

ABSTRACT

Title of Dissertation: USING QUANTITATIVE METHODS TO EXPLORE POLITICAL LEVERAGE, TRADE POLICY, AND FOOD SECURITY: A CASE STUDY OF THE MIDDLE EAST

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Doctor of Philosophy, 2016

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This dissertation explores why some states consistently secure food imports at prices higher than the world market price, thereby exacerbating food insecurity domestically. I challenge the idea that free market economics alone can explain these trade behaviors, and instead argue that states take into account political considerations when engaging in food trade that results in inefficient trade. In particular, states that are dependent on imports of staple food products, like cereals, are wary of the potential strategic value of these goods to exporters. I argue that this consideration, combined with the importing state's ability to mitigate that risk through its own forms of political or economic leverage, will shape the behavior of the importing state and contribute to its potential for food security. In addition to cross-national analyses, I use case studies of the Gulf Cooperation Council states and Jordan to demonstrate how the political tools available to these importers affect their food security. The

results of my analyses suggest that when import dependent states have access to forms of political leverage, they are more likely to trade efficiently, thereby increasing their potential for food security.

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by

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Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2016

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Dedication

For Maman and Baba, whose extraordinary lives inspire me to always reach higher.

And for Roudabeh, my best friend and my true north.

Acknowledgements

This dissertation project could not have been completed without the strong support of numerous individuals, beginning with my dissertation committee.

My dissertation chair and advisor, Dr. Shibley Telhami, played an integral role in shaping my arguments and vision for this project. His thoughtful advice and direction encouraged me to push this research in ways I had not yet considered. In addition, his guidance throughout my entire graduate career, both as his student and his research assistant, exposed me to new concepts and the fascinating world of public opinion polling. I am forever grateful for all of the opportunities Dr. Telhami sent my way, and I could not have asked for a better mentor.

The foundation of this dissertation project came from hours upon hours of meetings with Dr. Joel Simmons. Dr. Simmons gave so much of his valuable time to helping me develop the original research question and plan how I would approach this complicated task. If not for his support, I may very well still be wading through pages and pages of undeveloped dissertation project ideas.

I had the opportunity to work as a teaching assistant for Dr. Virginia Haufler for her course on food security, and my experiences there helped shape my ideas about the topic and exposed me to the questions that still needed to be answered. I am grateful for her detailed notes and suggestions, and I know my work as her TA helped guide me down the path of researching this important issue.

As a novice in the international trade literature, I was thankful for the presence of Dr. Todd Allee on my committee. Dr. Allee was an excellent resource for helping me understand how trade data can answer some of the questions I had about food security, and advised me in the best ways to empirically answer my hypotheses.

Dr. Robert Chambers served as an exceptional Dean's Representative on my committee. He went above and beyond in giving me feedback on my thesis, and I particularly appreciate his insights as an agricultural economist. The final manuscript of this dissertation is stronger because of his guidance.

Outside of the university, I would like to thank The Iran Primer team at the United States Institute of Peace – Robin Wright, Garrett Nada, and Cameron Glenn – for their support as I finished this project. Their willingness to be flexible and allow me to put this commitment first made it much easier to balance it with my work at USIP. Their countless edits of my other work made an impression on my writing here, hopefully resulting in more streamlined prose.

I would also like to thank my friends and family for their unconditional support in this process. In particular, thank you to my sister and colleague, Dr. Roudabeh Kishi, whose guidance, in this and all things, has never led me astray. And last but not least, thank you to my partner and colleague, Dr. Daniel Creed, for going on this journey with me and for never letting me falter.

Table of Contents

Dedication	ii
Acknowledgements	iii
Table of Contents	v
List of Tables	vii
List of Figures	viii
List of Abbreviations	x
Chapter 1: Introduction	1
1.1 Organization of Dissertation Project	8
Chapter 2: Theory, Hypotheses, and Research Design	11
2.1 Agricultural Trade	12
2.1.1 International Food Trade	12
2.1.2 Cereal Trade	15
2.2 Food Power	17
2.2.1 Importer Perceptions of Food Power	19
2.2.2 Counterarguments to the Food Power Thesis	21
2.3 Preferences of Major Exporters	25
2.3.1 Political Preferences	25
2.3.2 Economic Preferences	26
2.3.3 Ranking Preferences	26
2.3.4 Identifying the Major Exporters	27
2.4 Preferences of Import Dependent States	29
2.4.1 Identifying Import Dependent States	29
2.4.2 Private and State Trading Enterprises	30
2.4.3 Risks of Import Dependency	32
2.4.4 Political Preferences	35
2.4.5 Economic Preferences	37
2.4.6 Ranking Preferences	37
2.5 Interactions Between Exporters and Importers	37
2.5.1 The Credible Commitment Problem and the Importer's Options	38
2.5.2 Leverage	41
2.6 Research Design	47
Chapter 3: Quantitative Analysis	49
3.1 Dependent Variable: Price of Cereal Imports	49
3.2 Independent Variables: Political and Economic Leverage	56
3.2.1 Political Linkages	56
3.2.2 Economic Linkages	57
3.2.3 Social Linkages	58
3.2.4 Economic Leverage	59
3.3 Control Variables	60

3.4 Descriptive Statistics.....	62
3.5 Statistical Models.....	65
3.6 Results.....	67
3.6.1 Hypothesis 1.....	68
3.6.2 Hypothesis 2.....	71
3.6.3 Hypothesis 3.....	74
3.6.4 Hypothesis 4.....	77
3.6.5 Hypothesis 5.....	81
3.7 Conclusion	85
 Chapter 4: Political Linkages and Cereal Prices: Jordan	87
4.1 Food Security in the Middle East and North Africa	88
4.1.1 Variation among States	88
4.1.2 The Jordanian Case, 1990-1999.....	93
4.2 Jordan.....	98
4.2.1 Background.....	98
4.2.2 Political Landscape	103
4.2.3 Available Leverage	108
4.2.4 Food Trade.....	129
4.3 Conclusion	143
 Chapter 5: Corruption and Cereal Prices: The GCC States	145
5.1 Corruption and Trade.....	147
5.1.1 Definition of Corruption	147
5.1.2 Effects on Trade.....	149
5.1.3 Corruption in Cereal Trade	150
5.2 Corruption in the GCC States	152
5.3 Corruption and Prices	157
5.3.1 Corruption and Cereal Import Prices	159
5.3.2 Corruption, Import Dependency, and Wealth.....	161
5.3.3 Import Dependency, Wealth, Oil, and Corruption.....	163
5.4 Conclusion	167
 Chapter 6: Conclusions, Policy Recommendations, and Future Research	168
6.1 Overall Findings of Dissertation.....	168
6.2 Food Security Policy and Recommendations	170
6.3 Future Research	172
 Appendices.....	175
Bibliography	179

List of Tables

3.1	Correlations between Cereal Import Price per Ton and Domestic Food Prices, and Domestic Cereal Prices and Food Security Score.....	53
3.2	Average Import Dependency Ratios, All Categories, 1961-2011	63
3.3	Average Price per Ton of Cereal Products, All Categories, 1961-2011	64
3.4	Effects of Resource Rents (% of GDP) on Cereal Import Prices	70
3.5	Effects of Diplomatic Representation on Cereal Import Prices.....	72
3.6	Effects of Bilateral Trade on Cereal Import Prices.....	76
3.7	Effects of Foreign Aid on Cereal Import Prices	80
3.8	Effects of Diaspora Community on Cereal Import Prices	83
5.1	Corruption Perception Scores for GCC States, 2014.....	159
5.2	Inquiries 3A and 3B.....	165

List of Figures

1.1	Cereal Import Prices Among Import Dependent States (difference from average price paid by non-import dependent states), 1980-2010.....	6
2.1	Average Cereal Export Prices of Major Exporters (USA, Russia, Canada, and Australia) versus Non-Major Exporters, 1961-2011	22
2.2	Food Prices and Rioting, 2007-2008	33
2.3	Risks and Rewards of Import Dependent States' Available Options	39
2.4	Payoffs of Import Dependent States' Available Options.....	40
3.1	Percentage Undernourished versus Ratio of Agricultural Trade, 1998-2000	52
3.2	Average Yearly Spending on Cereal Imports in US Dollars, Split Dichotomy group	65
3.3	Original vs. Smoothed Versions of Dependent Variable, United States case	67
3.4	Israeli Cereal Import Prices, 1961-2011	84
4.1	Cereal Imports in the Middle East and North Africa, 1960-2011.....	89
4.2	Average Import Dependency Ratio Among MENA States, 1961-2011	91
4.3	Cereal Import Prices (Difference from NID Prices) Among Import Dependent MENA States, 1961-2011	92
4.4	Percent of Jordanian Cereal Imports from USA, 2000-2014.....	96
4.5	Agriculture as a Share of Total GDP, 1960-2000.....	100
4.6	Cereal Imports in Jordan, 1961-2011. Five-year moving average.....	102
4.7	Average Oil and Natural Gas Rents among MENA States, 1990-1999	110
4.8	Average Bilateral Trade Flows between MENA States and Major Food Exporters, 1990-1999.....	113
4.9	U.S. Foreign Aid to Jordan, 1990-1999.....	116
4.10	U.S. Foreign Aid to Egypt, Israel, and Jordan, 1990-1999.....	118

4.11	Cereal Export Prices per Ton from the United States, Australia, and Canada, 1990-1999, Three-year moving average.....	131
4.12	Value and Percentage of Jordanian Cereal Imports from USA, 1990-1999.....	132
4.13	Jordan-USA Bilateral Trade and Cereal Imports from USA, 1990-1999.....	133
4.14	Political Events and Cereal Imports from U.S., 1990-1999	142
5.1	Cereal Import Prices (Difference from NID Prices) Among Import Dependent MENA States, 1961-2011	146
5.2	Average Resource Rents among MENA States, 1970-2011	147

List of Abbreviations

AoA – Agreement on Agriculture

FAO – Food and Agriculture Organization of the United Nations

FAOSTAT – Food and Agriculture Organization of the United Nations Statistics

Division

GATT - General Agreement on Tariffs and Trade

NBER – National Bureau of Economic Research

NID – Non-Import Dependent

WFP – World Food Programme

WTO – World Trade Organization

Chapter 1: Introduction

“Food security in the future depends more and more on having reliable trading partners.”

