Safety Inspection Service (FSIS) by laws, the FDA increasingly worked with FSIS through memorandums of understanding (MOUs) to share information, launch joint training program for food inspectors, and conduct collaborative enforcement for a wide range of issues, such as the control and prevention of BSE after the finding of a BSE-positive cow imported from Canada in the state of Washington in December 2003. Meanwhile, the FDA was also integrating its own automatic detention system with Customs' Automated Targeting System to develop a next generation risk assessment software to detain shipments posing the greatest risk to public health for additional field or laboratory examinations. This new software is called Predictive Risk-Based Evaluation for Dynamic Import Compliance Targeting (PREDICT) system. From June through September 2007, the FDA implemented a pilot test of PREDICT in Los Angles for seafood imports. PREDICT outperformed the previous system in terms of enhancing

the FDA and Customs' capacity of overseeing safety of imported foods at the border.[14]

But the incipient FDA-led regulatory extraterritoriality did not really take off until the Obama administration. When the Government Accountability Office conducted the yearlong performance audit of the FDA from July 2008 to September 2009, the FDA told GAO officials that the agency already initiated "Beyond Our Borders" program to prevent food from reaching the U.S. territory without meeting domestic regulatory standards. Under this program, as some FDA officials further told GAO auditors,[15]

> FDA will station investigators in some of the overseas locations... The program is also expected to provide FDA with direct access to information about foreign facilities' food manufacturing practices so that its staff at U.S. ports of entry can make informed decisions on which food imports to examine....Overseas staff will also educate local exporters to make sure they understanding U.S. food safety laws and regulations. The offices in China (Beijing, Guangzhou, and Shanghai) opened in November 2009. FDA plans to post staff at the U.S. Mission to the EU in Brussels, Belgium; in the European Medicines Agency in London, England; and at the European Food Safety in Parma, Italy. The office in New Delhi, India, opened in January 2009; a second office in Mumbai, India, is expected to open later in 2009. FDA opened an office in San Jose, Costa Rica, in January 2009 and also intends to open offices in Mexico City, Mexico, and Santiago, Chile. FDA has not opened offices in the Middle East because its request to do so was denied by the Department of State owing to security concerns.

This international program has gradually emerged as the intriguing extraterritorial governance of food safety described earlier. Those international offices not only planned routine inspections of foreign food facilities but also provided training programs to educate local regulators, both public and private, about the U.S. standards to facilitate the international harmonization of national food standards for growing world food trade. As the FDA Commissioner Margaret Hamburg said at the time,

> Today we recognize that to successfully protect U.S. public health, we

[14]GAO 2009, 34-38.
[15]GAO 2009: 31-32.

> must think, act, and engage globally. Our interests must be broader than simply those within our own borders.

It is worthwhile to note that the operation of the FDA's international offices was not based upon formal multilateral legal agreements, but a set of informal bilateral political commitments. These political commitments are what the FDA called "Cooperative Arrangements" with a variety of titles, including "Memorandum of Understanding" and "Agreement." For instance, the operation of the FDA's China office was first based upon the *Agreement between the Department of Health and Human Services of the United States of America and the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China on the Safety of Food and Feed* entered into force in December 2007 and renewed in December 2012. As the Article I of the Agreement said,

> The purpose of this Agreement is to establish a bilateral cooperative mechanism regarding food and feed safety. Such a mechanism may include current and future registration and certification systems. The mechanism aims to provide the Parties with information to use in judging whether an imported product meets the requirements of the importing country.

Beyond the general provisions, the Agreement also specified substantive cooperative activities in the Annex. These cooperative activities include the Chinese adoption of the FDA requirements to control quality of food export to the U.S. market, the FDA and its Chinese partner's harmonization of electronic information-sharing system to screen the falsification of information in registered Chinese food facilities, and so forth.

While regulatory extraterritoriality covers a wide range of international implementation of domestic rules and regulations, it is the intrusive authority to inspect any foreign food facility in the Chinese territory that best describes the incipient FDA-led extraterritorial governance of food safety in the global economy. As specified in Article D(4) of the Annex, within five calendar days of notifying AQSIQ, the FDA is permitted

to conduct an inspection of any firm's site or facility that is within the customs territory of China and is engaged in the manufacture, producing, growing, processing, packing, testing, holding, transporting, distribution, or export of food or feed. The mutual political agreement on the FDA's right to inspect Chinese sites of production has ultimately extended the US domestic standards to China, thus producing extraterritorial governance of food safety.

3.4 Discussion

On March 14, 2009, when President Barack Obama announced the creation of a new Working Group on Food Safety to assist him on updating the U.S. food safety system to deal with emerging challenges in the 21st century, he said:

> I've often said that I don't believe government has the answer to every problem or that it can do all things for all people. We are a nation built on the strength of individual initiative. But there are certain things that we can't do on our own. There are certain things only a government can do. And one of those things is ensuring that the foods we eat, and the medicines we take, are safe and don't cause us harm. That is the mission of our Food and Drug Administration and it is a mission shared by our Department of Agriculture, and a variety of other agencies and offices at just about every level of government.

Had President Obama instead believed that private producers and consumers could regulate food safety on their own, the FDA may have still been prevented from taking the leadership to ensure the integrity of the food supply for Americans without borders.

By examining heterogeneous government regulators in history, this chapter shows that food safety has been a policy area that government regulators persistently intervene because its impacts on private producers and consumers are distributional. This holds not only in the pre-modern history, during the Progressive era, and the contemporary world. Today, nearly all modern governments around the world have their own regulatory agencies in charge of food safety oversight to protect domestic public health through

various kinds of science-based food inspection regime. The British have the Food Standards Agency (FSA), the Japanese have Pharmaceutical and Food Safety Bureau (PFSB), and the Chinese have the China Food and Drug Administration (CFDA), etc. Names of these national food regulatory agencies look somewhat similar to the FDA, and more importantly, they share similar domestic regulatory mission of overseeing the integrity of food supply for mass consumption in respective nations. However, they are not functional substitutes because some can more credibly assure consumers of food safety in a global economy than others.

Chapter 4

Observing Credibility: Why the US Leads the Extraterritorial Food Safety Regime

This chapter aims to test my second theoretical claim: All else, a democratic government regulator can more credibly assure consumers of food safety in international trade than its autocratic counterpart, all else equal. I experimentally test this claim with two surveys administered in the US and China. This leads to three testable implications of the claim.

First, American consumers should be more concerned about the safety of imported food from China. By contrast, Chinese consumers should be less concerned about safety of imported food from the US. In other words, we should observe an inverse relationship between the public concern over the safety of imported food and the rigor of the behind-the-border regulatory institution between countries as a benchmark for cross-national comparison.

Second, within the US, American consumers should be less concerned about the safety of imported food from China when being informed that the FDA rather than its Chinese equivalent is in charge. Evidence of fewer American public concerns over food safety in international trade under the FDA vignette treatment than its Chinese equivalent

allows us to observe credibility the FDA has cultivated in assuring consumers of food safety in international trade relative to its Chinese equivalent.

Third, within China, we should see the similar pattern. That is, individual Chinese consumers should be less concerned about the safety of imported food from the US after being informed that the FDA rather than its Chinese equivalent is taking the responsibility of overseeing the quality and safety of imported food from the US. Evidence of fewer public concerns over the safety of imported from the US under the FDA than its Chinese equivalent allows us to observe whether the credibility the FDA has developed can spill over across borders.

In the rest of this chapter, I first describe the cross-national survey design and first-cut evidence in support of the first testable implication. I then propose a cross-over experimental design to test the other two major empirical implications of my credibility argument. Because cross-over design is not widely used in political science, I will discuss the analytic logic of inference in details. Results from this cross-national cross-over survey experiment are presented and discussed before I close this chapter with the broader theoretical implication of the FDA as a standard setter of last resort through international trade in countries with lax domestic standards.

4.1 The Cross-national Survey Design

Two coordinated public opinion surveys were conducted in the US and China to test the three implications of my argument with regard to the FDA's credibility. Both surveys were administered by the research firm YouGov in July and August, 2015. In the US, YouGov interviewed 859 adult subjects in its online panel of permanent residents. These interviewed US subjects were matched on to full 2010 American Community Survey across a wide range of demographic characteristics, including gender, age, education, race, party identification, ideology and political interest. With a final

sample of 800 subjects, the US survey yielded a completion rate of 93 percent. Similarly, YouGov interviewed a total of 807 Chinese adult subjects from its online panel. These interviewed Chinese subjects were matched on to the sampling frame across gender, age, and education using the 34th Statistical Report on Internet Development in China, created in July 2014 by the China Internet Network Information Center. With a final sample of 800 subjects, the China survey had a final completion rate of 99 percent. Finally, the recruitment of human subjects in both the US and China was registered and approved by the UCSD Institutional Review Board before the actual implementation in the summer of 2015.[1]

China was selected as a country case to be compared with the US for a research design reason. As an autocratic regime, China has disreputable track records of mismanaging the integrity of its domestic food supply beyond the high-profile melamine-tainted milk products as described in chapter 1. For instance, journalists have reported a variety of unthinkable malpractices of producing and processing food for human consumption and animal feed in contemporary China, from recycling gutter oil for sale, to poisoning frozen dumplings for Japanese household consumption,[2] and to repacking the out-of-date beef and chicken products with new expiration dates for resale.[3] Thus, China is an indisputable case to be paired with the US to test whether the variation in domestic political institution shapes the variation in public health and safety concerns over imported food between countries.

Furthermore, in order to make the cross-national comparison as clean as possible, my survey instrument uses the US-China food trade as a context to measure health and safety concerns among individual consumers of one country over imported food from the other in the dyadic trading relationship. That is, instead of asking for assessments of *all*

[1]The approved project number is 150069 for the US survey and 150070 for the China survey.
[2]Smith 2015: chapter 5
[3]CNN, 2014/07/29.

imported food from abroad to the US or China, I measure quality and safety concerns of individuals over imported food only *specific* to US-China bilateral trade. The exact question wordings for import safety concerns in the US survey look as follows.

> What is your general evaluation of the safety of food imported from China to the United States?
>
> 1. Very safe
> 2. Safe
> 3. Acceptable
> 4. Unsafe
> 5. Very unsafe

Likewise, the item measuring import safety concern in the China survey is worded as follows after translated from simplified Chinese into English.

> What is your general evaluation of the safety of food imported from the United States to China?
>
> 1. Very safe
> 2. Safe
> 3. Acceptable
> 4. Unsafe
> 5. Very unsafe

As shown above, both American and Chinese subjects were asked for their general assessments of the safety of food imported from the other country in the US-China bilateral trading relationship. Designing my survey instrument this way allows me to observe whether the behind-the-border regulatory standards set and implemented by the FDA within the US are more credible than those adopted by its foreign equivalent in China to assure the safety of food imported from the other side of the Pacific.

Moreover, since China started opening its door to the world economy in the reform era, the US-China food trade has had the largest share of the total world food

trade. Results obtain from my surveys can be generalized beyond the US-China trading relationship to the world food trade.

Using the simple survey item described above, we are able to test the first cross-national implication of my credibility argument. More concretely, we expect that American adult consumers should be more concerned about the safety of imported food from China. By contrast, the information problem of tainted food imported from the US is less a concern for adult consumers in China. Together, the benchmark distribution of import safety concerns should move in opposite directions for American and Chinese subjects recruited in the coordinated cross-national surveys.

Evidence from a benchmark comparison between the US and China is consistent with my theoretical expectation. As Figure 4.1 shows, there were around 6.5 percent of American adult consumers saying Chinese imported food were safe or very safe in the upper figure; by contrast, about 46.9 percent of Chinese adult consumers praising American imported food were safe and very safe in the lower figure. Likewise, while imported food from the China were widely regarded by 47 percent of American adult consumers as unsafe or very unsafe in the upper figure, there were only 7.4 percent of Chinese worrying imported food from the US were unsafe or even very unsafe in the lower figure. Beyond just eyeballing the central tendency of the distribution, a more formal test also points to a statistically significant sample mean difference between how American and Chinese adult consumers assess growing food import from their own country to the other. As reported in Table 4.1, the mean estimate for the US sample is 3.586 out of a 5-point Likert scale, with a higher value indicating more concerns and vice versa; by contrast, the mean level of safety concerns in the Chinese sample is 2.452. On average, American adult consumers were more concerned about Chinese imported food than Chinese concerned about US imported food in the US-China trade by 1.133 point, with 1.054 as the lower bound of the 95 percent confidence interval and 1.213 as

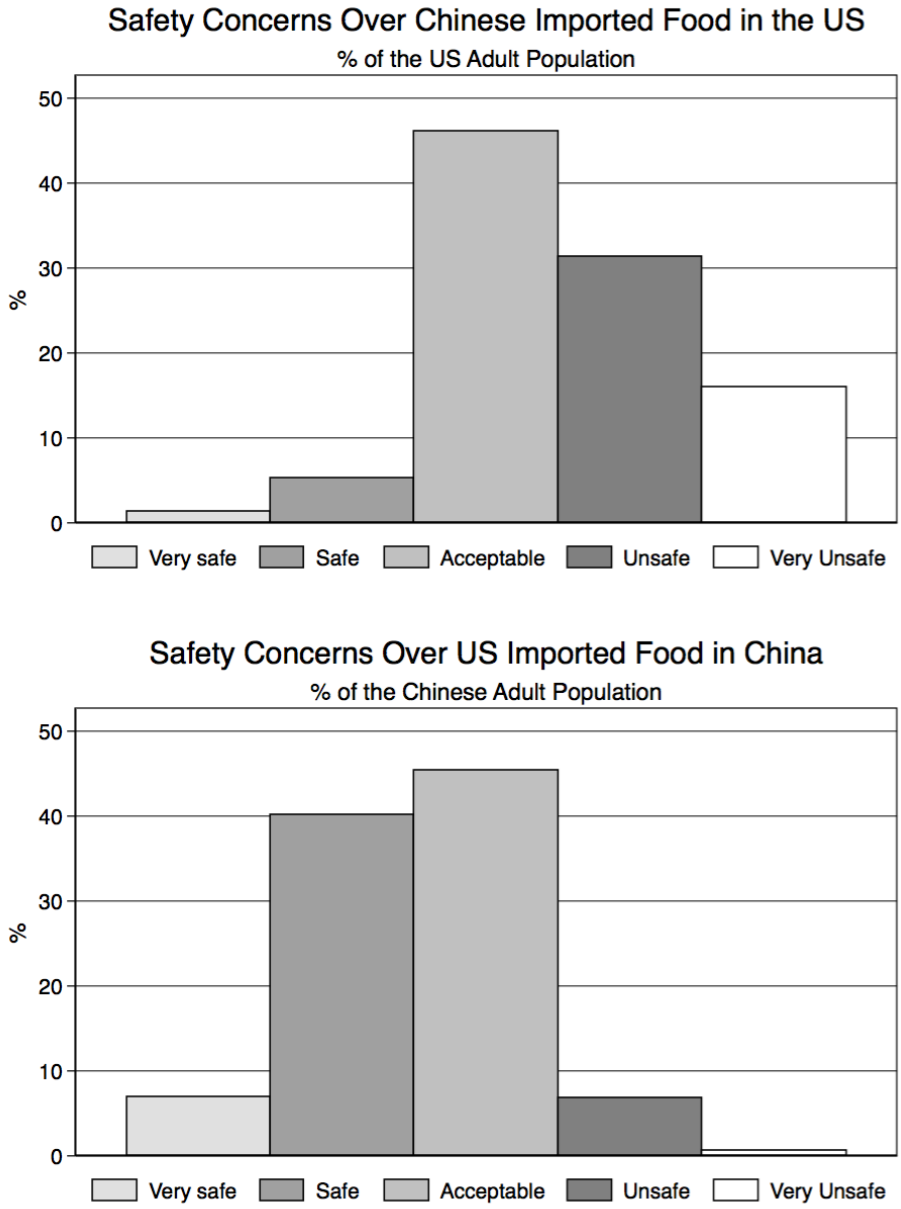

Figure 4.1. Safety Concerns Over Chinese Imported Food in the US and US Imported Food in China, 2015.

Note: The upper figure plots the percent of the American adult population who expressed safety concerns over Chinese imported food across an ordinal scale of five categories (Very safe, Safe, Acceptable, Unsafe and Very unsafe). The lower figure graphically displays the percent of the Chinese adult population who expressed safety concerns over US imported food on the same ordinal scale. Data are from the author's own surveys administered by YouGov.

Table 4.1. A Test for Mean Difference Between the US and Chinese Sample in Safety Concerns over Import Safety in the Bilateral Trade

	Obs	Mean	Std. Err.
(1) American Sample	800	3.586	(0.031)
(2) Chinese Sample	800	2.452	(0.026)
(1)- (2) Difference	1600	1.133***	(0.040)

Standard errors in parentheses. + $p < 0.1$ * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

the upper bound. These results jointly suggest that despite growing US-China food trade over the past several decades, Americans have become more concerned about the safety of imported food from China than Chinese are concerned about the safety of imported food from the US.

While the benchmark cross-national comparison provides clear observational evidence consistent with my argument, this approach is unable to tease out the direct causal mechanism – that is, the credibility of national regulatory apparatus – behind observed aggregate cross-national difference in safety concerns over imported food. To complement this indirect test, I also embedded a cross-over experimental design within the US and China survey. This cross-over design allowed me to test my argument more directly by exploiting average individual safety concerns over imported food between two equivalent experimental groups over time within the US and China.

4.2 The Cross-over Experimental Design

The procedure of the cross-over experimental design is described as follows. Regardless of the American or Chinese sample, recruited subjects were first asked for their impressions of food, including imported food from different countries, in a set of warm-up questions. Before randomization was introduced, all recruited subjects were asked for their benchmark levels of safety concerns over imported food as a pretest. The

survey question for the pretest was exactly the one I discussed in the last section to show the reversed distribution for concerns over the safety of imported from China in the US and from the US in China. After the pretest, participants were randomly assigned into two experimental groups.

The distinctiveness of the cross-over design lies in its reversed order of experimental manipulation between the two randomly assigned groups. More specifically, in the two experimental groups, one group of subjects was first exposed to a vignette treatment about the FDA's responsibility of inspecting food imported from China to the US, and then exposed to an alternative vignette treatment about the FDA's Chinese equivalent's– that is, CFDA's – responsibility of inspecting food imported from China to the US. Exact wordings of the two vignettes used for experimental manipulation in the first group are shown as follows by the implemented order.

> The Food and Drug Administration (FDA) is an agency within the United States government. To ensure consumer health, the FDA is responsible for inspecting food products imported from China to the United States.
>
> The China Food and Drug Administration (CFDA) is an agency within the Chinese government. To ensure consumer health, the CFDA is responsible for inspecting food products imported from China to the United States.

Subjects of the other experimental group were exposed to the same set of vignettes in a reversed order. That is, they were first exposed to the vignette treatment about the CFDA's responsibility of inspecting food imported from China to the US, and then the vignette treatment about FDA's responsibility of inspecting food imported from China to the US. The two vignettes and their order were displayed below.

> The China Food and Drug Administration (CFDA) is an agency within the Chinese government. To ensure consumer health, the CFDA is responsible for inspecting food products imported from China to the United States.
>
> The Food and Drug Administration (FDA) is an agency within the United States government. To ensure consumer health, the FDA is responsible

for inspecting food products imported from China to the United States.

Immediately after being assigned to read each experimental vignette, subjects were asked for their levels of safety concerns over imported food as a protest. Because the two experimental vignettes were sequentially given to subjects with a reversed order, there were two post-tests in total. The exact survey question for each wave of post-test outcome measures was also the one mentioned above for the pretest. Before the survey went to the end, we gather a set of basic demographic information about subjects in the US and Chinese sample, such as age, gender, education etc.[4]

This two-treatment, two-period cross-over design has three design merits. First, widely used in clinical tests of drugs, it presumes that treatments alleviate a condition rather than effect a permanent cure. This is very well equipped to test whether the FDA and its Chinese equivalent can credibly mitigate– but not permanently eliminate– individual safety concerns over imported food in the two largest economies of the world. Second, based on comparisons of two treatments on the same subjects across three waves of repeated outcome measures with a switching order, it allows us to directly control the experimental sequence to gauge lasting intention-to-treat effects without holding the assumption of sequential ignorability for casual inference in experimental design.[5] Third, because randomization guarantees equivalent groups for comparisons of the treatments in the cross-over design, we are able to validate if results from one group an be reproduced in the other group. This is why the cross-over design is also called "switching replications design" in the literature on research design.[6]

[4]However, due to Chinese government regulations, we are forced to drop some demographic questions deemed too politically sensitive to be administered. As a result, we have more demographic information about the US than the Chinese sample.

[5]Imai et al 2011.

[6]Trochim and Donnelly 2008: 204-207.

4.3 Model Specification, Measurement and Estimation

The analysis of any experiment with the cross-over design is a bit more complicated than widely used parallel-group experiments across a wide range of issues in IR.[7] To clarify the logic of casual inquiry, I formally introduce the classical analytic model for a cross-over experiment:[8] $Y_{ijk} = \mu + b_{ij} + \pi_k + \phi_m + \gamma_m + \varepsilon_{it}$, where the subscription i is the sequence (i = 1 or 2), j represents a subject randomly assigned to the ith sequence (j = 1...n_i), k represents the period (k= 1 or 2), and m represents the treatment (m= 1 or 2). Y_{ijk} is the observed outcome for subject j assigned to sequence i in the period k. In terms of parameters in the equation, μ represents the overall mean, b_{ij} represents the random effect of jth subject in the ith sequence, π_k represents the fixed effect of the kth period, π_k represents the direct effect of the mth treatment, γ_m represents the carryover effect of the mth treatment in the group, and ε_{it} represents the random error term.

With this notation, we can analytically decompose Y_{ijk} by sequence and period to compare means across groups. As shown in Table 4.2, the observed group mean for subjects assigned to the sequence 1 in the period 1 is $Y_{1.1}$. It can be rewritten as $\mu + \pi_1 + \phi_1$. That is, the mean of this group is the sum of the overall mean, the effect of the first period and the direct effect of the first treatment– that is, the FDA vignette. Likewise, the observed group mean for subjects assigned to the sequence 2 in the period 1 is $Y_{1.2}$. This group mean is equivalent to the sum of the overall mean, the effect of the first period and the direct effect of the second treatment– that is, the CFDA vignette. This can be mathematically expressed as $\mu + \pi_1 + \phi_2$. The group mean for subjects assigned to the sequence 1 in the period 2 is $Y_{2.1}$. It is equivalent to the sum of overall mean, the effect of the 2nd period, the direct effect of the second treatment, that is, the CFDA vignette,

[7] e.g. Hiscox 2006; Tomz 2007; Hainmuller and Hiscox 2010; Naoi and Kume 2011, Lu, Scheve and Slaughter 2012; Wallace 2013; Hafner-Burton et al 2014,

[8] Grizzle 1965.

Table 4.2. The Analytic Decomposition of Observed Outcomes in the Cross-over Design

	Period 1 (k=1)	Period 2 (k=2)
Sequence (1): FDA → CFDA (i=1)	$Y_{1.1} = \mu + \pi_1 + \phi_1$	$Y_{2.1} = \mu + \pi_2 + \phi_2 + \gamma_1$
Sequence (2): CFDA → FDA (i=2)	$Y_{1.2} = \mu + \pi_1 + \phi_2$	$Y_{2.2} = \mu + \pi_2 + \phi_1 + \gamma_2$
Sequence (2) - (1):	$(Y_{1.2}\text{-}\ Y_{1.1})$	$(Y_{2.2}\text{-}\ Y_{2.1})$
Mean Difference	$= (\phi_2\ \text{-}\ \phi_1)$	$= (\phi_1\ \text{-}\ \phi_2) + (\gamma_2\ \text{-}\ \gamma_1)$

and the carryover effect of the 1st treatment, that is, the FDA vignette. This can be formally expressed as $\mu + \pi_2 + \phi_2 + \gamma_1$. Similarly, $Y_{2.2}$ represents the group mean for subjects assigned to the sequence 2 in the second period. It is the sum of the overall mean, the effect of the second period, the direct effect of the 1st treatment, that is, the FDA vignette, and the carryover effect of the second treatment, or the CFDA vignette. It can be formulated mathematically as follows: $\mu + \pi_2 + \phi_1 + \gamma_2$.

Using this simplified framework, we have two major quantities of interest. First, we are interested in the average intention-to-treat effect of the CFDA relative to the FDA. This can be mathematically expressed as $(\phi_2\ \text{-}\ \phi_1)$. It is equivalent to the simple mean difference between the two groups in the first period. Again, as shown in Table 4.2, by subtracting $Y_{1.1}$ from $Y_{1.2}$, we can get $(\phi_2\ \text{-}\ \phi_1)$ as the mean difference for the first period. This quantity of interest is the average intention-to-treat effect of the CFDA relative to the FDA in mitigating safety concerns of individual American consumers over imported food from China to the US or safety concerns of individual Chinese consumers over imported food from the US to China. According to my argument of differential regulator credibility in governing food safety in a global economy, I expect the CFDA vignette generates more safety concerns over imported food than the FDA among adult consumers in the US and China. This testable implication of my argument can be more formally expressed using notations from this framework as follows: $(\phi_2\ \text{-}\ \phi_1) > 0$.

Second, I am also interested in the carryover effect of the CFDA relative to the

FDA in the second period of the experiment. This can be more formally expressed as (γ_2 - γ_1). Ideally, if (γ_2 - γ_1) = 0, that is, the carryover effect of the CFDA is equivalent to that of the FDA, the mean difference between two groups in the second period, or say ($Y_{2.2}$- $Y_{2.1}$), will be equivalent to (ϕ_1 - ϕ_0), which is also the intention-to-treat effect of the FDA relative to the CFDA. This is the fundamental casual identification assumption for the cross-over design. By contrast, if (γ_2 - γ_1) $\neq$ 0, or say, the carryover effect of the CFDA is not equivalent to that of the FDA, the mean difference between the two groups in the second period will be a biased estimate for the intention-to-treat effect of the FDA relative to the CFDA.

However, because we can get the unbiased estimate for the intention-to-treat effect of the CFDA relative to the FDA during the first period of this cross-over experiment, we can leverage this information to learn more about the carryover effect of the CFDA relative to the FDA during the second period. More specifically, if we can validate (ϕ_2 - ϕ_1) $>$ 0 during the first period, then it follows that (ϕ_1 - ϕ_2) $<$ 0 for the second period. This leads us to consider three scenarios. First, if the mean difference during the second period ($Y_{2.2}$- $Y_{2.1}$) = 0, this implies that (ϕ_2 - ϕ_1) = (γ_2 - γ_1) $>$ 0. That is, the carryover effect of the CFDA relative to the FDA is positive and its size is equivalent to the intention-to-treat effect of the CFDA to relevant to the FDA. Second, if the mean difference during the second period ($Y_{2.2}$- $Y_{2.1}$) $<$ 0, it follows that (ϕ_2 - ϕ_1) $>$ (γ_2 - γ_1) $\geq$ 0. That is, the carryover effect of the CFDA relative to the FDA is non-negative and its size is *smaller* than the intention-to-treat effect size of the CFDA relative to the FDA. Finally, if the mean difference during the second period ($Y_{2.2}$- $Y_{2.1}$) $>$ 0, it follows that (γ_2 - γ_1) $>$ (ϕ_2 - ϕ_1) $\geq$ 0. This suggests that the carryover effect of the CFDA relative to the FDA is positive and its size is *greater* than the intention-to-treat effect of the CFDA relative to the FDA.

Together, we can use the estimated mean difference during the second period

to make inference about the lasting effect of differential regulator credibility within a country. In the US, I expect the second-period mean difference should *not* be positive. If the mean difference even turns positive, that implies that the FDA treatment cannot even offset safety concerns over Chinese imported food originating from the CFDA treatment in the previous period. Likewise, I expect the second-period mean difference should be zero or even positive in the Chinese sample. The expected zero suggests that the FDA can be a regulator of last resort to salvage the CFDA's credibility deficits in assuring Chinese adult consumers of imported food from the US. If the CFDA not only fails to alleviate but also generate additional safety concerns about imported food from the US after being salvaged by the FDA, the second-period mean difference will further turn positive. Thus, my causal hypotheses can be more mathematically expressed as follows: In the US sample, $(Y_{2.2}\text{-}\ Y_{2.1}) \leq 0$; in the Chinese sample, $(Y_{2.2}\text{-}\ Y_{2.1}) \geq 0$.

Because the cross-over design has three repeated outcome measures, I simply use the same item about safety concerns over imported food from China to the US and from the US to China during the two waves of experimental manipulation as my dependent variable. For the outcome measure taken during the first period, I label it as Post-test 1. Similarly, I label the measure outcome measure taken during the second period as Post-test 2. Both Post-test 1 and Post-test 2 thus follows the same 5-point scale for measurement as the outcome measure for benchmark comparison, labeled as Pre-test. In other words, these repeated outcome measures, including Pre-test, Post-test 1 and Post-test 2, all range from 1 to 5, with a larger value for a higher level of safety concern over imported food.