- Amb. Richard Crowder, former Chief Agricultural Negotiator in the Office of the United States Trade Representative (Personal communication, January 11, 2016)

Close to 805 million people in the world lack enough food to maintain a healthy and active life (FAO, 2014), making food insecurity one of the foremost global problems of our time. One out of every nine people is unable to secure adequate supplies of food, creating a global health crisis that poses a greater risk than AIDS, malaria, and tuberculosis combined (ibid). The consequences of food insecurity also pervade the political sphere. Hunger is typically a larger problem in developing states, which prevents them from having access to a healthy labor force (Sahn and Alderman, 1988). Increases in food insecurity have been linked to heightened tensions and volatility in some states, creating atmospheres that are ripe for conflict (Brinkman and Hendrix, 2011). All of this occurs in a world that actually produces enough food to feed the entire seven billion-person global population (WFP, 2014), raising the question: why are so many people still food insecure?

Food security is defined by the Food and Agriculture Organization of the United Nations as existing “when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (Rome Declaration, 1996). Operationally, it is often characterized by three main hierarchical pillars – availability, access, and utilization – with each pillar being a necessary but not sufficient condition for the next pillar (Barrett, 2010). In other words, availability is necessary but not sufficient for securing access. Availability refers to the adequate supply of sufficient

macronutrients (carbohydrates, proteins, and fats) (ibid.). This is typically associated with the supply-side factors of food security, having to do with the amount of calories per capita available for intake. Access refers to the range of choices available to each individual, and whether they have access to “sufficient, safe, and nutritious food” (ibid.). This is more in line with the demand-side factors of food security. Utilization is the most recent pillar to be added to the food security operational definition. It has to do with the way food is utilized within the household – whether individuals are choosing nutritionally rich foods and preparing them safely and sanitarily (ibid.). These three pillars seek to operationalize the UN’s definition of food security, and they help shape the existing theories on the causes of food insecurity.

One of the primary obstacles preventing food security is the potential for population growth to outpace global food production, also commonly referred to as “food availability decline” (Sen, 1983). While this Malthusian (1888) argument has been modified with technological advances in agricultural methods, rising populations still create increases in food demand each year (Leisinger et al, 2002) and additional advances in agricultural technology will be needed (Ehrlich et al, 1993). However, there is a limit to how much food can be produced worldwide. The loss of farmland due to population expansion, the limits to freshwater supplies, the degradation and erosion of soil, diminishing returns from fertilizer overuse, and declining genetic variation among crops all serve as constraints to agricultural production (ibid.). The worldwide growth in population coupled with increased incomes have led to the diversification of diets as well, including an increased demand for meat and poultry products (Rosegrant et al, 2012). The existing limits to food production are thus becoming intensified as more farmland is being used to raise and feed livestock to meet these rising demands.

Despite the development of new technologies, states that are situated in climates and landscapes that are inhospitable to crop production will be limited in how much food they can produce domestically. These states must rely on imports from other states to feed their populations, which makes them sensitive to price fluctuations on the world market. Even states that have better conditions for agriculture are susceptible to changes in rainfall and temperature that can negatively impact crop yields (Lobell and Field, 2007) or create famines. This effect can become particularly problematic in the future if global temperatures continue to increase (Challinor et al, 2014), and the world has already begun to see the effects of weather fluctuations when weather-related supply disruptions led to decreased world cereal production in 2006 and a subsequent price hike in world food prices in 2008 (Demeke, Pangrazio, & Maetz, 2009).

Recently, there has been an increase in academic literature on the effects of politics on food security. Scholars like Jean Drèze and Amartya Sen (1991) have argued that famines and food insecurity are not only caused by a shortage of supply worldwide, but also because of social and economic factors like the unequal mechanisms in place for distributing food. In fact, Sen (1999) extended this theory one step further by declaring that democracies with a free press are protected from famines, with the mechanism being that electoral politics will encourage the incumbent to take action when faced with a potential famine. While some have countered Sen's claim by arguing that famines cannot be explained by "mono-causal political explanations" (Rubin, 2009), this link between democracies and famines has been widely accepted in the literature (Saad, 2013).

Historically, food insecurity has also been a major source of political instability, sparking protests, riots, and violence during times of limited food access. Grain prices have been referred to as the single strongest predictor of political instability and violence – albeit not the sole reason for them (Keating, 2014). High or volatile food prices make it more difficult for average people to secure consistent supplies of food. Coupled with situations of extreme poverty, some people are unable to meet their daily food security needs or are forced to spend a growing proportion of their income on food.

Experts tend to agree that these factors -- poverty and volatile food prices – are two of the strongest predictors of food insecurity (WFP, 2014). Persistent poverty makes it difficult to afford sufficient quantities of food as well as nutritionally high-quality food. Low food prices are especially important in these areas where people spend most of their incomes on food purchases. States that cannot secure imports at low and stable prices have more difficulty predicting future prices and establishing reserves – necessary for preventing domestic price spikes and famine – that mitigate the effects of price instability. This important component of food insecurity – food import prices – is the focus of this dissertation and how it impacts a country’s potential for food security.

High or volatile food prices are particularly problematic if a state is import dependent for most of its staple food products (i.e. they import more of these products than they produce domestically). It is imperative for these states to import food efficiently and at competitive prices. By doing so, they can minimize the amount of government spending required for the subsidies that make food more affordable for their populations. Subsidies are extremely popular among populations that

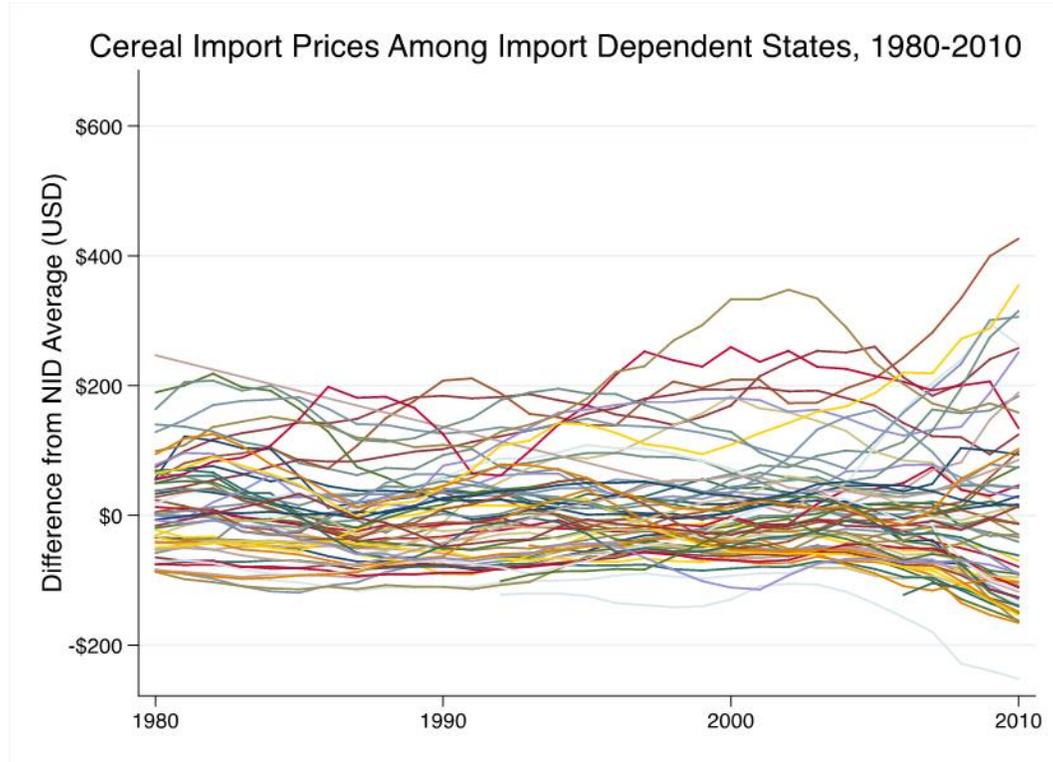
would otherwise see prices increase for the staple food items they eat daily. Governments use subsidies to keep domestic prices low and rely on them to keep the peace among their constituents – Jordan, for example, saw mass protests when government bread subsidies were cut in the 1990’s (“Jordanians Rioting Over Bread Prices”, 1996).

States – especially import dependent ones – need to secure the lowest possible price for imported food in order to afford the appropriate amount of subsidies to keep domestic food prices low. Some are able to do this better than others. In comparison to the average prices paid by non-import dependent states (NID)¹, some import dependent states pay close to the same price while others pay significantly more (or sometimes even less). Figure 1.1 provides a snapshot of this variation among cereal prices² paid by import dependent states over the course of 30 years.

¹ Throughout this dissertation, non-import dependent states are used as a point of comparison since they are the group of states that would hypothetically be able to secure the lowest priced imports. This is in part due to the theory laid out later in this dissertation regarding leverages, but also because their ability to supplement food imports with domestic production makes it unlikely that they would pay exorbitantly high prices for imports. Thus, the average prices paid by these states are the most likely to reflect “real” market prices.

² This dissertation focuses on the import prices of cereal products because they constitute the most significant portion of the world population’s diets. Cereals are discussed at length in Chapter 2.

Figure 1.1³ – Cereal Import Prices among Import Dependent States (difference from average price paid by non-import dependent states), 1980-2010. Source: FAOSTAT. Compiled by author.



Some, but not all, of this variation is can be attributed to economic factors. Crop yields, world financial markets, oil prices – all of these issues can alter the import price of cereals. These factors should, however, affect the prices paid by all states that import cereals, including non-import dependent ones. In addition, states will sometimes place restrictions on imports that go against purely economic motivations. For example, in 2011 Egypt posted a tender for wheat coming from a variety of origins but intentionally excluding Russia or Black Sea countries, even though those countries were exporting some of the cheapest wheat on the world market (Battat & Lampietti, 2014). This is not an uncommon practice, and limiting the export origins of cereal products often results in forgoing the cheapest cereals on the market (ibid). Why would some

³ The legend is intentionally excluded due to the large number of states included in this figure.

states – especially import dependent ones that could benefit most from importing at the lowest prices possible – engage in behavior that could lead to inefficient trade? And why do some states avoid this behavior and import at efficient prices similar to NID states?⁴

I argue that the answer has more to do with politics than economics. By definition, import dependent states rely on other states for one of their most important imports: staple food products. The value of these products to their domestic constituents forces the governments of these countries to consider the potential risk of exporters using the strategic value of their food exports to coerce them in the future.

As I elaborate in the literature review, some food-exporting states have a history of using states' reliance on their food products against them as a form of political leverage. This threat has become "conventional wisdom" for import dependent states (S.Schwab, personal communication, January 8, 2016), and shapes their behavior when choosing trading partners. For example, U.S. threats of a wheat embargo against Saudi Arabia after the formation of OPEC made a lasting impression on some other food-import dependent countries in the Middle East. Syria adopted a strategy of self-reliance in the 1970's, which translated to a push toward self-sufficiency in major staple food products, increased participation by the state in production and trade, and the state monopolizing foreign trade (Sarris, 2003). Saudi Arabia vastly increased its own wheat production in the 1980's, eventually becoming a key exporter of wheat until a lack of available water supply ended its pursuit of food self-sufficiency (Woertz, 2011). These concerns

⁴ Note that the import price per ton of cereals used in this dissertation are the import values divided by the import quantities. They are not domestic prices of imported food, since those numbers can be heavily influenced by government policies and subsidies and would not be useful this study's cross-country comparisons.

about food import dependence have continued to the present day as well. In 2011, Qatar's Crown Prince Sheikh Tamim bin Hamad bin Khalifa al-Thani created the Qatar National Food Security Programme, which aims to double the amount of Qatari farms in order to meet 60 to 70 percent of Qatar's domestic demand (Fuchs, 2012).

States can mitigate the threat from the exporter by using their own forms of leverage. These types of leverage – both political and economic – can deter the exporter from using its goods as a tool of coercion in the future. In cases where the import dependent state has the appropriate form of leverage, its trading behavior will be efficient and economically driven because it does not need to make trading decisions based on political relationships, but can make deals based on economic factors. In contrast, import dependent states that lack these forms of leverage must avoid coercion from exporters in other ways. This would include minimizing trade with certain cereal exporters in order to minimize their dependence on one source – and giving certain exporters greater leverage against them. These states will be more likely to make politically-motivated decisions that may result in inefficient trade. In other words, if a state is making trade decisions using political rather than economic criteria, they will be more likely, on average, to trade inefficiently and pay higher import prices. Thus, import dependent states with leverage are more likely to pay import prices for cereal products that resemble the average prices paid by non-import dependent states; states without leverage will be more likely to experience import prices that significantly deviate from this average.

1.1 Organization of Dissertation Project

The remainder of this dissertation is organized as follows:

Chapter 2 will examine the literature on food power (the ability of exporters to use food as a tool of foreign policy coercion) and the world cereal trade. The remainder of the chapter looks closely at the theory outlined above, explaining what forms of leverage may have a deterrent effect on exporters. I also present a series of hypotheses associated with these types of leverage to determine whether they allow import dependent states to trade efficiently.

Chapter 3 presents the empirical methodology for testing these hypotheses. I present the differences between import dependent and non-import dependent states using descriptive statistics before testing the effects of leverages using multiple regression.

Chapter 4 is a case study of the Hashemite Kingdom of Jordan, an import dependent state. I examine Jordan's political and trade relationships with major cereal exporters between 1990-1999. This qualitative study illustrates how political leverage can encourage efficient trade in a specific import dependent state.

Chapter 5 examines the potential effects of corruption on import prices, using the Gulf Cooperation Council countries as a case study. This chapter presents several inquiries about the relationship between corruption and import prices, as well as preliminary statistical correlations between these two concepts.

Chapter 6 concludes by revisiting the theoretical contribution of this dissertation, the statistical findings in Chapter 3, and the qualitative narratives in the case studies. I also couch this dissertation in the current policy research on food security and discuss how it can play a part in

furthering that research. Lastly, I present suggestions for further research on this and related topics.

Chapter 2: Theory, Hypotheses, and Research Design

States that are dependent on other states for their staple food products⁵ are vulnerable to coercion by them. Their import dependency on a strategically important good creates an opportunity for exporting states to use it as a tool for achieving foreign policy objectives. Exporting states can hold significant power over import dependent states by withholding or manipulating the supply of these goods. Major exporters of staple food products cannot credibly commit to the import dependent state that they will not use this dependence against them in the future.

Import dependent states can however help solve this problem by using various forms of leverage to deter the exporter from taking such actions. I argue that import dependent states that have leverage – either in the form of their own valuable exports or in the form of close political, economic, or social linkages to the exporting state – trade more efficiently⁶ than their counterparts. This is because they can make trading decisions based on economic principles that will maximize their gains, rather than artificially restricting their trading behaviors in an effort to avoid heavy reliance on major exporters and potential future coercion.

⁵ A staple food product is “one that is eaten regularly and in such quantities as to constitute the dominant part of the diet and supply a major proportion of energy and nutrient needs” (FAO, 2014). In this chapter, I will discuss why cereal products are a particularly important staple food and will continue to focus on cereals in the remainder of this dissertation.

⁶ I define trading “efficiently” as maximizing the state’s possible gains from trade. States that trade efficiently are importing at the lowest possible price. Trading based on economic principles will increase the likelihood of efficient trade, since deals are being made based on export prices per ton, transport costs, and the length of the deals. States that allow political considerations to affect these decisions will be more likely to trade inefficiently, since these political considerations may prevent them from making the best possible deal. Because of their consistently low export prices (see Figure 2.1) and economies of scale, deals with major exporters are expected to be the most efficient.

In this chapter, I discuss the existing literature on agricultural trade and the use of food as a foreign policy tool, otherwise known as “food power”. I then detail the theoretical preferences of the major food exporters and import dependent states. Next, I present a series of hypotheses that predict the expected relationships between importers and exporters⁷ based on those preferences and the types of leverage available to them. Lastly, I briefly outline the research design for testing this theory.

2.1 Agricultural Trade

To understand how some states are dependent on others for their staple foods, it is important to examine agricultural trade and how states trade cereal products in particular, as it is an important staple food product that will feature prominently in this dissertation.

2.1.1 International Food Trade

Given all of the potential sources of food insecurity and the consequences it holds for health and stability, states have used international trade as a means of securing food sources that they cannot acquire domestically. Despite its importance, agricultural trade was a largely unregulated sector until the World Trade Organization’s (WTO) 1995 Uruguay Round Agreement on Agriculture (AoA). Until the AoA, there was no institutional mechanism in place to account for the different policy interests of states engaging in agricultural trade. While the General Agreement on Tariffs and Trade (GATT), the precursor to the WTO, set some restrictions on quantitative import barriers and domestic export subsidies for manufactured products, it specifically exempted agricultural products. This meant that over time, agricultural trade evolved quite differently from

⁷ Throughout this dissertation, the terms “importer” and “importing state” are used to refer to import dependent states, and “exporter” and “exporting state” are used to refer to major exporters of cereal products.

the trade of other goods. Countries began using domestic agricultural subsidies to create an “adequate” income for farmers (Raney, 2005), while essentially bolstering their own production beyond the capacity of their domestic market and creating surpluses that were then purchased by the government. At times, these governments would use export subsidies to sell these surpluses on the international market, making it difficult for markets such as the United States and the European Union to compete.