With this outcome measure, we can simply use the simple OLS method to get unbiased estimates for mean difference between experimental groups in each period. In other words, the statistical analysis of this experiment is similar to many parallel-group experiments except that the interpretation of the mean difference between groups is a bit

nuanced during the second period.

4.4 Experimental Results and Robustness Checks

Table 4.3 presents baseline OLS estimates for mean difference in Pretest, Post-test 1 and Post-test 2 between the two experimental groups in the US sample. Model (1) shows that there was not significant difference between the two groups in Pretest. The initial mean safety concern over Chinese imported food among subjects was about 3.531. The mean difference estimate in Model (2) suggests that subjects randomly assigned to the CFDA vignette treatment were averagely more concerned about the safety of imported food from China than the others assigned to the FDA treatment by 0.12 point difference at the significance level of 0.1 during the first period of the experiment. This is consistent with my argument that the FDA is more credible than the CFDA in assuring American consumers of the safety of imported food even if this imported food is from China, with a disreputable past of tainted food. In other words, the estimated (ϕ_2 - ϕ_1) $>$ 0 as I hypothesized above. With a statistically significant negative mean difference point estimate, Model (3) further reveals that the intention-to-treat effect of the CFDA relative to the FDA was not only counterbalanced not also completely altered to the opposite direction by the carryover effect of the FDA relative to the CFDA during the second period of the experiment. This negative mean difference in Model (3), namely -0.21 significant at 0.001 level, provides additional support to strengthen my argument about the FDA's credibility in regulating food safety. That is, ($Y_{2.2}$- $Y_{2.1}$) $\leq$ 0.

My hypotheses developed in this chapter are supported by findings from the cross-over experiment not only in the US sample, but also in the Chinese sample. Table 4.4 reports baseline OLS estimates for mean difference in Pretest, Post-test 1 and Post-test 2 between the two experimental groups in the Chinese sample. Model (4) shows that there was no notable difference in Pretest. That is, subjects randomly assigned to the

Table 4.3. The Cross-over Experiment, Baseline OLS Estimates for the US Sample

DV	(1) Pretest	(2) Post-test 1	(3) Post-test 2
Mean Difference (Sequence 2- Sequence 1)	0.0374	0.120^{+}	-0.210^{***}
	(0.0615)	(0.0649)	(0.0669)
Mean (Sequence 1)	3.531^{***}	3.232^{***}	3.664^{***}
	(0.0959)	(0.101)	(0.104)
Method	OLS	OLS	OLS
$N1$: Sequence 1 # of obs.	417	417	417
$N2$: Sequence 2 # of obs.	383	383	383
N: Total # of obs.	800	800	800
R^2	0.0005	0.0043	0.0122

Subjects were randomly assigned into Sequence 1 and 2.
Sequence 1 received the FDA vignette treatment during period 1 and the CFDA during period 2.
Sequence 2 received the CFDA vignette treatment during period 1 and the FDA during period 2.
Pretest, Post-test 1 and Post-test 2 are repeated outcome measures.
Outcome is measured in a five-point scale for safety concerns over imported food from China.
Standard errors in parentheses.
$^{+}$ $p < 0.1$ * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

two groups had averagely identical level of quality and safety assessment of imported food from the US. Right after subjects of sequence 1 were exposed to the FDA vignette treatment and subjects of sequence 2 were given the CFDA vignette treatment, there was a significant mean difference between the two groups during the first period. As shown in Model (5), averagely speaking, subjects exposed to the CFDA vignette treatment thought imported food from the US less safe than subjects being given the FDA treatment by 0.131 point difference at the significance level of 0.05. This is consistent with the hypothesis that (ϕ_2 - ϕ_1) > 0. With a statistically insignificant negative mean difference point estimate of -0.0547, Model (6) suggested that the carryover effect of the CFDA relative to the FDA was nearly equivalent to the intention-to-treat effect of the FDA relative to the CFDA during the second period. Because the intention-to-treat effect of

the FDA relative to the CFDA during the second period should have had the same size with intention-to-treat effect of the CFDA relative to the FDA during the first period, despite the opposite signs between the first and second period in the same Chinese sample, we can infer that there should have been significant positive carryover effect of the CFDA relative to the FDA during the second period, and it was counterbalanced by the significant negative intention-to-treat effect of the FDA relative to the CFDA during the same period, thus resulting in no difference between the two groups during the second period of the experiment. Again, this is consistent with $(Y_{2.2}\text{-}\ Y_{2.1}) \leq 0$.

Table 4.4. The Cross-over Experiment, Baseline OLS Estimates for the Chinese Sample

DV	(4) Pretest	(5) Post-test 1	(6) Post-test 2
Mean Difference (Sequence 2- Sequence 1)	-0.00333	0.131*	-0.0547
	(0.0528)	(0.0515)	(0.0547)
Mean (Sequence 1)	2.4571***	2.359***	2.586***
	(0.0826)	(0.0805)	(0.0856)
Method	OLS	OLS	OLS
$N1$: Sequence 1 # of obs.	414	414	414
$N2$: Sequence 2 # of obs.	386	386	386
N: Total # of obs.	800	800	800
R^2	0.0000	0.0081	0.013

Subjects were randomly assigned into Sequence 1 and 2.
Sequence 1 received the FDA vignette treatment during period 1 and the CFDA during period 2.
Sequence 2 received the CFDA vignette treatment during period 1 and the FDA during period 2.
Pretest, Post-test 1 and Post-test 2 are repeated outcome measures.
Outcome is measured in a five-point scale for safety concerns over imported food from US.
Standard errors in parentheses.
$^{+}$ $p < 0.1$ * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Together, my coordinated cross-over experiment in the US and China provide reproducible empirical evidence about the FDA's credibility in assuring consumers in the world's two largest economies. Regardless of countries of residency, namely the

US or China, adult consumers were aware of the difference in the credibility of the behind-the-border inspection regime between the FDA and its Chinese counterpart, or the CFDA, in ensuring the integrity of the food supply in international trade. And more importantly, as expected, all else equal, the FDA is more credible to the CFDA in assuring consumers of the safety of imported food not only from China to the US but also from the US to China. The nearly identical size of the intention-to-treat effect of the CFDA relative to the FDA between the US and Chinese sample obtained from the first period of the experiment offers straightforward micro-level evidence for American and Chinese consumers' convergent expectations on divergent regulator credibility in governing import safety for food as a credence good. This central point is further supported by evidence from the second period of the cross-over experiment, where individual safety concerns over Chinese food imports were significantly reduced by the FDA in the US, and individual safety concerns over American food imports triggered by the CFDA were also effectively counterbalanced by the FDA in China. In other words, the FDA served as a regulator of last resort not only in the US but also in China, where the FDA salvaged the CFDA's credibility deficits in assuring Chinese adult consumers of imported food from the US.

I perform a set of additional checks on the robustness of the main findings from the two-treatment, two-period, and two-country survey experiment. First, the mean differences between the two groups are unbiased estimates for the average intention-to-treat causal effect of the CFDA relative to the FDA if and only if subjects were randomly assigned into the two averagely equivalent groups. This raises a potential concern about randomization failure in the coordinated cross-over experiment in the US and China.

I empirically check the validity of this casual identification assumption of randomization with a series of tests for mean differences across a wide range of demographic variables available in the US and Chinese survey. Table 4.5 reports summary statistics

of these demographic variables, respectively for the US and Chinese sample. The exact measurement for each demographic variable is concisely described in Table 4.6. As further being shown in Table 4.7, I find little evidence for the potential threat of randomization failure in both the US and China survey. The balanced average demographic backgrounds of subject between the two experiment groups suggest that the assignment of subjects to experimental groups was not at all correlated with any of these commonly used demographic variables. Those reported OLS estimates for mean differences between groups in Tables 4.3 and 4.4 are unlikely to be biased.

Second, to get more accurate OLS estimates for our quantities of interest in the experiment, I respectively regress Post-test 1 and Post-test 2 on our treatment indicator with an set of demographic variables containing no missing value in the US and Chinese sample. Results of this alternative model specification are reported in Table 4.8. Coefficient estimates for effects of our treatment on Post-test 1, that is, the level of safety concern over imported food from the other country in the US-China trade during the first period, are significantly positive at the 0.05 level. As shown in Model (7) and (9), the estimated positive effect of the CFDA relative to the FDA in the US sample is exactly identical to the Chinese sample: 1.27. Likewise, coefficient estimates for effects of our treatment on Post-test 2, that is, safety concern over imported food from the other country in the US-China trade during the second period, are consistent with our theoretical expectations. In the Chinese sample, the second-period intention-to-treat effect of the FDA relative to the CFDA must have counterbalanced the carryover effect of the CFDA relative to the FDA to produce a null treatment effect on Post-test 2. This is exactly what is as shown in Model (10). Otherwise, the estimate coefficient on Post-test 2 could have been positive, suggesting a counterfactual that the FDA failed to assure Chinese adult consumers of import safety. More importantly, in the US sample, we find a statistically significant negative coefficient on Post-test 2 at the 0.01 level. The effect

size, 0.205 as shown in Model (8), is much larger than the intention-to-treat effect of the CFDA relative to the FDA discovered during the first period in Model (7), 0.127. This suggests that the second-period intention-to-treat effect of the FDA relative to the CFDA is much larger than 0.205, despite its negative sign, so that the FDA treatment can not only counterbalance the carryover effect of the CFDA relative to the FDA but also completely alter its direction to reduce safety concerns over imported food from China among American consumers.

Simply put, results from these regression analyses reinforce our earlier interpretation: All else equal, the FDA is more credible than the CFDA in assuring consumers of the safety of imported food not only in the US but also in China. Figure 4.2 plots the coefficient estimates from these regression models to visually display the observed credibility of the FDA in assuring consumers at home and abroad relative to its foreign equivalent, more specifically the CFDA in the case of the US-China food trade. Because we are able to replicate the estimated average intention-to-treat effects of the CFDA relative to the FDA during the first period of the experiment using different country samples and to rule out the potential that average intention-to-treat effects of the FDA relative to the CFDA were positive or zero using deductive reasoning, we are confident to conclude that the FDA continues to maintain its credibility in assuring consumers at home and abroad after its extraterritorial expansion.

Table 4.5. Summary Statistics for Demographic Variables, US and China

	Mean	Sdev	Min	Max	Obs
The US Sample					
Female	0.537	0.499	0	1	800
Age	49.005	16.651	20	90	800
College	0.256	0.436	0	1	800
Rural	0.423	0.494	0	1	800
Young Kids	0.128	0.334	0	1	800
Single	0.291	0.455	0	1	800
Risk Averse	4.075	1.523	1	7	800
National Pride	3.516	0.723	0	1	800
Social Trust	0.312	0.463	0	1	800
Full Employment	0.363	0.481	0	1	800
Attention to Food Origin	0.280	0.449	0	1	800
White	0.726	0.446	0	1	800
Republican-Democrat Party ID	3.726	2.126	1	7	754
Conservative-Liberal Ideology	3.089	1.177	1	5	713
The Chinese Sample					
Female	0.433	0.495	0	1	800
Age	33.011	10.456	19	89	800
College	0.607	0.488	0	1	800
Rural	0.210	0.407	0	1	800
Young Kids	0.330	0.470	0	1	800
Single	0.393	0.488	0	1	800
Risk Averse	4.071	1.212	1	7	800
National Pride	1.910	0.853	0	1	800
Social Trust	0.758	0.428	0	1	800
Full Employment	0.696	0.460	0	1	800
Attention to Food Origin	0.398	0.489	0	1	800

Table 4.6. The Description of Demographic Variables in the US and China Survey

Variable	Coding	Description
Female	Female = 1; Male = 0.	A dummy variable to indicate that a subject is female.
Age	Age as of 2015	A continuous variable to measure the age of a subject.
College	College graduate = 1; Otherwise = 0	A dummy variable to indicate that a subject is a college graduate.
Rural	Rural resident =1; Otherwise = 0	A dummy variable to indicate that a subject is a rural resident.
Single	Single =1; Otherwise= 0.	A dummy variable to indicate that a subject is single.
Risk Averse	Extremely uncomfortable taking risks =7; Uncomfortable taking risks =6 ; Somewhat uncomfortable taking risks =5; Neither comfortable nor uncomfortable taking risks =4; Somewhat comfortable taking risks =3; Comfortable taking risks=2; Extremely comfortable taking risks=1	An ordinal variable to measure how risk-averse a subject is.
National Pride	Very proud =4; Somewhat proud =3; Not very proud =2; Not at all proud =1	An ordinal variable to measure how proud a subject feels for being a citizen of the US or China (depending on country).
Social Trust	Most people can be trusted = 1; Need to be very careful in dealing with people	A dummy variable to indicate that a subject trust others in the society.
Full Employment	With a full-time job = 1; Otherwise = 0	A dummy variable to indicate that a subject has a full-time job.
Attention to Food Origin	Attention paid = 1; Otherwise = 0	A dummy variable to indicate that a subject pays attention to the origin of food.
White	White = 1; Other races = 0	A dummy variable to indicate that a subject is while in race. (US Sample only)
Republican-Democrat Party ID	Strong Republican =7; Not very strong Republican =6; Lean Republican =5; Independent =4; Lean Democrat =3; Not very strong Democrat=2; Strong Democrat=1	A standard seven-point scale measure for a subject's party identification along with the Republican-Democrat divide. (US Sample only)
Conservative-Liberal Ideology	Very conservative =5; Conservative =4; Moderate =3; Liberal=2; Very liberal =1	A standard five-point scale measure for a subject's ideology along the Conservative-Liberal divide.

Note: Income categories are not reported here for too many missing values.