When import substitution strategies became popular from the 1950’s to the 1970’s, the agricultural sector began to be taxed heavily in order to fund industrial projects. States attempted to correct this “urban bias” by becoming involved in agricultural markets through “price measures and compulsory state monopolies” (Raney, 2005). These domestic measures sometimes had repercussions for neighboring countries. By creating import quotas, the burden of supply shifted from domestic to international markets making prices for farmers and consumers in other countries less stable.

The Agreement on Agriculture, implemented in 1995, was the first real attempt at setting rules to regulate agricultural trade. It obligated member states of the WTO to set fair, market-oriented trading systems for agriculture, increasing market access and reducing agricultural subsidies that can distort trade (Glipo, 2003). The three main elements of the AoA focused on market access, domestic support, and export competition. In terms of market access, all member countries were required to reduce tariffs or convert non-tariff barriers like import bans, import quotas, or quantitative restrictions on imports into traditional tariffs. The AoA also sought to minimize domestic support for policies with trade-distorting effects. Lastly, states that provided direct

export subsidies were required to reduce them, and states that did not already have these subsidies in place were prohibited from implementing them in the future.

While measures like the AoA aimed at reducing the role of the state in trade distortion, agricultural trade has had a long history of state involvement. States can still set trade policies that favor or exclude certain countries, and can, to a certain extent, still restrict exports. State-run agricultural monopolies also exist, which act similarly to private entities purchasing commodities on the world market, but are actually extensions of the state apparatus. For example, the Saudi Grain Silos and Flour Mills Organization is a government branch that regulates the price of wheat domestically, manages grain reserves, and imports wheat to meet domestic demands (USDA 2014). State trading enterprises (STE) like this allow the state to play a significant role in agricultural trade, and this role is not always purely economic. Abbott and Young (1999) found that state traders do not necessarily shift their trading partners based on market forces, which suggests that there is a political component that factors in heavily when choosing the source of food supplies. Government involvement, either through STE's or economic policies, means that states are still the primary actors in determining agricultural trade policy vis-à-vis other states. Net-importing states – states that import more staple foods than they produce and supply domestically and the focus of this dissertation – have a particularly strong tradition of state involvement in agricultural trade, making politics particularly salient in these states.⁸

⁸ For further discussion of state trading enterprises, see the section titled “Private and State Trading Enterprises” of this chapter.

2.1.2 Cereal Trade

The world grain trade⁹ is primarily run through four major international grain trading companies, commonly referred to as “the ABCD companies”: Archer Daniels Midland, Bunge, Cargill, and Louis Dreyfus. Together, these four companies control about 70% of global grain trade (Murphy, Burch, & Clapp, 2012) and the physical flow of grains from exporter to importer (Atkin, 1995). Importers can contact these companies directly to make a deal, or, more commonly, they call a tender (Atkin, 1995). Tenders are open invitations that the importer is looking to purchase a certain quantity of grain at a specified schedule. Trading companies then make their offers and the importer chooses which company, and at what price, with which to do business. This is not always a completely economic decision. Certain importers may have a preference for which state the grain originates from (Battat & Lampietti, 2014), and trading companies may not want or have access to grain from that state (Atkin, 1995). For example, if an importer requests Australian wheat and the trading company does not have access to wheat from Australia, it would have to forgo that deal. While this can be a disadvantage for the trading company, it can also be a disadvantage for the importer. If the importer restricts itself to grain that originates from specific states because of political reasons, it may be excluding offers from companies that can supply the same quantity and quality of grain for a lower price from a different origin. This inefficiency may result in higher import prices or higher price volatility for some states versus others that are open to taking the best long-term deal from any export origin.

While existing economic theories of international trade have tried to predict trading partners based on solely economic factors, the literature suggests that states are less influenced by these

⁹ “Grain” and “cereal” are used interchangeably to refer to the subset of staple food products examined in this dissertation.

factors as previously assumed (Abbott & Young, 1999). For instance, some argued that the decision to establish trade ties with another state is based on the theory of natural trading partners (Krugman, 1991; Wonnacott and Lutz, 1989). This theory assumes that states are likely to trade with each other if they are natural trading partners, which is determined based on a combination of previous trade interactions, the countries' relative levels of economic development, the complementarity or competitiveness of their economies, and their geographic proximity to one another (Panagariya, 1997). Through the years, this theory has been called into question, with scholars finding that the gains from a preferential trade agreement are less than expected (Panagariya, 1997), and that the idea that geographic proximity or trade volume have a significant impacts on trade diversion or benefits has limited support (Krishna, 2003). Additionally, Panagariya (1998) found little evidence to suggest that transport costs justify regional preferential trade agreements and that transport costs should not receive special consideration over other types of costs to states, thereby criticizing preferential trade agreements and supporting trade liberalization that is nondiscriminatory. These studies contribute to the idea that preferential trade agreements, particularly regional ones, are not only not as beneficial to trade as previously theorized, but also that they are less influential in determining trade relationships among states (Frankel et al, 1995).

Gravity models are also commonly used to predict trade relationships. Gravity models predict trade flows between states based on the states' economic sizes (GDP) and proximity (Tinbergen, 1962) where the distance between states is inversely related to the predicted trade flow between them and their incomes are directly proportional to the amount of trade in which they will engage. The usefulness of this model has also been called into question by scholars who argue that it may be better used as a heuristic tool or that the distances between trade partners should be

measured in relative rather than absolute quantities (Polak, 1996). Others have commented that the lack of spatial effects in the model creates a bias that can only be eliminated by using spatial econometrics (Porojan, 2001), or that the model should be updated to incorporate substitution between trade flows (Bikker, 1987).

This emerging literature suggests that economics alone cannot predict which states are most likely to become trading partners. In the case of grain trade in particular, where grain can be of strategic value, it would be useful to incorporate political explanations of how states choose their trading partners. In exploring these political explanations, it is necessary to examine the concept of food power.

2.2 Food Power

Just as military weapons can be used to threaten other states, economic commodities can also be used to achieve similar ends. Economic commodities are often essential to maintaining life and order in the states that rely on them, and this need is heightened when the commodities are scarce goods such as energy resources or staple food products (Wallensteen, 1976). A state that exports large quantities of staple foods to another state can threaten the lives and health of people in that state by withholding it; at the very least, it can upset the stability in the importing state's food markets and create an atmosphere of political unrest and conflict as citizens cannot afford basic food products (Hendrix, Haggard, & Magaloni, 2009; Brinkman & Hendrix, 2011). This denial of food exports by one state to influence the actions of another state is known as "food power" (Paarlberg, 1982; Wallensteen, 1976). By threatening importing states with the withholding of food in exchange for some action (or lack of action), exporting states can use food as a tool for achieving their foreign policy goals.

The U.S. Secretary of Agriculture in 1974, Earl Butz, once said “Food is a weapon” (The Guardian, 1976), and indeed, food has been used in the past in attempts to coerce political concessions out of importing states. Two notable examples of a major exporter – the United States – using food power include the threatened grain embargo against Saudi Arabia in the early 1970’s in retaliation for the formation of OPEC (Woertz, 2013) and the imposed grain embargo against the Soviet Union in January 1980 by the Carter Administration, as punishment for the Soviet invasion of Afghanistan in 1979 (Paarlberg, 1985). In both of these events, the U.S. threatened to, or did, cut off grain exports to states that were dependent on the importation of these staple foods in an attempt to coerce them into specific foreign policy actions. States can implement food power in a variety of ways, including using trade embargoes or restrictions on exports to specific states.

It is widely agreed upon that only major exporters of strategic food products can use food power effectively (Paarlberg, 1985; Woertz, 2013; Coffey, 1981; Wallenstein, 1976). Strategic foods are those which are scarce, in high demand, concentrated in the hands of a few suppliers, and controlled by those suppliers (Wallenstein, 1976). A good example of a strategic food product is cereals (Wallenstein, 1976; Paarlberg, 1985), including wheat, rice, maize and various other forms of grains and plants (FAO, 2015).

Cereal products meet all of the criteria for a strategic food. First, cereals are scarce because not all states can grow enough of them to meet the demands of their population. This could be due to an unfavorable climate for these types of crops (e.g. too hot or too cold temperatures, too much or too little rainfall), a lack of adequate amounts of land, mountainous or rocky terrain that is not suited for agriculture, an insufficient labor force, or limited capital to invest in agriculture. Even

in states where cereal production is possible, the rate of growth in crop yields has been progressively declining: the growth rate has dropped nearly in half from 3.2 percent per year in 1960 to 1.5 percent per year in 2000 (FAO, 2009).