Table 4.7. Balance Table Across Demographic Variables for the US and Chinese Sample

	The US Sample		The Chinese Sample	
	Sequence 1 Mean	Sequence 2- Sequence 1 Mean Difference	Sequence 1 Mean	Sequence 2- Sequence 1 Mean Difference
Female	0.499	0.026	0.407	0.0179
		(0.035)		(0.0351)
Age	47.9	0.747	33.24	-0.152
		(1.179)		(0.740)
College	0.235	0.014	0.581	0.017
		(0.031)		(0.035)
Rural	0.396	0.019	0.233	-0.015
		(0.035)		(0.029)
Young Kids	0.148	-0.014	0.392	-0.042
		(0.024)		(0.033)
Single	0.362	-0.048	0.329	0.043
		(0.032)		(0.035)
Risk Averse	3.895	0.122	4.097	-0.018
		(0.108)		(0.086)
National Pride	3.425	0.062	1.815	0.064
		(0.051)		(0.060)
Social Trust	0.303	0.007	0.780	-0.014
		(0.033)		(0.030)
Full Employment	0.292	0.049	0.717	-0.014
		(0.034)		(0.033)
Attention to Food Origin	0.304	-0.016	0.393	0.003
		(0.032)		(0.035)
White	0.757	-0.021		
		(0.032)		
Republican-Democrat Party ID	3.749	-0.015		
		(0.155)		
Conservative-Liberal Ideology	3.087	0.002		
		(0.088)		

Standard errors in parentheses. + $p < 0.1$ * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.8. The Cross-over Experiment, OLS Estimates with Demographic Controls

	The US Sample		The Chinese Sample	
	(7)	(8)	(9)	(10)
DV	Post-test 1	Post-test 2	Post-test 1	Post-test 2
Treatment	0.127*	-0.205**	0.127*	-0.0556
	(0.0602)	(0.0635)	(0.0493)	(0.0533)
Female	-0.147*	-0.196**	-0.0620	-0.0846
	(0.0627)	(0.0661)	(0.0507)	(0.0547)
Age	0.00890***	0.00555*	0.00487	0.00408
	(0.00239)	(0.00252)	(0.00296)	(0.00296)
College	0.123	0.133	-0.152**	-0.144*
	(0.0727)	(0.0767)	(0.0537)	((0.0579)
Rural	-0.0143	0.0672	0.134*	0.0391
	(0.0625)	(0.0659)	(0.0665)	(0.0718)
Young Kids	0.0281	-0.0491	-0.00646	-0.0453
	(0.0962)	(0.101)	(0.0580)	(0.0627)
Single	-0.0356	-0.142	0.182**	0.130
	(0.0814)	(0.0858)	(0.0694)	(0.0749)
Risk Averse	0.0486*	0.0341	0.0939***	0.0953***
	(0.0209)	(0.0221)	(0.0211)	(0.0228)
National Pride	-0.0925*	-0.0771	0.0587	-0.0132
	(0.0428)	(0.0451)	(0.0299)	(0.0323)
Social Trust	-0.293***	-0.247***	-0.0787	-0.0199
	(0.0662)	(0.0698)	(0.0594)	(0.0642)
Full Employment	0.0340	-0.0452	-0.0381	-0.0963
	(0.0673)	(0.0710)	(0.0595)	(0.0643)
Attention to Food Origin	0.460***	0.378***	-0.131*	-0.132*
	(0.0686)	(0.0724)	(0.0538)	(0.0581)
White	0 0.251***	0.241**		
	(0.0712)	(0.0751)		
Method	OLS	OLS	OLS	OLS
$N1$: Sequence 1 # of obs.	417	417	414	414
$N2$: Sequence 2 # of obs.	383	383	386	386
N: Total # of obs.	800	800	800	800
R^2	0.165	0.135	0.107	0.072

Standard errors in parentheses. $^{+}$ $p < 0.1$ * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

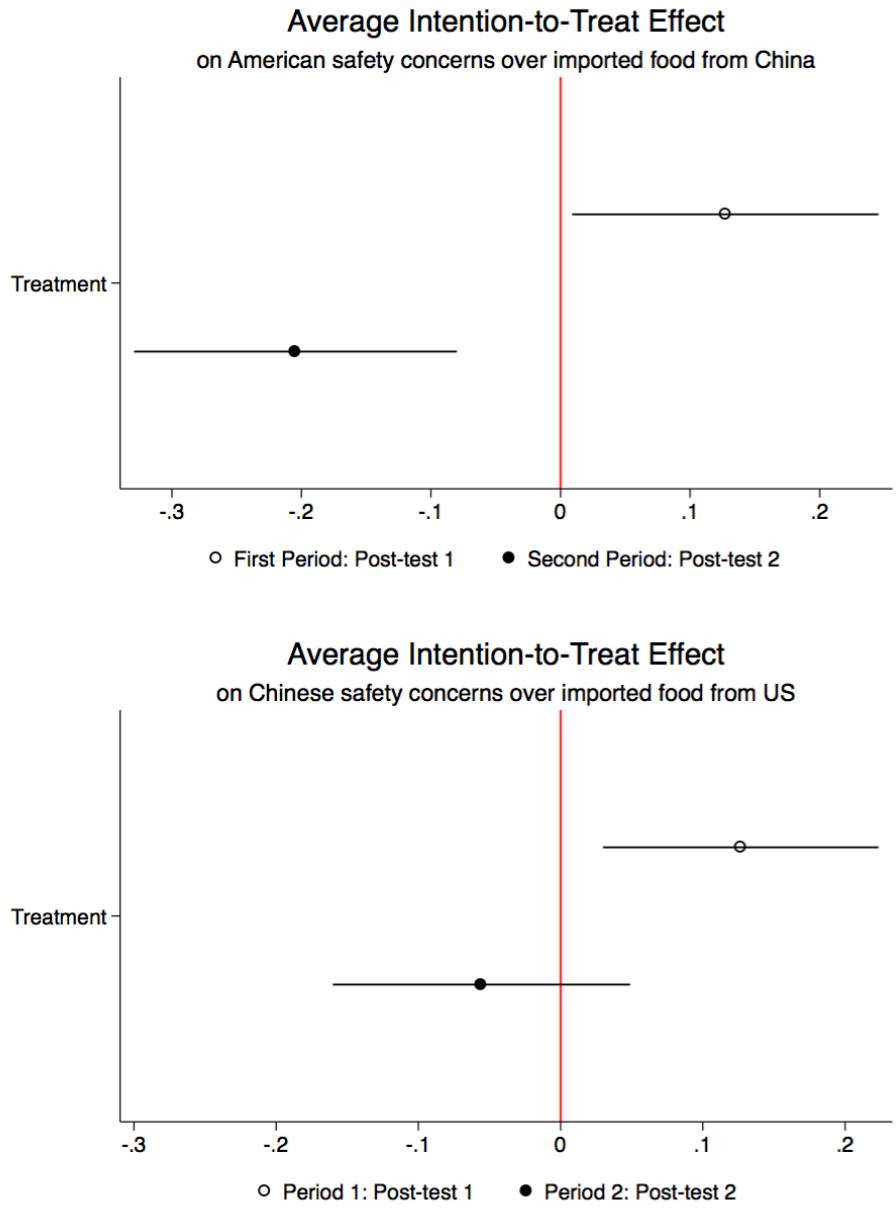

Figure 4.2. Average Intention-to-Treat Effects on Safety Concerns Over Chinese Imported Food in the US and US Imported Food in China, 2015.

Note: The upper figure plots average intention-to-treat effects of the CFDA relative to the FDA on the levels of American safety concerns over Chinese imported food across an ordinal scale of five categories (Very safe, Safe, Acceptable, Unsafe and Very unsafe) across two periods (Period 1 and 2). The lower figure graphically displays reproducible effects of the CFDA relative to the FDA on the levels of Chinese safety concerns over US imported food on the same ordinal scale across periods. Data are from the author's own surveys administered by YouGov.

4.5 Discussion

The credibility of a national regulatory apparatus plays a crucial role of alleviating individual citizens' safety concerns over imported food in a global economy. Leveraging the two-treatment, two-period, and two-country cross-over experimental design, this chapter has presented two sets of robust empirical findings to support this claim. First, it demonstrates a patterned cross-national difference in the distribution of consumers' safety concerns over imported food between the US and China. That is, citizens living in developed countries with more rigorous food safety standards, such as the US, are more concerned about food safety in international trade than citizens in developing countries with more lax food safety standards, such as China. Second, it provides reproducible experimental findings in both the US and Chinese sample about the constant existence of differential regulator credibility in guaranteeing food safety in international trade. In the particular context of the US-China food trade, all else equal, the FDA is better able to alleviate safety concerns over imported food among consumers in both the US and China than the CFDA, which points to the greater credibility the FDA has developed to win trust of American and Chinese consumers over the CFDA in this policy area. These findings jointly support the general theoretical claim developed in chapter 2: A democratic government regulator can more credibly assure consumers of food safety in international trade than an autocratic counterpart, all else equal.

More interestingly, we also find that the FDA's credibility in regulating food safety spreads across borders with international trade. Just like American consumers, Chinese consumers are equally assured by the FDA to alleviate their safety concerns about imported food. This convergent expectation of consumers about the credibility of the FDA can further provide a micro-foundation for the emerging FDA-led regulatory extraterritorial governance of food safety. That is, it helps the US to assure foreign gov-

ernment regulators that a reciprocal access to the US market will come after their approval of US inspectors to regulate foreign producers within their territorial jurisdictions.

Chapter 5

Observing Reciprocity: Why Foreign Government Regulators Approve Extraterritoriality

Why do foreign government regulators approve the emerging US-led extraterritoriality? This chapter tests the third and fourth theoretical claim developed in chapter 2. Leveraging a uniquely designed interrupted time-series (ITS) quasi-experiment, I empirically demonstrate the causal process of reciprocal exchange such that a foreign government regulator's de facto acceptance of the FDA extraterritorial enforcement leads to the discontinuous average increase in its exports to the US domestic market as material returns, all else equal.

This chapter proceeds as follows. I first clarify the logic of the ITS quasi-experimental design. Then, I move to describe model specification, measurement and estimation methods used in my quasi-experimental test of the reciprocity hypothesis. Before moving to the concluding section, I present results from not only the main test but also a series of robustness checks for the presence of reciprocity as a causal mechanism in the international political process. The last section concludes that the emergence of the US-led extraterritorial governance of food safety can be explained by the reciprocal exchange for more food exports that benefit foreign producers privileged by foreign

government regulators.

5.1 The ITS Quasi-experimental Design

The central difficulty in identifying the theorized reciprocal exchange is that we do not simultaneously observe the presence and absence of the FDA's extraterritorial regulatory enforcement in a foreign country. This poses a problem to observe the difference in a country's exports to the U.S. market between being incorporated in the emerging FDA-led extraterritorial regime and being left out from it. We are thus prohibited from learning whether there are material returns flowing from this emerging regime.

Since the "causality revolution" in social sciences, a true randomized experiment has been ideal to draw internally valid causal inferences about empirical questions.[1] Yet it is still empirically impractical to have a country-level randomized field experiment in IR. The reason is threefold. First, the limited number of countries in the world naturally constrain the statistical power IR scholars can have when running a true randomized experiment at the country level. Besides, the huge variation in the unit-level characteristics makes it even more difficult to get truly equivalent groups for any meaningful experimental comparison even if randomization can be successfully introduced for a cross-national field experiment on subjects of our interest. Third, non-compliance with the randomly assigned intervention and non-response to the post-intervention outcome measure are far more challenging because not all national governments are willing and able to participate in a true randomized field experiment. Not surprisingly, in spite of the proliferation of experimental research on subjects of sub-national non-state actors, true randomized country-level field experiments are still rare in IR.[2] While there have been

[1] Angrist and Pischke 2010; Dunning 2012.
[2] See Hyde 2015.

voices of going sub-national to implement true randomized survey and field experiments for causality in IR, just as what has been done to offer new tests of old theories in American and comparative politics, this solution in fact begs the fundamental question of how to make causal inference at the country level, which is central to many theories of strategic interaction in IR. As a result, the best feasible empirical strategy for IR scholars' to test any hypothesized casual mechanism in a cross-national panel is designing a quasi experiment.

This chapter proposes an ITS quasi-experimental design to deal with this particular identification challenge. As a general rule of thumb, the ITS quasi-experimental design leverages the known variation in the timing of a non-random intervention to identify its casual effect by comparing repeated outcome measures before and after the intervention for the same set of subjects, whose compliance with the intervention and post-intervention outcome measures are archived and observable.[3] While not widely used in political science, this identification strategy is increasingly popular for program design and evaluation in epidemiology and medical research, where a true randomized experiment is as impractical as in IR.[4]

The ITS quasi-experimental design is also known as "before-and-after" design. Under this design, each country subject is assigned to the intervention group during the post-intervention period and to the control group during the pre-intervention period. Our main interest lies in the observable change in the time trend before and after subjects are introduced to the non-random intervention across repeated outcome measures. The interruption of the time trend in the outcome of interest between the pre-intervention and post-intervention period is the "smoking gun" for the causal effect of the non-random intervention.

[3]Cook and Campbell 1979: 207-232.

[4]See, for instance, Biglan et al 2000; Wagner et al 2002; Ramsay et al 2003.

In particular, this study uses the newly available information from the FDA Inspections Classification Database to construct a fine-grained measure for the variation in the country-level assignment of the FDA's "Beyond Our Borders" program from 2008 to 2013. This measure has detailed information about when and where the FDA starts conducting substantive inspection of food facilities abroad. The raw data set contain 113,005 inspections the FDA conducted both at home and abroad during this period. Unsurprisingly, most inspections were conducted in the United States. The international share of the total inspections is about 9.8 percent within the six years of observation in the raw data set. That is equivalent to 11,077 inspections being conducted by the FDA investigators beyond the U.S. borders.

While legal names of exporting firms being inspected are available in the raw data set, I do not make inference at the firm level. The reason is twofold. First, according to my theory, the FDA-led regulatory extraterritoriality equally benefits all firms who are willing and able to afford costs of complying with the U.S. standards in a given foreign country. Thus, material returns to foreign governments and exporting firms are observable in aggregate at the national level. Second, while there may be unequal distribution of net benefits across exporting firms within a foreign country due to heterogeneous characteristics of these firms, as long as these exporting firms are better off, I find no reason to believe that relative gains can produce severe distributional cleavages between exporting firms to reverse their support for the FDA-led regulatory extraterritoriality. Thus, to observe the theorized reciprocal exchange, a proper empirical test should be at the country level, not the firm level.

That being said, I aggregate the information from the firm level to the country level to create a cross-national ITS quasi-experiment, in which foreign countries are either assigned into the FDA's foreign food inspection program or stayed outside the emerging regulatory extraterritorial regime every year between 2008 and 2013. The two maps in

Figure 5.1 display the sharp contrast in the cumulative country coverage of the emerging FDA-led regulatory extraterritoriality. Table 5.1 further provides detailed information about when and where the FDA's regulatory extraterritoriality locally emerges across foreign countries around the world to construct a cross-national ITS quasi-experiment during this period of observation.

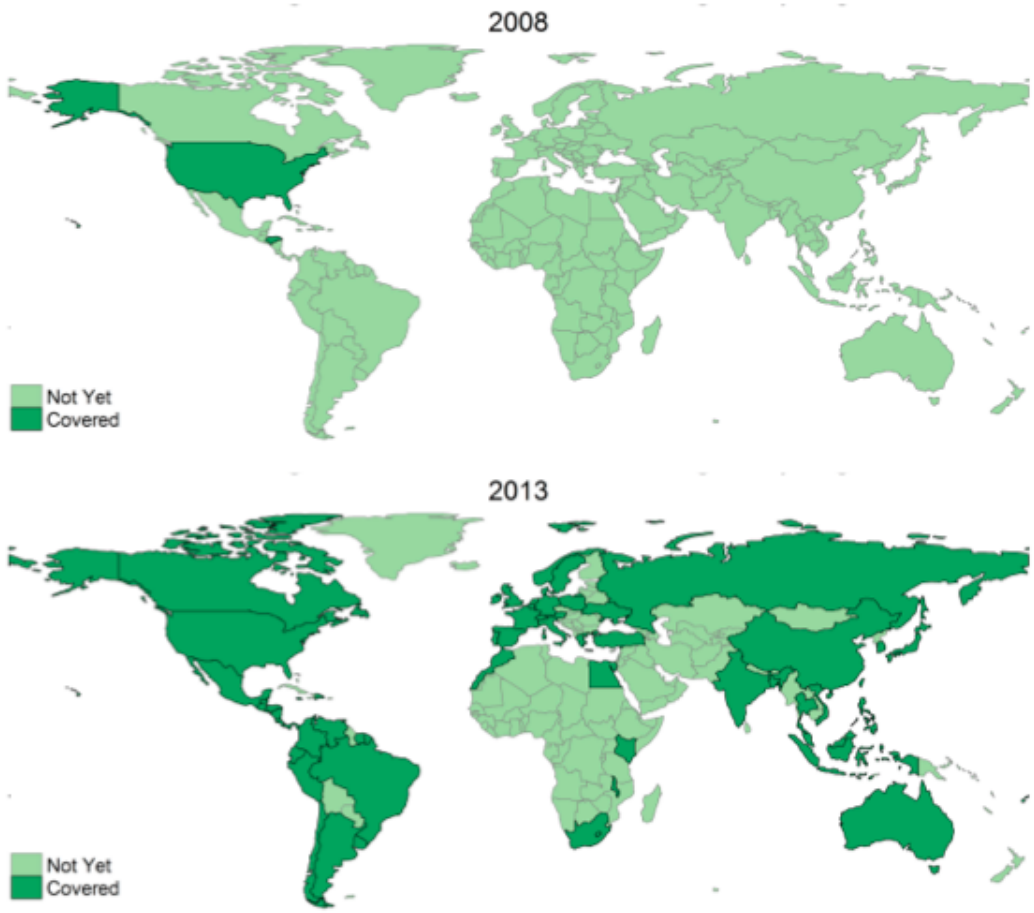

Figure 5.1. Maps of the FDA-led Extraterritoriality, 2008 v.s. 2013.

Note: Light shading areas are countries, where the FDA has not conducted food inspections under the Beyond Our Border Program. By contrast, dark shading areas are countries, where foreign food inspection activities have been archived in the FDA's official records.
Source: Author's calculation of the FDA Inspection and Classification Database.

Under this cross-national ITS quasi-experiment, if my hypothesis is correct, there should be a statistically meaningful interruption of the time trend in the U.S.

Table 5.1. The International Expansion of the FDA's Food Inspection Program

Year	# of countries added	List of countries
2008	1	Honduras
2009	26	Argentina, Bangladesh, Canada, Chile, China, Colombia, Dominican Republic, Ecuador, France, Guatemala, India, Italy, Japan, Malaysia, Mexico, Morocco, Peru, The Philippines, Poland, Portugal, South Africa, South Korea, Surinam, Taiwan, Thailand
2010	9	Costa Rica, Demark, Germany, Ireland, Indonesia, Netherlands, Switzerland, United Kingdom, Vietnam
2011	13	Australia, Belgium-Luxembourg, Brazil. Greece, Kenya, Malawi, Nicaragua, Norway, Panama, Uruguay, Ukraine, Turkey, Venezuela
2012	6	Belize, Bulgaria, Egypt, Hong Kong, Jamaica, Russia
2013	6	Austria, El Salvador, Trinidad and Tobago, Sri Lanka, Sweden, Singapore

Note: Author's calculation of the FDA Inspection and Classification Database.

food imports from foreign countries right before and right after the local emergence of the FDA regulatory extraterritoriality such that the interrupted time trend in U.S food imports changes from zero during the pre-intervention period to positive during the post-intervention period. This why this cross-national ITS quasi-experiment is useful for IR scholars to observe reciprocity as a causal mechanism behind the mutually agreed non-random, selective intervention between the FDA and foreign governments. To my knowledge, this is the first cross-national ITS quasi-experiment constructed to study the effect of informal international institution on international trade flows in IR.

After explaining the logic of the research design and justifying the merit of using it to identify the average causal effect of non-random intervention, we are moving to more technical issues of empirical analyses. In the next section, I will more formally introduce main model specification and testable implications of the reciprocity argument. Empirical strategies of defining sample, constructing measurement, and implementing alternative estimation methods are all covered in the next section.

5.2 Model Specification, Measurement and Estimation

The benchmark model specification for this cross-national ITS quasi-experiment is formally expressed as follows: $Y_{it} = \beta_0 + \beta_1 \ \ Duration_t + \beta_2 \ \ Invervention_{it} + \beta_3 \ Postintervention_{it} + \beta_4 \ \ Year_t + \beta_5 \ \ Country_i + \varepsilon_{it}$. In this framework, y_{it} represents the outcome measure for the monetary value of the U.S. food imports from country i in year t in millions of current U.S. dollars. The information is taken form the Department of Agriculture Economic Research Service (USDA ERS). $Duration_t$ is a continuous variable measured by the number of years from the onset of the time-series, 2006, to the end, 2013. $Invervention_{it}$ is a binary intervention indicator, taking the value of one for the local emergence of the FDA's regulatory extraterritoriality as an intervention in country i in year t; zero otherwise. This information is manually coded from the FDA

Inspection Classification Database mentioned above. $Postintervention_{it}$ is a continuous variable with the value of zero in the pre-intervention period and then counts the years since the intervention. $Year_t$ is a binary indicator with the value of one for being for being the tth year in the panel and zero otherwise. By the same token, $Country_i$ takes the value one for an observation being the ith country in the panel and zero otherwise. Finally, ε_{it} is the normally distributed error term for the ith country in year t.

The interpretation of estimated β coefficients is straightforward. First, β_0 is the estimated pre-intervention level of y_{it} for the baseline country omitted from country-fixed effects. Here the baseline country is China. Second, β_1 is the pre-intervention time trend of y_{it} for all countries in the sample throughout the period of observation. Third, β_2 is the change in the level of y_{it} just in the year of the intervention. It can be understood as the "instantaneous" intervention effect in the country-year panel here. Fourth, β_3 is the post-intervention time trend of y_{it}. This is equivalent to the "delayed" intervention effect observable only after the intervention. Finally, the parameter vector of β_4 and that of β_5 respectively represent country-fixed and year-fixed effects in the benchmark model.

Among these β coefficients, β_1, β_2, and β_3 are our quantities of interest. More specifically, according to my theory, I expect that the FDA's intervention in foreign countries should abnormally "interrupt" the pre-intervention time trend with a significantly different post-intervention time trend ($\beta_1 \neq \beta_3$). It is such an "interruption," which abnormally changes the time trend of American food imports for domestic consumption before and after the intervention, that allows us to attribute the observed change in the time trend to the intervention, or say, the local emergence of the FDA's regulatory extraterritoriality in a global panel. Second, the post-intervention time trend in the U.S. import of agricultural products for domestic consumption should be greater than the intervention time trend ($\beta_3 > \beta_1$); otherwise, the FDA's emerging regulatory extraterritoriality is not providing the hypothesized material benefits for foreign governments

and exporters. Third, I also expect the short-term "instantaneous" intervention effect in the intervention year should not significantly reduce the US import of food products for domestic consumption ($\beta_2 \geq 0$); otherwise, the FDA's offshore enforcement of the U.S. standard is nothing but a new form of short-term trade protectionism. In sum, there are three testable implications of my reciprocity hypothesis using notations just introduced above: H_1:$\beta_1 \neq \beta_3$; H_2: $\beta_3 > \beta_1$; H_3: $\beta_2 \geq 0$.

Like many other quasi-experiments, mine is under the threat of a third confounding variable, denoted as X_{it}, that correlates with y_{it} and $Inverventi on_{it}$. Because the benchmark model has taken country and year fixed effects into account, if there is such an omitted variable X_{it} that confounds the intervention effect in my benchmark model, that confounding variable must be time-varying and above the country level. To address this potential omitted variable bias, I also rerun the benchmark model with an extensive set of time-varying international-level covariates, including European Union (EU) membership, North America Free Trade Agreement (NAFTA) membership, and bilateral preferential trade agreement with the US, to check the robustness of my main results from the benchmark model specification. Another potential threat to my inference is that the the assignment of $Inverventi on_{it}$ is sensitive to the timing of the intervention. To address this concern, I conduct additional sensitivity tests of time trends by manipulating the timing of the intervention, respectively with one-year and two-year lags and leads.

Models mentioned above, both the benchmark and its extensions, are estimated using the ordinary least square (OLS) method. OLS remains the workhorse method for casual inference in social sciences. While it is a legitimate concern that the distribution of y_{it} may violate the linear assumption so that the model fits the data poorly, I address this problem with additional robustness checks using logged y_{it}. For those who are still concerned about the potential mi-specification of my functional form, I further replicate these analyses using non-parametric method of Kernel Regularized Least Squares (KRLS)

Table 5.2. Summary Statistics for Key Variables in the Quasi-experiment

	Mean	Sdev	Min	Max	Obs
Y_{it}	1397277.859	2931789.373	125	22399812	488
$Year_t$	2009.5	2.294	2006	2013	488
$Duration_{it}$	4.5	2.294	1	8	488
$Intervention_{it}$	0.125	0.331	0	1	488
$Postintervention_{it}$	0.766	1.237	0	5	488
EU_{it}	0.244	0.43	0	1	488
$NAFTA_{it}$	0.033	0.178	0	1	488
PTA_{it}	0.262	0.44	0	1	488

for estimation.[5]

The full sample for my quantitative analyses consists of 190 foreign countries from which the U.S. imports agricultural products for domestic consumption. Apparently, only 32 % of them were incorporated in the FDA's offshore food inspection program by 2013. A clean cross-national ITS quasi-experiment should certainly use the balanced sub-sample of the sixty-one countries intervened (C=61) during the eight years of observation (T=8) for inference rather than the full sample. By doing so, we will have roughly equivalent groups of countries before and after the intervention. Table 5.2 provides summary statistics of key variables in a time-series-cross-national panel of 488 observations.

5.3 Results and Robustness Checks

Table 5.3 reports consistent results of four benchmark models with different methods of estimating standard errors. Several inferences can be drawn from these models. First, the estimated pre-intervention time trend is statistically indistinguishable from zero at the significance level of 0.05. That is, $\beta_1 = 0$. This suggests that there is no significant pre-intervention time trend in the monetary value of the U.S. food imports

[5] Hainmuller and Hazlett 2013.

from the 61 countries in the sample. After the local implementation of the FDA offshore food inspection program, however, a significant positive linear time trend emerges among the same set of countries at the estimated rate of nearly 302.8 million dollars per year during the post-intervention period. That is, β_3 = 302.8. This is substantively equivalent to a 9.8 percent annual increase in the U.S. food imports from China for domestic consumption since the FDA inspectors began conducting on-site inspections of Chinese food facilities in 2009. The estimated coefficients of β_1 and β_3 are consistent across four benchmark models regardless of using conventional standard errors in Model (1), clustering standard errors by country or year in Models (2)-(3), and grouping standard errors by both country and year in Model (4). These coefficient estimates provide support for two main testable implications of my reciprocity argument: H_2: $\beta_3 > 0$; and H_1:$\beta_1 \neq \beta_3$. The time trend in American food imports for domestic consumption is indeed interrupted by the mutually agreed informal international institution of the FDA-led regulatory extraterritoriality.

Second, the estimated instantaneous effect of the intervention is statistically indistinguishable from zero. That is, $\beta_2 = 0$ at the significance level of 0.05. This is consistent with another testable implication of my reciprocity argument: H_2: $\beta_2 \geq 0$. Because it is easier for the FDA to abuse its first extraterritorial regulatory oversight in a given foreign country for domestic agricultural trade protectionism, if the FDA does not take advantage of the chance, it will be increasingly unlikely to do so after foreign governments and exporters are more familiar with the U.S. domestic rules and regulations over time through more frequent policy communications under the emerging regulatory extraterritoriality. Thus, the non-negative β_2 coefficients across four benchmark models provide additional support for my reciprocity claim that the FDA was not abusing its extraterritorial authority of overseeing foreign sites of food production so that she can co-opt foreign governments for domestic public health protection and exporters rather

than exploit them for domestic trade protectionism.

Beyond simple OLS estimates of the four benchmark models, I further incorporate three time-varying international-level binary indicators that may confound our estimated quantities of interest. Table 5.4 reports OLS estimates of β coefficients and their corresponding standard errors grouped by both country and year for this quasi-experiment with additional control variables. As expected, estimated β_1, β_2, and β_3 are not only similar to results from the first four benchmark models but also consistent across extensive models with additional controls of EU_{it}, $NAFTA_{it}$, and PTA_{it} in Models (5), (6), (7) and (8). In other words, the intervention-induced interruption of the time trend in the US food imports from a sample of 61 countries is not a byproduct of extant trading networks based on bilateral or major regional preferential trade agreements, through which hard standards could have been supplied as in the issue of human rights or labor rights.[6]

Another legitimate concern is that the interrupted time trend in the outcome of Y_{it} may be sensitive to a specific time-series-cross-national distribution of $Intervention_{it}$. As a result, the interrupted time trend is nothing but a statistical coincidence. To rule out this potential concern about my inference, I conduct a set of placebo and sensitivity tests of time trends. A few comments can be made about results of these robustness checks in Table 5.5.

First, Model (9) drops $Intervention_{it}$ and $Postintervention_{it}$ from the extensive model specification of Model (8) reported above to serve as a placebo test. Under this alternative specification, the estimated β_1 coefficient is 90.87 at the significance level of 0.05. This coefficient estimate captures the secular linear time trend of Y_{it} from 2006 to 2013 *as if* foreign governments and exporters *did not* contract with the FDA to enforce the U.S. domestic food safety standards in their territorial jurisdictions. This estimated positive secular time trend makes intuitive sense for those who are observing the growth

[6]Hanfer-Burton 2005.