Second, cereal products are in consistently high demand relative to other food products. Cereals are a staple food for the majority of the world's population, making up over 50% of individuals' average daily food intake (FAO, 2014). This demand for cereals is expected to increase in the coming decades (Harrison et al, 2002).

Lastly, major cereal production is concentrated in the hands of a few states that also control their supply (Wallensteen, 1986). For example, the United States' share of world wheat exports is currently at 20-30% (USDA, 2015). While the major exporters of cereal products differ in their domestic economic policies when it comes to cereal trade – some use state-trading enterprises while others rely on private grain traders – each state is ultimately in control of where their exports can be shipped.

These attributes of cereal products qualify them as strategic goods, and make them effective tools for food power. For this reason, I focus this dissertation on the potential use of cereal products for food power, rather than food products as a general category. This distinction is particularly important in the next chapter where I test this theory empirically.

2.2.1 Importer Perceptions of Food Power

While there is a debate regarding the efficacy of food power as a result of food embargos or price manipulations (Coffey, 1981; Huntington et al., 1978), the threat of coercive action by food exporters is nonetheless taken quite seriously by food importing states (Paarlberg, 1985). Past

uses of food power have made import dependent states wary of relying on another state for a strategic good, and this caution persists despite the use of outright food power in recent years (R. Crowder, personal communication, January 19, 2016).

This concern can be illustrated by Saudi Arabia's push toward wheat self-sufficiency in the 1980's. At that time, the Saudi government created subsidies to increase wheat production exponentially (Woertz, 2011). This proved to be incredibly costly for the Saudis, given the harsh environmental conditions in the Arabian Peninsula. Ultimately, the costs involved and the depletion of water resources made this growth unsustainable, and Saudi Arabia decided to phase out its subsidized wheat production by 2016 (Woertz, 2011) and return to relying on imports. Nevertheless, Saudi Arabia's venture into wheat self-sufficiency – despite the enormous costs it would have to overcome – demonstrates the value placed on reducing import dependence.

Import dependency continues to be a key concern for countries that cannot grow their own staple foods. The 2014 Arab Forum for Environment and Development was entirely focused on food security issues for Arab states, many of which import at least 50% of their staple food products. One of the primary points of discussion was the prospects for food self-sufficiency in the region and how to reduce dependence on outside food sources (Malek, 2015). States are clearly concerned with food import dependence, and while this concern is partly attributed to economics, states are also concerned with the potential use of food power against them. This makes it likely that food power, and the perceived threat of its use, is an underlying consideration for import dependent states when making trade decisions.

The current literature on food power and the strategic use of food exports neglects the steps that importing states can take to deter future threats (Wallensteen, 1976; Paarlberg, 1982, 1985; Coffey, 1981; Woertz, 2013; Westing, 1986). Here, this dissertation project makes the original contribution of examining the political options available to importers vis-à-vis the threat of future food power from the exporter. I deviate from the existing literature by showing how *importers'* political calculations play a role in the food power argument, and how exporters' threats of coercion need not be carried out for them to make an impact on importers' food security prospects. By understanding the perceived threats of food importers and their resulting political calculations, this dissertation offers a framework for understanding why food prices vary between importing states – a key component for understanding why food insecurity prevails in many of these states.

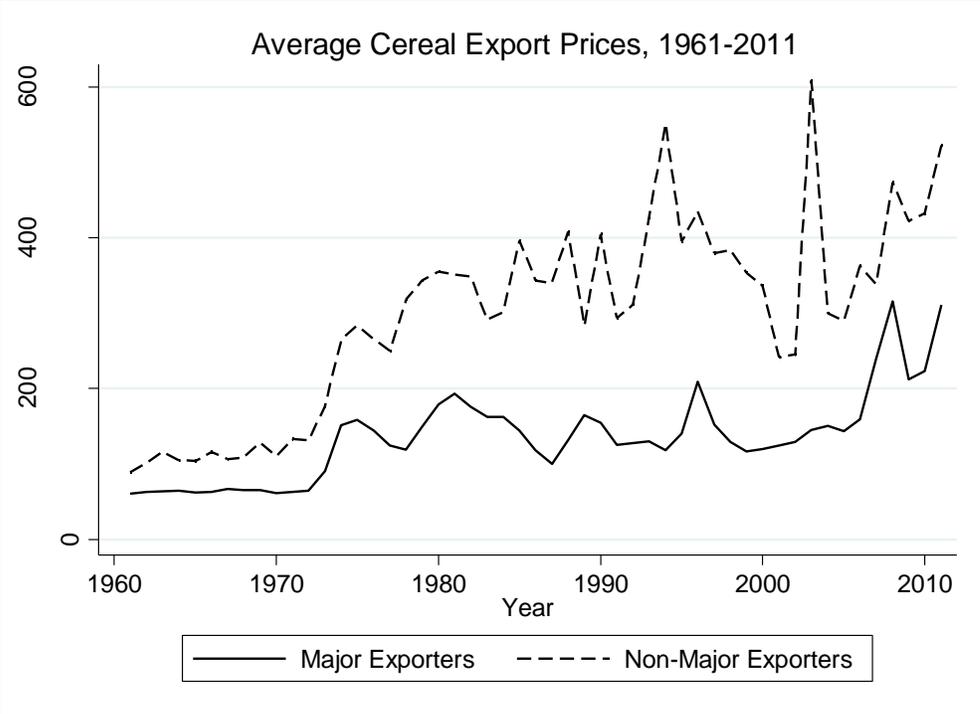
2.2.2 Counterarguments to the Food Power Thesis

One criticism of the food power idea is that it will not occur in a free market system because manipulating supplies should be just as costly for exporters as it is for importers (Paarlberg, 1985). Politically motivated government restrictions on exports result in a loss of profits for its producers. Since exporting states have an incentive to sell their goods and they face domestic pressure from their producers to maintain stable trade relationships, a potential loss in profits would prevent them from using trade to deter or compel another state.

I challenge this criticism by arguing that exporters do *not* have as much to lose as importers in this scenario. The major exporters of staple food products are economies of scale in food production – the large scale of their production apparatus lowers the costs of producing each unit. This allows them to export these products more efficiently and more cheaply than other

states (see Figure 2.1 for a comparison of cereal export prices from major exporters versus other states). It also makes them attractive trading partners for many states that need to import staple foods, which makes them able to – at least temporarily – absorb the costs of losing a single trading partner.

Figure 2.1 – Average Cereal Export Prices of Major Exporters (USA, Russia, Canada, and Australia) versus Non-Major Exporters, 1961-2011. Data compiled from FAOSTAT



If a major exporting state imposes restrictions, import dependent states who are forced to look for alternative suppliers for their staple foods have two options. First, they can source them from one of the other major exporters. This exporter however may not be willing to be on the opposing side of a political issue from the original exporter. This is especially likely as most of the major cereal exporters have close political relationships.¹⁰ Second, importers can source their

¹⁰ The major cereal exporters in this study are the United States, Russia, Canada, and Australia. There is a detailed account of why these four states were chosen later in this chapter.

food products from smaller exporters and risk making a less efficient trade deal. This is because these smaller exporters are not likely to be economies of scale and would therefore export products at a higher price than the major exporters (see Figure 2.1).

In both of these instances, the importer must also consider that it might have to endure depleted supplies of its staple food products as it tries to establish an alternative trade relationship. This will cause shortages and/or price spikes in the domestic cost of these products. Food shortages and price spikes are politically destabilizing and could result in protests, riots, or even conflicts domestically (Hendrix, Haggard, & Magaloni, 2009; Brinkman & Hendrix, 2011). Thus, the cost of food power to the importer is very high. While the exporter also incurs some economic and political cost by forgoing a trade relationship, it is still significantly less than the costs incurred by the importer. Exporting states would be willing to undergo these costs if they saw it as a way to increase their own security or power.¹¹

To illustrate, consider the American embargo of grain against the Soviet Union in 1980. By the end of the embargo, the estimated cost to the United States was \$145 million compared to the \$470 million cost of the embargo for the Soviets (Coffey, 1981), making the relative cost of this threat almost four times higher for the importing state.¹² So, while the domestic agricultural producers of the exporter would certainly politically punish the state for withholding exports, these costs would still justify the maneuver for the exporter because of the exponentially greater

¹¹ I discuss this ranking of preferences in the next section.

¹² Coffey (1981) estimated the cost of this embargo using “the square of the share of the amount embargoed, the elasticities of supply and demand, and the equilibrium value that would prevail without the embargo”.

costs – political and economic—that the importer would incur and the exporter’s increased potential for political gains.

Another criticism of the food power thesis is that it violates the assumptions of trade interdependence and peace arguments. These arguments assume that increased trade between states will decrease their likelihood of conflict (Kant, 1795; Russett & Oneal, 2000; Oneal & Russett, 1999; Keohane & Nye, 1977). If states are mutually dependent on one another for economic goods, then they will be less likely to engage in conflict with one another and risk disrupting the flow of those goods.

I argue that the effect of trade interdependence on the probability of using food power is conditioned by the types of goods that are traded between the states. As I detail in the hypotheses section to follow, if the food-exporting state relies on strategic goods from the food-importing state, then it may be more likely to cooperate and avoid conflict (i.e. use food power).

If the food-exporting state does not rely on the food-importing state for a strategic good, then I do not expect trade interdependence to deter the use of food power. This is because the vulnerability experienced by food import-dependent states works against the trade interdependence hypothesis. A state that is a significant supplier of staple food products to another state holds enormous leverage over it. This leverage creates tension between the states in the short-term that jeopardizes peace (Mansfield & Pollins, 2003). Thus economic interdependence in this situation is not likely to deter a state from using food power; the heightened vulnerability of one state vis-à-vis another state increases the chances of conflict,

which will make the exporter more likely to use any coercive tools at its disposal, including food exports.

I test these variations on the trade interdependence theory in the following chapter to determine whether increased or specific trade flows between food exporters and importers acts as a deterrent against food power.

2.3 Preferences of Major Exporters

In order to understand an exporting state's motivation to coerce food importers, I highlight these states' political and economic preferences.

2.3.1 Political Preferences

First, I assume that major cereal exporters, like all states, seek to maximize their power in the international system (Waltz, 1979; Morgenthau, 1985; Mearsheimer, 2001; Herz, 1951). Power, an actor's capability to influence the actions of another actor, helps to ensure a state's security and survival in an anarchical system (Pevehouse & Goldstein, 2014). In this system, a state must leverage its capabilities against other states in an effort to increase its relative power. Capabilities may include economic wealth, military strength, or population size, but it can also include a state's strategic exports. These are exports that other states rely on and that render them vulnerable if supplies were cut off. This dissertation defines cereal products as strategic goods that exporters can use as leverage. Assuming that states will use their capabilities, including strategic goods, to maximize their power in the international system, exporters of cereal products will use those products to gain power over states that rely on them.

2.3.2 Economic Preferences

Second, I assume that states – including the private firms within them – prefer to maximize their gains from international trade. This includes maximizing their profits from exports because it would give them the highest return on investment in their agricultural industry and allow them to make further investments in their domestic agricultural sectors, if they so choose. Increased profits also help regimes secure the support of their domestic constituents, especially if agriculture is a significant sector of the economy or has a strong political lobby – as it is in states that are major exporters of these goods.

2.3.3 Ranking Preferences

I argue that while it is important to exporters to maximize their economic gains from trade, it is more important to them to maximize their *political* gains through trade. This idea borrows from classical realist theory, which asserts that states will prioritize security over wealth (Mearsheimer, 2001; Smith, 1776). If a state believes it can use its exports to increase its security, it will sacrifice the economic gains associated with it. This is especially the case when it comes to food power. As food is a necessary commodity to the survival of a dependent state's population, an exporter can achieve its political goals through even a temporary sacrifice of its economic gains. In other words, a state does not need to threaten a permanent restriction of exports in order to deter or compel an importer's actions, since food imports are such an essential component to an importing state's immediate survival.¹³ This makes food exports a highly valuable and effective economic tool for increasing a state's security. In addition, the major exporters of cereal products that are examined in this study are also major exporters of other

¹³ This is an assumption that I will explore in depth in the discussion of importers' preferences.

goods.¹⁴ The diversification of their exports allows these states to absorb the costs of restricting food exports to a specific state since they are still profiting in other trade sectors.

In sum, I assume that exporting states prefer to increase their security, and that they have an incentive to use whatever tools they have at their disposal to reach this goal – including food exports. If a state supplies a significant portion of another state’s staple food commodity – as major cereal exporters often do -- then it could use those supplies as leverage to compel or deter the importer’s actions. In a situation where the state must prioritize political and economic goals, it will choose its political goals.

2.3.4 Identifying the Major Exporters

This dissertation focuses on the United States of America, Canada, Australia, and Russia (or the U.S.S.R. pre-1991) as examples of major exporters of cereal products. These four states have been among the top cereal exporters for the entire time period examined in this dissertation (1961-2011) (FAO, 2015). In addition, these four states are all considered either great or middle powers in the international system (Jordaan, 2003; Neumann, 2008), which gives them the political and economic capital to use their strategic exports as a foreign policy tool. This is compared to a state that may be a major exporter of cereals, but is not a great or middle power. Such a state does not have the political support or economic size to withstand the potential retaliation or humanitarian backlash that may come with using food as a foreign policy tool, making them less likely to use food power.

¹⁴ The four states used as major exporter examples are discussed in the following section.

I also chose to focus on these four states because of their trade institutions and history of using food as a foreign policy tool. Canada, through the Canadian Wheat Board (CWB) (1935-2012), and Australia, through the Australian Wheat Board (AWB) (1939-1999), used state trading enterprises to manage the majority of their cereal exports for a significant portion of the time period examined in this study (Atkin, 1995). Both the CWB and the AWB were government-run organizations that gave the state extensive control over cereal exports. While the food power thesis is not limited to states that use STE's to manage their exports, it is important to account for whether this direct control over exports has a different effect on the decision-making process of importing states. In other words, does absolute power over cereal exports deter or attract net-importers, or do importers view these states as the same as exporters without STE's?

I focus on the United States and Russia because both of these states have been great powers during the time period examined in this study. This gives them unique political leverage in the international system that may factor into the calculus of importing states when they assess the risk of these states using food power. In addition, the United States has a history of using food power to achieve its foreign policy goals. Russia has also begun using food power in an alternative way – by banning the imports of certain food products depending on their origin. Russia's 2014 ban on European Union food exports is in retaliation for EU economic sanctions (The Associated Press, 2015). The use of food as a political tool demonstrates how it is still a useful option for statecraft.

Lastly, the geographic locations of these four exporters mean that all import dependent states are somewhat geographically close to these cereal sources. Since distance can play a part in making

trade decisions, the use of these four states acts as a latent control variable. In other words, import dependent states will not make inefficient trade deals simply because they are too far from major exporters (thereby increasing costs of transportation), since each import dependent state is geographically related to at least one of these states.

2.4 Preferences of Import Dependent States

2.4.1 Identifying Import Dependent States

The importers in this theory are states that have a dependence on foreign imports of cereal products. These are states that import more cereal products than they produce or export. Their dependence can be estimated by calculating how much of the cereal products consumed by the population originate from imports.¹⁵ A state that only imports 10% of the cereals its people consume is less dependent on those imports than a state that imports 80% of the cereals its people consume.

This theory focuses on actors at the state level, and not the calculations or actions of private trading enterprises within or between each state. While private grain trading companies and domestic suppliers of grain are key players in the overall international grain trade, they do not have agency in this theory. In a completely free market scenario, domestic suppliers would make deals with grain trading companies based on the most efficient price they can offer, evaluating the export origin in terms of transport costs, currency conversion rates, tariffs, and quotas (Atkin, 1995). This theory does not assume a completely free market scenario, since I argue that states' political motivations can and do effect trade decisions and policies.

¹⁵ A detailed calculation for import dependency is discussed in the following chapter.

At the state level, governments can have politically driven preferences for which states they trade with (Abbot & Young, 1999; Krasner, 1978; Morrow, 1999; Oneal and Russett, 1997; Olson, 1993). At the lowest levels of involvement, a state can set import tariffs on goods originating from specific export origins in an effort to promote trade with other international or domestic suppliers. At the other end of the spectrum, states can place tariffs or ban imports from certain states, often based on political goals.

Ultimately, private domestic buyers must operate within the policy confines of their host states. This means buying grain from trading companies that can offer the best price for the grain that comes from an approved export origin. As I argue that cereal imports have a higher strategic value in import dependent states, it stands to reason that the governments of these states play a larger role in ensuring the steady supply of these products and that private traders within import dependent states do not have the same level of decision-making freedom as traders in non-import dependent states.

2.4.2 Private and State Trading Enterprises

It is important to understand how the governments of import dependent states can affect trade decisions, and one of the primary ways they can shape agricultural trade decisions is through the use of state trading enterprises. State trading enterprises (STE) are defined by Article XVII of the General Agreement on Tariffs and Trade (GATT) of 1994 as “governmental and non-governmental enterprises, including marketing boards, which have been granted exclusive or special rights or privileges, including statutory or constitutional powers, in the exercise of which they influence through their purchases or sales the level or direction of imports or exports.” The

use of STE's is particularly prevalent in agriculture: seventy-five percent of reported STE's are involved in agricultural trade (Pearce & Morrison, 2002). STE's are also common among the top importers of grain products. Six out of the top seven cereal importers in 2012 had state trading enterprises involved in their agricultural sectors in the time period examined in this dissertation.¹⁶

The GATT restricts STE's from engaging in trade distorting practices and aims to have STE's behave similarly to private enterprises (WTO, 2015). Still, governments can have extensive control over agricultural imports and exports through the use of STE's. There have been concerns that states with these institutions make import decisions based on historical political relationships rather than price differences between exporters (Rominger, 1996; Abbott & Young, 1999). States are able to distinguish the sources of imported grain (Blandford, 1988; Johnson, Grennes & Thursby, 1979; Alston, Carter, Green & Pick, 1990), making it possible to make political decisions about which exporters to trade with. Indeed, Abbott and Young (1999) found significant support for wheat-importing STE's being unresponsive to market conditions when choosing trading partners.