Table 5.3. The Benchmark Quasi-experiment, 2006-2013

	(1) Y_{it}	(2) Y_{it}	(3) Y_{it}	(4) Y_{it}
β_0: $Intercept$	3057.0***	3057.0***	3057.0***	3057.0***
	(216.8)	(132.1)	(147.1)	(175.1)
β_1: $Duration_{it}$	-30.68	-30.68	-30.68	-30.68
	(26.59)	(22.63)	(17.30)	(16.42)
β_2: $Intervention_{it}$	113.6	113.6*	113.6	113.6
	(101.9)	(47.42)	(64.55)	(72.44)
β_3: $Postintervention_{it}$	302.8***	302.8*	302.8***	302.8***
	(54.20)	(119.4)	(42.41)	(59.71)
β_4: $Yearfixedeffects$	X	X	X	X
β_5: $Countryfixedeffects$	X	X	X	X
T: # of years	8	8	8	8
C: # of countries	61	61	61	61
N: # of obs.	488	488	488	488
R^2	0.968	0.968	0.968	0.968
Method	OLS	OLS	OLS	OLS

Model (1) reports conventional standard errors in parentheses.

Model (2) reports standard errors clustered by country in parentheses.

Model (3) reports standard errors clustered by year in parentheses.

Model (4) reports standard errors clustered by both country and year in parentheses.

The baseline year category is 2006 and the baseline country category is China.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5.4. The Quasi-experiment with Controls, 2006-2013

	(5) Y_{it}	(6) Y_{it}	(7) Y_{it}	(8) Y_{it}
β_0: $Intercept$	3055.1***	3057.0***	3057.0***	3055.1***
	(176.0)	(175.1)	(175.1)	(176.0)
β_1: $Duration_{it}$	-30.12	-30.68	-30.68	-30.12
	(16.63)	(16.42)	(16.42)	(16.63)
β_2: $Intervention_{it}$	112.9	113.6	113.6	112.9
	(72.46)	(72.44)	(72.44)	(72.46)
β_3: $Postintervention_{it}$	302.1***	302.8***	302.8***	302.1***
	(59.74)	(59.71)	(59.71)	(59.74)
EU_{it}	-119.5			-119.5
	(88.08)			(88.08)
$NAFTA_{it}$		14391.4***		17152.5***
		(925.1)		(906.5)
PTA_{it}			-2760.2***	-2761.1***
			(158.0)	(158.0)
β_4: $Yearfixedeffects$	X	X	X	X
β_5: $Countryfixedeffects$	X	X	X	X
T: # of years	8	8	8	8
C: # of countries	61	61	61	61
N: # of obs.	488	488	488	488
R^2	0.968	0.968	0.968	0.968
Method	OLS	OLS	OLS	OLS

Models (5)-(8) reports standard errors clustered by both country and year in parentheses.
The baseline year category is 2006 and the baseline country category is China.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

of Y_{it} now. But it clearly suffers from one particular omitted variable bias: The emerging FDA-led regulatory extraterritoriality. When we add dropped variables to model the emerging FDA-led regulatory extraterritoriality to rerun the extensive model specification in Model (10), the intervention just interrupts the time trend in Y_{it} from 2006 to 2013, with $\beta_1 = 0 \neq \beta_3 = 302.1 > 0$. In sum, there is no evidence suggesting that the discontinuous change in the time trend of Y_{it} can be subsumed by the secular time trend without taking the emerging intervention into account.

Second, Models (11)-(14) constitute a joint sensitivity test of the altered time trend before and after the intervention. More specifically, Model (11) pushes the timing of intervention with a one-year lag and Model (12) with a one-year lead. Model (13) follows the same logic to manipulate the timing of the intervention with a two-year lag and Model (14) with a two-year lead. By changing the window of intervention from year t to year t $\pm$ 1 and t $\pm$ 2 in the ITS quasi-experiment, we are able to check if the observed interruption in the time trend of Y_{it} in previous models is sensitive to the timing of the intervention.

Results of these sensitivity tests give additional support to my argument of reciprocity. Through Model (11) to (14), the β_3 coefficients are consistently positive despite the changing magnitudes. More importantly, I find no evidence in support of the null hypothesis that postintervention time trends estimated by β_3 coefficients are equivalent to preintervention time trends estimated by β_1 coefficients. In fact, the β_1 coefficients are consistently indistinguishable from zero in Models (11), (13) and (14). In the exceptional case of Model (12), where the intervention is manipulated with one year lead, the estimated β_1 coefficient is even -36.4 at the significance level of 0.05. Under this circumstance, the discovered positive postintervention time trend of Y_{it} cannot just be an extrapolation of the negative pre-intervention time trend. The interrupted time trend of American food imports from the 61 countries is thus not sensitive to when

the FDA regulatory extraterritoriality is locally introduced in foreign countries. These additional results support two testable implications of my reciprocity argument in the quasi-experiment: H_1:$\beta_1 \neq \beta_3$; H_2: $\beta_3 > 0$.

It is also interesting to note that coefficient estimates for another quantity of interest, β_2, are consistently non-negative across different models of sensitivity tests, from Model (11) to (14). This lends support for the third testable implication of the reciprocity argument. H_3: $\beta_2 \geq 0$.

The final concern about results I have shown so far is that the linear function form of the time trend may be specified incorrect. To deal with the estimation problem, I rerun two models using alternative estimation methods. Model (15) uses the log transformation of Y_{it} instead of the absolute value of Y_{it} as my outcome variable. This can make the model using OLS method better fit the data. Results from this alternative estimation strategy are consistent with earlier findings while coefficient estimates are difficult to be interpreted directly. Again, there is no clear pre-intervention time trend while post-intervention time trend turns positive at the significance level of 0.05.

To prevent the mis-specification of my functional form, I also employ the machine-learning-based, non-parametric Kernel Regularized Least Square (KRLS) method to re-estimate Model (10) without making the assumption of the linear time trend to fit the data. Results of this second alternative estimation strategy are reported in Model (16). I find no fatal inconsistency between KRLS estimates and earlier OLS estimates of β coefficients of our interest. Specifically, the KRLS estimate of β_1 is -17.89, β_2 75.4 and β_3 is 251.7, all significant at the 0.05 level. These KRLS coefficient estimates are consistent with our OLS estimates, pointing to a robust intervention effect of American food imports from foreign governments and exporters on the time trend after the emergence of the FDA-led regulatory extraterritoriality.

Figure 5.2 graphically displays the estimated effects of the emerging FDA-led

Table 5.5. Placebo and Sensitivity Tests of Linear Time Trends, 2006-2013

	(9) Y_{it}	(10) Y_{it}	(11) Y_{it}	(12) Y_{it}	(13) Y_{it}	(14) Y_{it}	(15) $Log\ Y_{it}$	(16) Y_{it}
Timing of Intervention	t	t	t-1	t+1	t-2	t+2	t	t
β_0: $Intercept$	3077.0***	3055.1***	3292.7***	2964.7***	3519.0***	2838.6***	7.89***	-
	(215.1)	(176.0)	(151.7)	(171.7)	(161.9)	(151.2)	(0.05)	-
β_1: $Duration_{it}$	90.87***	-30.12	-14.17	-36.40*	-11.23	-24.82	-0.01	-17.89***
	(21.67)	(16.63)	(15.35)	(17.05)	(15.16)	(17.10)	(0.02)	(3.51)
β_2: $Intervention_{it}$		112.9	132.1*	211.9***	241.5***	127.4*	0.06	75.4***
		(72.46)	(64.48)	(62.40)	(65.49)	(62.00)	(0.05)	(26.93)
β_3: $Postintervention_{it}$		302.1***	323.2***	289.2***	384.6***	219.3***	0.14***	251.7***
		(59.74)	(72.43)	(58.13)	(100.1)	(55.46)	(0.03)	(6.48)
EU_{it}	X	X	X	X	X	X	X	X
$NAFTA_{it}$	X	X	X	X	X	X	X	X
PTA_{it}	X	X	X	X	X	X	X	X
β_4: $Yearfixedeffects$	X	X	X	X	X	X	X	X
β_5: $Countryfixedeffects$	X	X	X	X	X	X	X	X
T: # of years	8	8	8	8	8	8	8	8
C: # of countries	61	61	61	61	61	61	61	61
N: # of obs.	488	488	427	427	366	366	488	488
R^2	0.965	0.968	0.973	0.973	0.977	0.980	0.983	0.997
Method	OLS	OLS	OLS	OLS	OLS	OLS	OLS	KRLS

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The baseline year category is 2006 and the baseline country category is China.

Models (9)-(15) reports standard errors clustered by both country and year in parentheses.

Models (11)-(14) show that main results of Model (10) hold by lagging or forwarding the timing of intervention.

Models (15)-(16) show that main results of Model (10) are not vulnerable to potential mi-specification of the linear function form.

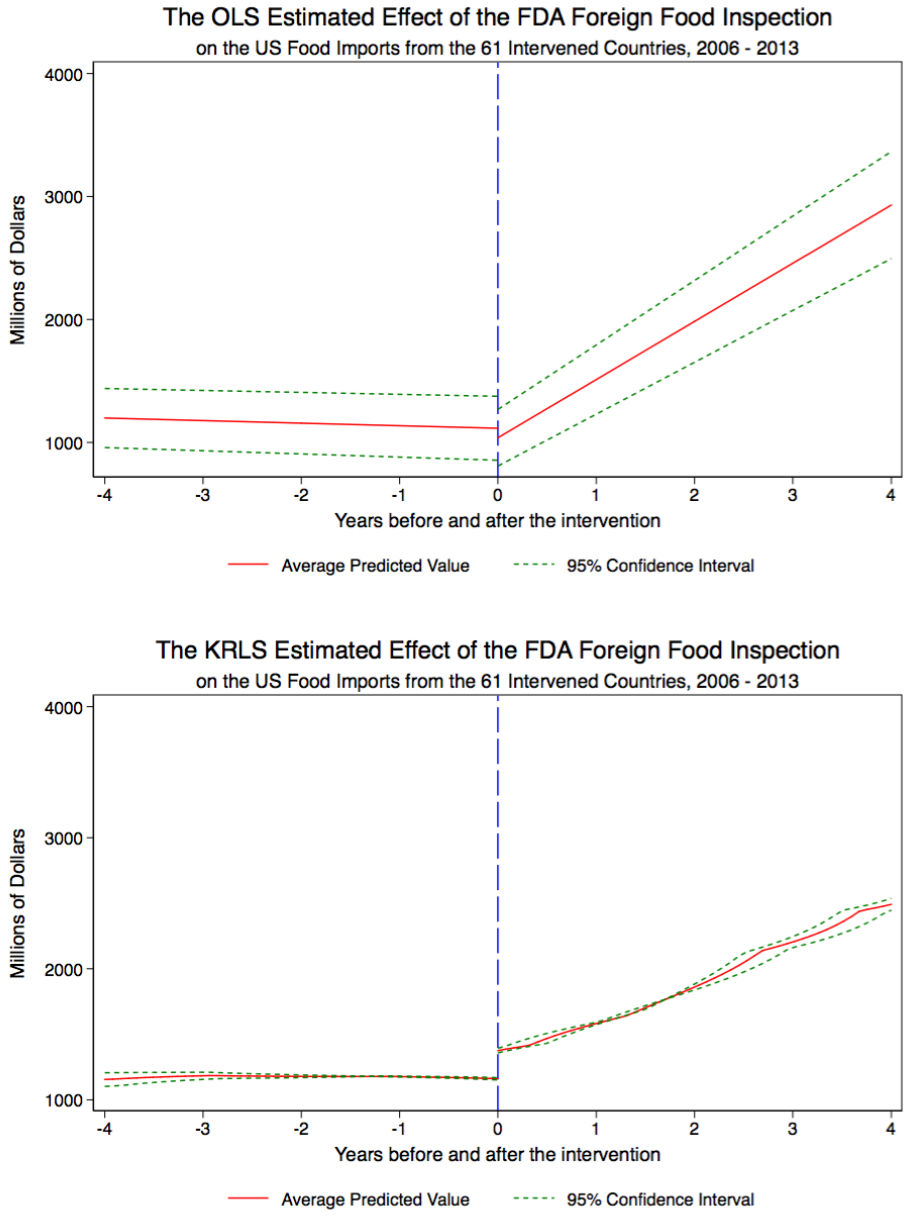

Figure 5.2. Estimated Effects of the FDA-led Regulatory Extraterritoriality on American Food Imports, 2006-2013.

Note: The upper figure plots OLS estimates of β coefficients and standard errors clustered by country and year from Model (10). The lower figure graphically displays KRLS estimates of β coefficients and standard errors from Model (16).
Source: USDA ERS and FDA.

regulatory extraterritoriality on American food imports. More specifically, the upper one takes OLS estimates of β coefficients and clustered standard errors from Model (10) to plot the interrupted time trend; and the interrupted time trend in the lower one is constructed based upon KRLS estimates taken from Model (16). In both the upper and lower graphs of Figure 5.2, the vertical axis represents Y_{it}, or the monetary value of American food imports measured in millions of dollars; and the horizontal axis represents the window of the intervention measured by the number of years before and after the intervention. Because there are eight years of observation in total, I take one half of the whole period – that is, four years– to plot the time trend interrupted before and after the intervention year. The time trends are so clearly altered to move upward after the year of introducing the intervention regardless of the functional form used to fit the data.

In sum, the extraterritorial governance of food safety, as hypothesized, reciprocally promotes American food imports form foreign countries, thus benefiting foreign producers. By backward deduction to infer preferences,[7] this should give foreign government government regulators reasonable material incentives to enter this new mode of global regulation in world politics.

5.4 Discussion

Why do foreign government regulators approve the emerging US-led extraterritoriality? I have shown that there are reciprocal material returns to foreign governments and firms after the actual implementation of the US foreign food inspection take place locally. Reciprocity thus allows the FDA to put together a global coalition of foreign government regulators and foreign producers to enhance consumer welfare in a global economy through extraterritorial governance of food safety.