Some import dependent states use private enterprises – either solely or in cooperation with state trading enterprises – for agricultural trade. These firms operate independently of the state, but must comply with the trade laws of their host. In other words, an agricultural import firm in the United States must operate in accordance with U.S. trade laws, which includes not violating any existing trade sanctions or policies against certain states.

¹⁶ The top seven cereal importers in 2012 (based on import quantities) were: Japan, China, Egypt, Mexico, the Republic of Korea, Saudi Arabia, and Iran (FAO, 2015).

2.4.3 Risks of Import Dependency

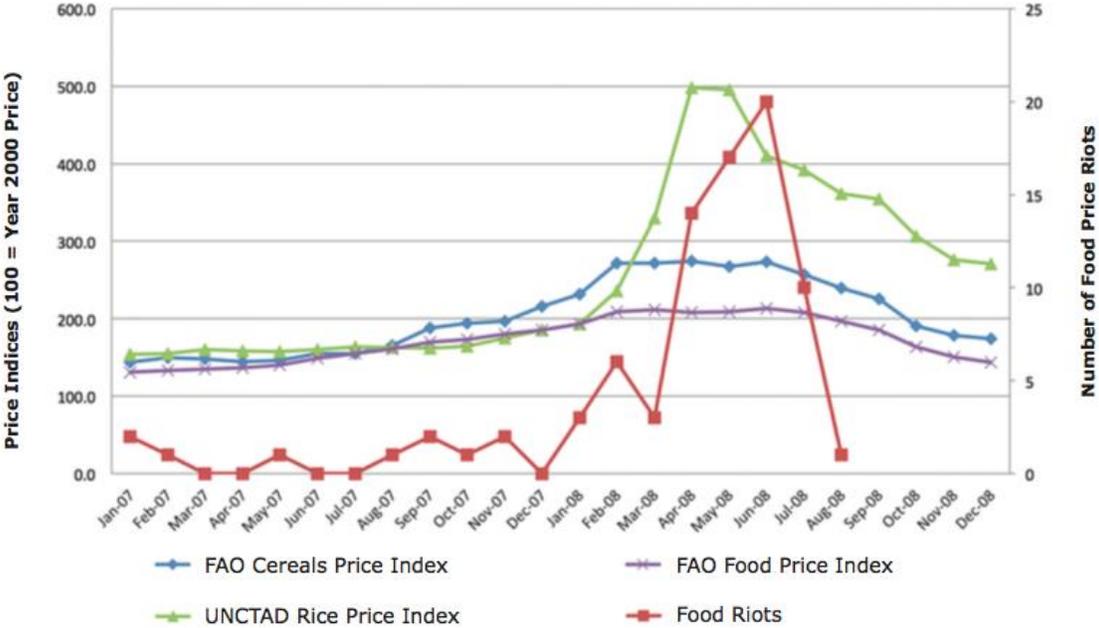
An import dependent state is much more vulnerable to increases or volatility in the price of imports since it has less domestic resources to support the price changes. To combat this, some states are able to keep reserves of certain staple food products so they can better control the domestic supply. If the price of cereal imports increases and there are fewer supplies available domestically, the state can supplement those imports with the reserves that are kept on hand.

Unfortunately, this is not an option for all states. Keeping food reserves is a costly endeavor. It can help stabilize domestic food prices, but it is costlier than other measures that governments can take to directly offset high prices, such as subsidies or food stamps (although these measures are costly as well) (Larson et al, 2013). Without a high budget to provide these reserves or subsidies, states are left vulnerable to price and supply fluctuations.

There are other reasons why states would want to avoid a heavy reliance on imported food besides the obvious health and economic concerns. Increased prices and subsequent declines in the availability of staple foods can lead to serious political concerns for import dependent states. This was the case in 2008, when global food prices skyrocketed. The increase in prices led to domestic unrest in many states that rely on food imports, namely in states across the Middle East (see Figure 2.2). As staple food items like bread became too expensive, protesters began blaming the government for not being able to provide affordable food. In fact, some attribute the start of the Arab Spring uprisings to the increase in food prices in 2008 (Lagi et al, 2001; Johnstone and Mazo, 2011; Harrigan, 2011). The reasons behind the Arab uprisings are numerous and certainly not limited to food prices, but the inability to feed their families contributed to protesters'

underlying feelings of humiliation and dissatisfaction with the government (Harrigan, 2011). It is clear that states also are aware of the risks of food insecurity. Following the riots in its neighboring countries, Kuwait began providing free staple food items to its people for fourteen months (The Economist, 2012).

Figure 2.2 - Food Prices and Rioting, 2007-2008. Source: Brinkman & Hendrix (2011)



There are other factors that can determine the occurrence and extent of domestic conflict after an increase in food prices (e.g. repressive tactics, regime type), but the connection between food access and conflict is fairly straightforward. High prices for staple food products create grievances for the population. These grievances can escalate into violent or nonviolent conflict unless the government is able to quickly resolve the issue (Arezki & Bruckner, 2011; Bates, 2011). Often, states that rely on imported staple foods – especially low-income states – are unable to quickly supplement those supplies with food reserves or subsidies. This makes them particularly vulnerable to political instability or conflict when food prices are high.

States' top preference may be to produce their own staple foods and become self-sufficient in them (or at least not import dependent) in order to avoid the economic, political, and health risks associated with import dependency. This was the case in Japan for many years, where the government banned rice imports in order to maintain self-sufficiency in the state's staple food product (Goldstein & Pevehouse, 2014). Japan, however, is unfortunately the exception to the rule when it comes to self-sufficiency. Many states lack the financial or agricultural means to be self-sufficient in their staple food product, and the conditions that prevent states from growing their own food are often difficult to overcome.

Geography and climate are among the most difficult conditions to change. They play a large part in determining how much food can be grown domestically. In Saudi Arabia for example, only 2% of the land is arable (Lippman, 2010), making crop production very difficult. States can attempt to overcome these issues using new methods or technologies, but the costs of such attempts typically outweigh the benefits. For example in arid states, effective irrigation systems are costly to implement and drain the limited amounts of water these states can access.

Self-sufficiency can be costly even in states that have friendlier conditions for agriculture. Consider the following case: Magnan, Lybbert, McCalla, and Lampietti (2011) at the International Food Policy Research Institute calculated the costs of cereal self-sufficiency in Morocco. The authors found that Morocco would be capable of reaching self-sufficiency in cereal products until 2022 if it increased its current yield by 40-percent. To achieve this however, it would have to divert land to cereal production that is currently being used to grow high-value

crops. By 2022, the opportunity cost associated with sacrificing these high-value crops could exceed \$10.3 billion (USD). Self-sufficiency may be possible, but its high cost makes it a difficult option for states – especially states that lack the capital to absorb these costs. In sum, self-sufficiency is an unsustainable option for many import-dependent states (Bailey and Willoughby, 2013).

Assuming that some states have no viable choice other than to rely on importing the majority of their staple foods, I argue that these states then have specific preferences. Much like exporters' preferences, these preferences can be grouped into political and economic goals.

2.4.4 Political Preferences

Like exporters, I assume that import dependent states aim to increase their power relative to other states. These states must account for the relative power that is lost however, through the risks and vulnerabilities associated with being dependent on other states for staple food products.

Given the historical examples of exporting states using food power against import dependent states, it seems likely that the latter would consider the potential for such behavior to occur in the future. Thus, the import dependent state is not only making a calculated decision about its present situation when it comes to establishing trading partners and agreeing on the terms of a trade deal (including the price and quantity of foods that will come from each export origin), but it is also attempting to mitigate its risk in the future. It is difficult to make assumptions about future actions, so to make this decision the state must consider whether it has the necessary

leverage to deter threats from the exporter or – in the absence of leverage – if it should take precautionary measures in its trading habits.

In the absence of potential threats from exporters, the importing state can make trade deals based on economic principles and import at the lowest possible price for the quantity it requires. An importer that possesses the leverage to deter threats from an exporter would be able to trade in this way – similar to non-import dependent states.¹⁷

Importers without leverage would have to lessen their risk in other ways. This can include additional diversification of their trading partners, refusing to import from exporters with whom they have had a political or military confrontation with recently, or importing smaller quantities from minor exporters who would not be able to use food power. While these tactics may not necessarily result in higher import prices for the importer, it would increase the possibility of these outcomes because states are making economic decisions based on factors other than current or predicted market prices. These trade behaviors are not driven by economic factors or forecasting, but are heavily influenced by politics instead. On average, it should result in the importing state trading inefficiently compared to other states that are driven primarily by economics. These inefficiencies could then manifest in increased import prices for these states compared to others.

¹⁷ Non-import dependent states do not face the same threats of food power from exporters. Their lack of dependency on imports for their staple food supply lessens the influence of exporters. In other words, if one of these states were threatened with an embargo in return for a political act, it could absorb the reduction in imports with its own reserves and production while it searches for other trading partners. The exporter has less overall influence in these states since the latter imports less of the exporter's goods.