Reciprocity as a causal mechanism behind the formation of the FDA-led ex-

[7] Lake and Powell 1999; Frieden 1999.

traterritoriality has broader implications for theories of international institutions and cooperation in IR. First, neither the supply-side hegemonic stability theory[8]; nor the demand-side voluntary cooperation[9] is sufficient to explain the formation of international institutions, especially informal ones in world politics. As many critics of hegemonic stability theory and functionalist theory of international regimes have pointed out, international institutions that regulate functional issues do not necessarily rest on one single hegemonic supplier.[10] Moreover, while a small group of powerful states may use coercion to resolve distributional conflicts in the process of creating international institutions to move towards the Pareto frontier,[11] being coercive is not necessary for powerful states to create international institutions as global public goods.[12] Governments with heterogeneous preferences can in fact specialize in differentiated tasks necessary for some mutually agreed international orders in a particular issue area.[13] International policy coordination can therefore arise with no need of costly domestic institutional adjustments for internationalization as often presumed in the literature.[14] The case of the FDA-led extraterritorial governance provides a new model of international institution that falls along emerging research program on informal influence in world politics through positive inducements.[15] My argument fits this important literature on the origins of international institutions.

Second, while research on reciprocity in IR has accumulated rich micro-level evidence from laboratories, there is little macro-level evidence from world politics. Specifically, the effectiveness of reciprocity in generating cooperative behaviors given

[8] Kindleberger 1981.
[9] Keohane 1984.
[10] Snidal 1985.
[11] Krasner 1991; Simmons 2000; Drzeners 2007.
[12] Lake 1993.
[13] Broz 1997.
[14] e.g. Mattli and Buthe 2003.
[15] Schneider and Urpelainen 2013.

different payoff structures has been demonstrated by computational simulations using agent-based model.[16] With the proliferation of survey and lab experiments, political scientists also start testing implications of issue-specific reciprocity, such as public support for climate change cooperation and distributive bargains in diplomacy.[17] This has not even taken into account a number of micro-level works in behavioral experimental economics, where people are shown to behave reciprocally in trust or gift exchange games beyond theoretical predictions rooted in material self-interest.[18] With no doubt, there is a visible, unresolved disagreement over whether the micro-foundation of reciprocity in social interactions is interest-based or norm-based in this research program. Yet, little effort has been put into observing reciprocity as patterned practices and subsequent consequences in the macro-level international politics. This chapter tests an interest-based explanation for the emergence of regulatory extraterritoriality as an informal international institution through observing reciprocity. Its findings point to the need of examining macro-level implications of the increasingly popular alternative micro-foundations for reciprocity in IR.

[16] Axelrod 1984; Jung and Lake 2011.
[17] Scheve and Bechtel 2013; Kertzer and Rathbun 2015.
[18] Fehr and Gachter 2000.

Chapter 6

Conclusion: Beyond Food Safety

This dissertation has developed a revised OEP approach to answer the three questions raised in the introductory chapter. It argues that the US-led extraterritoriality arose as an alternate model of global regulation in this issue area of food safety because of three reasons. First, food safety is a policy area in which government regulators persistently intervene because it has distributional impacts on private producers and consumers. Second, the US is a politically pro-consumer government regulator that can credibly assure consumers of food safety in international trade. Third, as a politically pro-consumer government regulator, the US can credibly provide material benefits to pro-producer government regulators in exchange for their acceptance of its inspectors beyond borders. I have provided qualitative evidence from history, experimental evidence from coordinated public opinion surveys, and quasi-experimental evidence from a cross-national-time-series panel to support these claims about this extraterritorial governance of food safety.

My argument can be broadly applied to global governance of other kinds of credence good beyond food, such as pharmaceuticals and other health-related products. In fact, the FDA inspectors have been overseeing the supply of drug ingredients globally. Thus, the theoretical insight developed in this dissertation is not just about food safety.

My argument also sheds lights on territoriality in world politics. IR scholars often

portray territorial integrity as a norm that promotes cooperation and reduces conflict between states. That is, it can constrain sovereign uses of military forces,[1] tie a political community together as a "bounded community" for collective defense at borders,[2] and assure private actors to engage in cross-border trade.[3] Contrary to this conventional wisdom, my argument suggests that sovereign states can reduce conflict and promote cooperation on food safety in a global economy by the violation of territorial integrity to manage a borderless world. This reaffirms the insight that sovereignty as "organized hypocrisy."[4]

Finally, my argument is broadly in line with the recent research on globalization and governance. Some political scientists have been theorizing and showing when private actors, such as NGOs, may not be able to govern the globe despite their virtues.[5] Others have noticed that extraterritoriality has been increasingly used by the US in other policy issues.[6] And still others have warned that there may be regime shift or competitive regime creation when multilateral organizations produce contested governance outcomes.[7] Food safety is such an issue area that private actors cannot govern on their own, multilingualism has been contested and extraterritorial governance is emerging. My argument ties these research frontiers together.

It is important to note that this emerging extraterritorial governance of food safety can be transitional. As a global climb to the top in food safety goes on, there will be more pro-consumer and less heterogeneous government regulators in a world. By the time, there will be no reason to have such an anomalous regime of extraterritorial governance. There is some anecdotal evidence in support of this speculation. That is,

[1]Zacher 2001.
[2]Goemans 2006.
[3]Simmons and Elkins 2006.
[4]Krasner 1999.
[5]Gourveitch and Lake, 2012.
[6]Putnam 2009; Kaczmareka and Newman 2011
[7]Morse and Keohane 2014.

the FDA has been slowly reviewing the comparability of a foreign country's domestic food safety regulatory system to determine whether the mutual-recognition status will be given. In 2012, New Zealand was the first country whose domestic food safety regulatory system recognized as comparable to the US by the FDA. It took another four years for the FDA to recognize Canada as Having a comparable food safety system to the US in 2016. Currently, the FDA is still reviewing the mutual-recognition status for Australia and the European Commission. Perhaps not surprisingly, non-democratic countries with very different political institutions from the US are not even put on the list for review. And these countries– such as China – will be the main reason why the anomalous extraterritorial governance of food safety may persist.

This also casts a shadow over China's rise as a comprehensive global leader. Despite its expanding outbound foreign direct investment in the rest of the world, leading role in the newly created multilateral Asian Investment and Infrastructure Bank (AIIB), and grand strategy of building "The Silk Road Economic Belt" in Eurasia, China has failed to perform the most basic governance function of a government for its citizens. How much confidence could the the rest of the world have on a China-centered new world order if there was one? Food safety will remain a policy jurisdiction in which China has a long way to go, given its expanding power and influence in the world economy.

Bibliography

Abbott, K. W., Keohane, R. O., Moravcsik, A., Slaughter, A.-M. & Snidal, D. (2000), 'The concept of legalization', *International organization* **54**(03), 401–419.

Abbott, K. W. & Snidal, D. (1998), 'Why states act through formal international organizations', *Journal of conflict resolution* **42**(1), 3–32.

Abbott, K. W. & Snidal, D. (2009), 'The governance triangle: regulatory standards institutions and the shadow of the state', *The politics of global regulation* **44**.

Akerlof, G. (1970), 'The market for lemons: Quality uncertainty and the market mechanism', *Quarterly Journal of Economics* **84**(3), 488–500.

Akerlof, G. A. & Shiller, R. J. (2015), *Phishing for phools: The economics of manipulation and deception*, Princeton University Press.

Alter, K. J. (1998), 'Who are the sters of the treaty European governments and the european court of justice', *International Organization* **52**(01), 121–147.

Alter, K. J. & Meunier, S. (2009), 'The politics of international regime complexity', *Perspectives on politics* **7**(01), 13–24.

Angrist, J. D. & Pischke, J.-S. (2008), *Mostly harmless econometrics: An empiricist's companion*, Princeton university press.

Avant, D. D., Finnemore, M. & Sell, S. K. (2010), *Who governs the globe?*, Vol. 114, Cambridge University Press.

Axelrod, R. & Keohane, R. O. (1985), 'Achieving cooperation under anarchy: Strategies and institutions', *World politics* **38**(1), 226–254.

Bechtel, M. M. & Scheve, K. F. (2013), 'Mass support for global climate agreements depends on institutional design', *Proceedings of the National Academy of Sciences* **110**(34), 13763–13768.

Bhalla, V., Grimm, P. C., Chertow, G. M. & Pao, A. C. (2009), 'Melamine nephrotoxicity: an emerging epidemic in an era of globalization', *Kidney international* **75**(8), 774–779.

Broz, J. L. (1997), *The international origins of the Federal Reserve System*, Cornell University Press.

Büthe, T. (2008), 'The globalization of health and safety standards: Delegation of regulatory authority in the sps agreement of the 1994 agreement establishing the world trade organization', *Law and Contemporary Problems* **71**(1), 219–255.

Büthe, T. & Mattli, W. (2011), *The New Global Rulers: The Privatization of Regulation in the World Economy*, Princeton University Press.

Carpenter, D. (2014), *Reputation and power: organizational image and pharmaceutical regulation at the FDA*, Princeton University Press.

Carpenter, D. & Moss, D. A. (2013), *Preventing regulatory capture: Special interest influence and how to limit it*, Cambridge University Press.

Carpenter, D. P. (2001), *The forging of bureaucratic autonomy: Reputations, networks, and policy innovation in executive agencies, 1862-1928*, Princeton University Press.

Chang, E. C., Kayser, M. A., Linzer, D. A. & Rogowski, R. (2010), *Electoral systems and the balance of Consumer-producer power*, Cambridge University Press.

Chang, E. C., Kayser, M. A. & Rogowski, R. (2008), 'Electoral systems and real prices: Panel evidence for the oecd countries, 1970-2000', *British Journal of Political Science* **38**(4), 739–751.

Chayes, A. & Chayes, A. H. (1993), 'On compliance', *International organization* **47**(02), 175–205.

Collinge, J., Sidle, K. C., Meads, J., Ironside, J. & Hill, A. F. (1996), 'Molecular analysis of prion strain variation and the aetiology of 'new variant' cjd', **383**, 685–690.

Cook, T. D., Campbell, D. T. & Day, A. (1979), *Quasi-experimentation: Design & analysis issues for field settings*, Vol. 351, Houghton Mifflin Boston.

Cooley, A. & Spruyt, H. (2009), *Contracting states: Sovereign transfers in international relations*, Princeton University Press.

Cox, G. W. (1999), 'The empirical content of rational choice theory a reply to green and

shapiro', *Journal of Theoretical Politics* **11**(2), 147–169.

Dai, X. (2005), 'Why comply? the domestic constituency mechanism', *International Organization* **59**(2), 363–398.

Darby, M. R. & Karni, E. (1973), 'Free competition and the optimal amount of fraud', *The journal of law & economics* **16**(1), 67–88.

Davis, C. L. (2003), *Food fights over free trade: How international institutions promote agricultural trade liberalization*, Princeton University Press.

Davis, C. L. (2004), 'International institutions and issue linkage: Building support for agricultural trade liberalization', *American Political Science Review* **98**(01), 153–169.

Davis, C. L. & Bermeo, S. B. (2009), 'Who files? developing country participation in gatt/wto adjudication', *The Journal of Politics* **71**(03), 1033–1049.

De Voe, T. F. (1862), *Market Book*, Printed for the Author.

De Voe, T. F. (1867), *Market Assistant*, Hurd & Houghton.

Downs, G. W., Rocke, D. M. & Barsoom, P. N. (1996), 'Is the good news about compliance good news about cooperation?', *International Organization* **50**(03), 379–406.

Drezner, D. (2007), *All Politics is Global : Explaining International Regulatory Regimes*, Princeton University Press.

Dunning, T. (2012), *Natural experiments in the social sciences: A design-based approach*, Cambridge University Press.

Eberlein, B. & Newman, A. L. (2008), 'Escaping the international governance dilemma? incorporated transgovernmental networks in the european union', *Governance* **21**(1), 25–52.

Edwards, S. (1999), 'How effective are capital controls?', *Journal of Economic Perspectives* **13**(4), 65–84.

Emilie, M. & Hafner-Burton, M. K. (2009), 'Network analysis for international relations', *International Organization* **63**(3), 559–92.

Endres, A. B. & Johnson, N. R. (2011), 'Integrating stakeholder roles in food production, marketing, and safety systems: An evolving multi-jurisdictional approach', *J.*

Environmental Law and Litigation **26**, 29.

Farrell, H. & Newman, A. L. (2010), 'Making global markets: Historical institutionalism in international political economy', *Review of International Political Economy* **17**(4), 609–638.

Farrell, H. & Newman, A. L. (2014), 'Domestic institutions beyond the nation-state: Charting the new interdependence approach', *World Politics* **66**(2), 331–363.

Fearon, J. D. (1994), 'Domestic political audiences and the escalation of international disputes.', *American Political Science Review* **88**(03), 577–592.

Fearon, J. D. (1995), 'Rationalist explanations for war', *International organization* **49**(03), 379–414.

Fearon, J. D. (1998), 'Bargaining, enforcement, and international cooperation', *International organization* **52**(02), 269–305.

Fehr, E. & Gächter, S. (2000), 'Fairness and retaliation: The economics of reciprocity', *The journal of economic perspectives* **14**(3), 159–181.

Frieden, J. A. (2014), *Currency politics: The political economy of exchange rate policy*, Princeton University Press.

GAO (1998*a*), 'Federal efforts to ensure the safety of imported foods are inconsistent and unreliable'.
URL: *http://www.gao.gov/assets/160/156166.pdf*

GAO (1998*b*), *Food and Drug Administration: Improvements Needed in the Foreign Drug Inspection Program*.

GAO, U. (2009), 'Seafood fraud: Fda program changes and better collaboration among key federal agencies could improve detection and prevention'.

Goemans, H. (2006), Bounded communities: territoriality, territorial attachment, and conflict, *in* M. Kahler & B. Walter, eds, 'Territoriality and Conflict in an Era of Globalization', Cambridge University Press Cambridge,, UK, pp. 25–61.

Goldstein, J., Kahler, M., Keohane, R. O. & Slaughter, A.-M. (2000*a*), 'Introduction: Legalization and world politics', *International organization* **54**(03), 385–399.

Goldstein, J., Kahler, M., Keohane, R. O. & Slaughter, A.-M. (2000*b*), 'Introduction:

Legalization and world politics', *International organization* **54**(03), 385–399.

Goodman, J. B. & Pauly, L. W. (1993), 'The obsolescence of capital controls?: economic management in an age of global markets', *World Politics* **46**(01), 50–82.

Gossner, C. M.-E., Schlundt, J., Embarek, P. B., Hird, S., Lo-Fo-Wong, D., Beltran, J. J. O., Teoh, K. N. & Tritscher, A. (2009), 'The melamine incident: implications for international food and feed safety', *Environmental health perspectives* pp. 1803–1808.

Gourevitch, P. A., Lake, D. A. & Stein, J. G. (2012), *The credibility of transnational NGOs: When virtue is not enough*, Cambridge University Press.

Grant, R. W. & Keohane, R. O. (2005), 'Accountability and abuses of power in world politics', *American Political Science Review* **99**(1), 29–43.

Greif, A. (1989), 'Reputation and coalitions in medieval trade: evidence on the maghribi traders', *The Journal of Economic Historyconomic history* **49**(04), 857–882.

Greif, A. (1993), 'Contract enforceability and economic institutions in early trade: The maghribi traders' coalition', *The American economic review* pp. 525–548.

Grizzle, J. E. (1965), 'The two-period change-over design and its use in clinical trials', *Biometrics* pp. 467–480.

Hafner-Burton, E. M. (2005), 'Trading human rights: How preferential trade agreements influence government repression', *International Organization* **59**(3), 593–629.

Haggard, S. (1990), *Pathways from the Periphery: The Politics of Growth in the Newly Industrializing Countries*, Cornell University Press.

Haggard, S. & Kaufman, R. R. (2008), *Development, Democracy, and Welfare States: Latin America, East Asia, and Eastern Europe*, Princeton University Press.

Haggard, S. & Simmons, B. A. (1987), 'Theories of international regimes', *International Organization* **41**(3), 491–517.

Hawkins, D. G., Lake, D. A., Nielson, D. L. & Tierney, M. J. (2006), *Delegation and agency in international organizations*, Cambridge University Press.

Hill, A. F., Desbruslais, M., Joiner, S., Sidle, K. C., Gowland, I., Collinge, J., Doey, L. J. & Lantos, P. (1997), 'The same prion strain causes vcjd and bse', *Nature* **389**(6650), 448–450.

Hooghe, L. & Marks, G. (2003), 'Unraveling the contral state, but how? types of multi-level governance', *American Political Science Review* **97**(2), 233–243.

Hurd, I. (1999), 'Legitimacy and authority in international politics', *International Organization* **53**(2), 379–408.

Hutt, P. B. (1984), 'History of government regulation of adulteration and misbranding of food, a', *Food Drug Cosm. LJ* **39**, 2.

Hutt, P. B. (2008), 'The state of science at the food and drug administration', *Administrative Law Review* pp. 431–486.

Hutt, Peter B., M. R. A. & Grossman, L. A. (2014), *Food and drug law: cases and materials*, Foundation Press.

Hyde, S. D. (2007), 'The observer effect in international politics: Evidence from a natural experiment', *World Politics* **60**(01), 37–63.

Hyde, S. D. (2011), *The Pseudo-Democrat's Dilemma: Why Election Monitoring Became an International Norm*, Cornell University Press.

Ikenberry, G. J. (2008), 'The rise of china and the future of the west: can the liberal system survive?', *Foreign affairs* pp. 23–37.

Imai, K., Keele, L., Tingley, D. & Yamamoto, T. (2011), 'Unpacking the black box of causality: Learning about causal mechanisms from experimental and observational studies', *American Political Science Review* **105**(4), 765–789.

IOM (2006), *Addressing Foodborne Threats to Health: Policies, Practices, and Global Coordination: Workshop Summary.*, National Academies Press.
URL: *http://www.ncbi.nlm.nih.gov/books/NBK57080/*

Josling, T. E., Roberts, D., Orden, D. et al. (2004), 'Food regulation and trade: toward a safe and open global system', *Peterson Institute Press: All Books* .

Jung, D. F. & Lake, D. A. (2011), 'Markets, hierarchies, and networks: An agent-based organizational ecology', *American Journal of Political Science* **55**(4), 972–990.

Kaczmarek, S. C. & Newman, A. L. (2011), 'The long arm of the law: Extraterritoriality and the national implementation of foreign bribery legislation', *International Organization* **65**(04), 745–770.

Kahler, M. (2000), 'Legalization as strategy: the asia-pacific case', *International Organization* **54**(3), 549–571.

Kahler, M. & Walter, B. F. (2006), *Territoriality and Conflict in an Era of Globalization*, Cambridge Univ Press.

Katzenstein, P. J., Keohane, R. O. & Krasner, S. D. (1998), 'International organization and the study of world politics', *International organization* pp. 645–685.

Keck, M. E. & Sikkink, K. (2014), *Activists beyond borders: Advocacy networks in international politics*, Cornell University Press.

Keek, M. E. & Sikkink, K. (1998), *Activists Beyond Borders: Advocacy Networks in International Relations*, Ithaca, NY: Cornell University Press.

Keohane, R. O. (1984), *After Hegemony: Cooperation and Discord in the World Political Economy*, Princeton University Press.

Keohane, R. O. (1986*a*), *Neorealism and its Critics*, Columbia University Press.

Keohane, R. O. (1986*b*), 'Reciprocity in international relations', *International Organization* **40**(01), 1–27.

Keohane, R. O. (2001), 'Governance in a partially globallized world', *American Political Science Review* **95**(1), 1–13.

Kertzer, J. D., Powers, K. E., Rathbun, B. C. & Iyer, R. (2014), 'Moral support: How moral values shape foreign policy attitudes', *The Journal of Politics* **76**(03), 825–840.

Kim, M. (2012), 'Disguised protectionism and linkages to the gatt/wto', *World Politics* **64**(03), 426–475.

Kim, M. (2015), 'Enduring trade disputes: Disguised protectionism and duration and recurrence of international trade disputes', *The Review of International Organizations* pp. 1–28.

Kindleberger, C. P. (1981), 'Dominance and leadership in the international economy', *International studies quarterly* **25**(2), 242–254.

King, G., Keohane, R. O. & Verba, S. (1994), *Designing Social Inquiry: Scientific Inference in Qualitative Research*, Princeton University Press.

Kono, D. Y. (2006), 'Optimal obfuscation: Democracy and trade policy transparency', *American Political Science Review* **100**(03), 369–384.

Koremenos, B. (2005), 'Contracting around international uncertainty', *American Political Science Review* **99**(04), 549–565.

Koremenos, B., Lipson, C. & Snidal, D. (2001), 'The rational design of international institutions', *International organization* **55**(04), 761–799.

Krasner, S. D. (1982), 'Structural causes and regime consequences: regimes as intervening variables', *International organization* **36**(02), 185–205.

Krasner, S. D. (1983), *International regimes*, Cornell University Press.

Krasner, S. D. (1995), 'Compromising westphalia', *International security* **20**(3), 115–151.

Krasner, S. D. (1999), *Sovereignty: organized hypocrisy*, Princeton University Press.

Krugman, P. (2007), 'Fear of eating', *New York Times* **2**.
URL: *http://www.nytimes.com/2007/05/21/opinion/21krugman.html?*$_r = 0$

Lake, D. A. (1996), 'Anarchy, hierarchy, and the variety of international relations', *International Organization* **50**(1), 1–33.

Lake, D. A. (2003), 'The new sovereignty in international relations', *International studies review* **5**(3), 303–323.

Lake, D. A. (2009), *Hierarchy in international relations*, Cornell University Press.

Lake, D. A. & Baum, M. A. (2001), 'The invisible hand of democracy political control and the provision of public services', *Comparative political studies* **34**(6), 587–621.

Lake, D. A. & McCubbins, M. D. (2006), 'The logic of delegation to international organizations', *Delegation and agency in international organizations* pp. 341–68.

Law, M. T. (2003), 'The origins of state pure food regulation', *The Journal of Economic History* **63**(04), 1103–1130.

Law, M. T. (2006), 'How do regulators regulate? enforcement of the pure food and drugs act, 1907–38', *Journal of Law, Economics, and Organization* **22**(2), 459–489.

Law, M. T. & Libecap, G. D. (2004), The determinants of progressive era reform: The pure food and drugs act of 1906, Technical report, National Bureau of Economic Research.

Linzer, D. A. & Rogowski, R. L. (2008), 'Lower prices: The impact of majoritarian systems in democracies around the world', *The Journal of Politics* **70**(01), 17–27.

Mansfield, E. D., Pevehouse, J. C. & Bearce, D. H. (1999), 'Preferential trading arrangements and military disputes', *Security Studies* **9**(1-2), 92–118.

Martin, L. L. & Simmons, B. A. (1998), 'Theories and empirical studies of international institutions', *International Organization* **52**(4), 729–757.

Mattli, W. & Büthe, T. (2003), 'Setting international standards: Technological rationality or primacy of power', *World Politics* **56**(1), 1–42.

McNamara, K. R. (2009), 'Of intellectual monocultures and the study of ipe', *Review of International Political Economy* **16**(1), 72–84.

Mearsheimer, J. J. (1994), 'The false promise of international institutions', *International security* **19**(3), 5–49.

Merrill, R. A. (1997), 'Food safety regulation: Reforming the delaney clause', *Annual Review of Public Health* **18**, 313–340.

Merrill, R. A. & Francer, J. K. (2000), 'Organizing federal food safety regulation', *Seton Hall Law Review* **31**, 61–173.

Moravcsik, A. (1997), 'Taking preferences seriously: A liberal theory of international politics', *International organization* **51**(04), 513–553.

Morse, J. C. & Keohane, R. O. (2014), 'Contested multilateralism', *The Review of international organizations* **9**(4), 385–412.

Mosley, L. (2010), 'Regulating globally, implementing locally: The financial codes and standards effort', *Review of International Political Economy* **17**(4), 724–761.

Newman, A. L. (2008), 'Building transnational civil liberties: Transgovernmental entrepreneurs and the european data privacy directive', *International Organization* **62**(01), 103–130.

Oatley, T. (2011), 'The reductionist gamble: Open economy politics in the global econ-

omy', *International Organization* **65**(02), 311–341.

Olson, M. (2009), *The logic of collective action*, Vol. 124, Harvard University Press.

Powell, R. (1999), *Strategic choice and international relations*, Princeton University Press.

Putnam, T. L. (2009), 'Courts without borders: domestic sources of us extraterritoriality in the regulatory sphere', *International Organization* **63**(03), 459–490.

Raustiala, K. (1997), 'Domestic institutions and international regulatory cooperation: comparative responses to the convention on biological diversity', *World Politics* **49**(04), 482–509.

Raustiala, K. (2009), *Does the constitution follow the flag?: the evolution of territoriality in American law*, Oxford University Press.

Raustiala, K. & Victor, D. G. (2004), 'The regime complex for plant genetic resources', *International organization* **58**(02), 277–309.

Rickard, S. J. (2012), 'A non-tariff protectionist bias in majoritarian politics: Government subsidies and electoral institutions1', *International Studies Quarterly* **56**(4), 777–785.

Rogowski, R. (1999), 'Institutions as constraints on strategic choice', *Strategic Choice and International Relations* pp. 115–136.

Rogowski, R. & Kayser, M. A. (2002), 'Majoritarian electoral systems and consumer power: price-level evidence from the oecd countries', *American Journal of Political Science* pp. 526–539.

Ruggie, J. G. (1993), 'Territoriality and beyond: problematizing modernity in international relations', *International organization* **47**(01), 139–174.

Schneider, C. J. & Urpelainen, J. (2013), 'Distributional conflict between powerful states and international treaty ratification1', *International Studies Quarterly* **57**(1), 13–27.

Simmons, B. A. (2001), 'The international politics of harmonization: The case of capital market regulation', *International Organization* **55**(3), 589–620.

Simmons, B. A. (2006), Trade and territorial conflict in latin america: International borders as institutions, *in* M. Kahler & B. Walter, eds, 'Territoriality and Conflict in an Era of Globalization', Cambridge University Press.

Simmons, B. A. & Elkins, Z. (2004), 'The globalization of liberalization: Policy diffusion in the international political economy', *American Political Science Review* **98**(1), 171–189.

Simmons, B. A. & Hopkins, D. J. (2005), 'The constraining power of international treaties: Theory and methods', *American Political Science Review* **99**(04), 623–631.

Slantchev, B. L. (2003), 'The power to hurt: Costly conflict with completely informed states', *American Political Science Review* **97**(01), 123–133.

Smith, S. A. (2015), *Intimate rivals: Japanese domestic politics and a rising China*, Columbia University Press.

Snidal, D. (1985*a*), 'Coordination versus prisoners' dilemma: Implications for international cooperation and regimes', *American Political Science Review* **79**(04), 923–942.

Snidal, D. (1985*b*), 'The limits of hegemonic stability theory', *International organization* **39**(04), 579–614.

Snidal, D. (1991), 'Relative gains and the pattern of international cooperation.', *American Political Science Review* **85**(03), 701–726.

Spruyt, H. (1996), *The sovereign state and its competitors: an analysis of systems change*, Princeton University Press.

Strange, S. (1996), *The retreat of the state: The diffusion of power in the world economy*, Cambridge university press.

Tomz, M. (2007), *Reputation and international cooperation: sovereign debt across three centuries*, Princeton University Press.

Trochim, W. & Donnelly, J. (2008), 'The research methods knowledge base . ohio: Thomson'.

Urpelainen, J. (2010), 'Regulation under economic globalization', *International Studies Quarterly* **54**(4), 1099–1121.

Vabulas, F. & Snidal, D. (2013), 'Organization without delegation: Informal intergovernmental organizations (iigos) and the spectrum of intergovernmental arrangements', *The Review of International Organizations* **8**(2), 193–220.

Victor, D. G. (2002), 'Wto efforts to manage differences in national sanitary and phytosan-

itary policies', *Dynamics of regulatory change: How globalization affects national regulatory policies* .

Vogel, D. (1995), *Trading up: Consumer and environmental regulation in a global economy*, Harvard University Press.

Vogel, D. (2006), *What's the beef?: the contested governance of European food safety*, MIT Press.

Vogel, D. (2008), 'Private global business regulation', *Annu. Rev. Polit. Sci.* **11**, 261–282.

Vogel, D. (2012), *The politics of precaution: regulating health, safety, and environmental risks in Europe and the United States*, Princeton University Press.

von Stein, J. (2005), 'Do treaties constrain or screen? selection bias and treaty compliance', *American Political Science Review* **99**(04), 611–622.

Walter, B. F. (2009), *Reputation and civil war: why separatist conflicts are so violent*, Cambridge University Press.

Weinberg, J. (2012), 'Do majoritarian electoral systems favor consumers: Identifying cross-national consumer bias1', *International Studies Quarterly* **56**(4), 820–826.

Wendt, A. (1992), 'Anarchy is what states make of it: the social construction of power politics', *International organization* **46**(02), 391–425.

Wendt, A. (1999), *Social theory of international politics*, Cambridge University Press.

Weymouth, S. (Forthcoming), 'Competition politics: Interest groups, democracy, and antitrust reform in developing countries', *The Antitrust Bulletin* .