2.4.5 Economic Preferences

Economically, I assume that import dependent states prefer to trade efficiently, procuring imports at the lowest possible price. Lower import prices correlate with lower prices for goods domestically, as any value added from processing and distribution starts at a lower initial cost. In addition, governments can spend less of their budget on food subsidies and assistance programs if the costs of staple food items are more affordable for the population.

2.4.6 Ranking Preferences

Again like exporters, I assume that importing states prioritize their preferences based on political goals first, followed by economic gains second. Thus, import dependent states will sacrifice short term gains from lower import prices in favor of the long term political gains that come from reducing the risk of coercion in the future. In other words, I argue that import dependent states are willing to trade inefficiently in order to avoid a threat to their political power. If an importer is able to use its own forms of leverage to deter an exporter from coercing it in the future, it will do so. Then, it can focus on its economic goal of trading efficiently.

2.5 Interactions Between Exporters and Importers

Exporting and import dependent states interact with one another based on each of their political and economic preferences and how they rank in importance. Again, both states will rank their political preference of increasing relative power higher than their economic preference of maximizing profits or making the most efficient trade deal. This creates a problem however, since both states' political preferences of increasing relative power vis-à-vis the other state are mutually exclusive. The importing state cannot maximize its relative power if it is dependent on

another state for its staple food source because the exporting state cannot credibly commit to not using those staple food products as a tool to gain more relative power in the future.

2.5.1 The Credible Commitment Problem and the Importer's Options

This commitment problem creates four possible options for the import dependent state, with varying degrees of risk and reward (see Figure 2.3). It can choose to engage in trade with major cereal exporters, because doing so would increase the probability that it is trading efficiently.

This would lead to two potential outcomes. The first outcome occurs if the importer has the necessary leverage to deter the exporter from using food power in the future. In this case, the risk of future coercion is low and the reward from trading efficiently is high. The second outcome occurs if the importer does not have the necessary leverage to deter major exporters, but chooses to trade with them anyway. In this situation, the risk of future coercion would outweigh the reward from trading efficiently, leading to a less optimal outcome for the importing state.

Third, the importer may choose to avoid extensive trade with major exporters and instead rely on alternative non-major cereal exporters. This would increase the possibility of inefficient trade however, since the importing state is likely overpaying for its cereal products (see Figure 2.1).

Thus while the risks of coercion are low with this option, the reward from inefficient trade is also low. Also note that in this scenario the importer's leverage, or lack thereof, does not influence the outcome since non-major exporters of cereal products cannot use food power effectively, eliminating the need for importer leverage.

Last, the importing state may choose to avoid depending on outside sources for its staple food and become self-sufficient in its production. As I highlighted previously, this is a very difficult

and expensive option, and one that is not available nor feasible for many states. In this scenario, the state must invest large amounts of resources – financial or natural – in a venture that is not guaranteed to succeed. Thus the risks are very high for the importing state. The reward is also lower than if the state had traded for its food, since the increased food production would divert resources that could be used to maximize the state’s comparative advantage in other sectors or products.

Figure 2.3 – Risks and Rewards of Import Dependent States’ Available Options

		Reward	
		<i>High</i>	<i>Low</i>
Risk	<i>High</i>	Trade with Major Exporters, No Leverage	Self-Sufficiency
	<i>Low</i>	Trade with Major Exporters, With Leverage	Trade with Non-Major Exporters

I assign risk and reward values for each option in order to illustrate the optimal outcome for importers with and without leverage. The payoff for each state is equal to the reward value minus the risk value. The risks and rewards are represented along a 1 through 5 scale, with 1 representing the lowest value and 5 the highest. The choice of 1 through 5 does not reflect actual values of trade; it is only used to illustrate the ranking of the outcomes relative to one another.

Figure 2.4 – Payoffs of Import Dependent States’ Available Options

		Reward	
		<i>High</i>	<i>Low</i>
Risk	<i>High</i>	Trade with Major Exporters, No Leverage (5, 5)	Self-Sufficiency (5, 2)
	<i>Low</i>	Trade with Major Exporters, With Leverage (1, 5)	Trade with Non-Major Exporters (1, 3)

Trade with major exporters by importers *without* leverage has high risk (5) but also high reward (5), since the state would still be trading efficiently. For importers *with* leverage, trading with major exporters carries low risk (1) because the exporter can be deterred, while also producing high reward (5) since they are trading efficiently. Self-sufficiency is high risk (5) with relatively low reward (2). Here, I assign a reward value of 2 rather than the lowest value, 1, because while self-sufficiency will take resources away from other (perhaps more profitable) sectors, it may still provide the state with a valuable domestic food source. Last, trade with non-major exporters has the lowest risk (1) because there is no threat of food power, but also has a low reward (3) since the state may not be trading efficiently. I assigned a reward value of 3 since the importer may acquire some of its cereals from major exporters, which would be at a low price, but would get the majority of its cereals from other exporters at a higher price. This would result in overall less efficient trade than those who use major exporters as their primary source, but more efficient than using vast resources to be self-sufficient.

Based on the calculated payoffs (reward minus risk), the optimal choice for an importer with leverage is to trade with major exporters (payoff = 4). If the importer lacks leverage, then its

optimal choice is to trade with non-major exporters (payoff = 2), rather than trade with major exporters (payoff = 0) or rely on self-sufficiency (payoff = -3).

2.5.2 Leverage

Assuming that states are rational actors that will want to choose the outcome with the highest possible payoff, importing states with leverage are more likely to trade with major exporters than those without leverage. This also means that they are more likely to trade efficiently than importers that do not have leverage against exporters. Given this advantage, it is important to explore the different kinds of leverage available to importers.

The following hypotheses describe the expected effects of various forms of leverage on the trade efficiency of an importing state. Efficient trade is represented by low import prices – if a state pays lower import prices than another state, then it is trading more efficiently. The outcome of efficient trade is increased food security, as import prices and food security are closely related.¹⁸

I explore the effects of four types of leverage which are divided into economic and political categories.

2.5.2.1 Economic Leverage

Import dependent states can use their own major exports as leverage. In particular, certain strategic goods can serve as a deterrent against other states that rely on those goods. Strategic

¹⁸ The following chapter includes a detailed discussion of the relationship between import prices and food security.

goods are those that are both scarce and valuable – much like cereal products are to the import dependent states that rely on them as a staple food source.

If the importer is a major supplier of these types of goods to other states, including major cereal exporters, it could threaten to interrupt their supply if food power is used against it. If major food exporters rely on these importers for a strategic good, then they may be less likely to use food power as a tool of coercion against them, lest they risk disrupting the supply of that strategic good.

I focus on natural resource exports as a particularly useful strategic good. Natural resources are valuable and scarce, and also difficult to substitute. They are vital for numerous industries – oil, natural gas, and coal exports are used in the energy industry, minerals can be used in technology industries, and forestry is used in building industries. In addition, states can use natural resource exports as leverage even if the major food exporters are not directly dependent on the resources from them. If a state holds a large enough share of the world market in natural resources, any destabilizing act on their part would have ramifications in the world resource market. It would be costly for the food exporter, even if it did not directly rely on the food importer for those resources.

I predict that import dependent states with significant amounts of natural resources will be more likely to trade efficiently, because they can use those resources to deter major food exporters from using food power against them in the future.

H₁: Among import dependent states, an increase in resource rents as a percentage of GDP results, on average, in a decrease in import prices.¹⁹

2.5.2.2 Political Leverage

The importer can also use political leverage to deter major exporters. A state's political leverages can come from its various relationships with major exporters. If the importer is closely linked politically to exporters, the latter may be less likely to use food power against it. Since food shortages and price spikes have destabilizing domestic effects, any drastic manipulation of food supplies would risk disrupting the political status quo and the tenure of the importing state's regime. So, if an importing state's regime acts as a key diplomatic player in a region that is of strategic interest to exporters, those exporters may avoid using food power against it in an effort to avoid upsetting the status quo.

This concept borrows from Levitsky and Way's (2005) idea of political "linkages". While they use linkages to the West to predict democratization, I argue that a similar concept can be applied here. Increased linkages – political, economic, and social – to major exporters of cereals can deter these exporters from using food power, as a major disruption in the status quo of the importing state could result in detrimental foreign policy consequences for the exporters themselves.

For example, imagine a scenario in which the importing state allows the exporter to put military bases within its borders. Not only would the exporter have an incentive to maintain the status quo domestically in the importing state (and therefore would want to maintain a steady flow of

¹⁹ I discuss the use of "resource rents as a percentage of GDP" as a measure of natural resources in the next chapter.

cereal exports to it to avoid instability or conflict from arising), but it could also lose its military bases as retaliation by the importer for disrupting food trade. In this way, increased linkages between the two states could provide the importer with leverage against potential coercive action by the exporter.

As there are several different dimensions to the relationships between states, “political leverage” is comprised of several forms of linkages: political, economic, and social linkages.

$$\textit{Political Leverage} = \textit{Political Linkages} + \textit{Economic Linkages} + \textit{Social Linkages}$$

2.5.2.2.1 Political Linkages

A high degree of political linkages between the importing and exporting states may deter future acts of coercion. These increased linkages would represent a higher level of cooperation and communication between the two states, which may discourage the exporter from using food power to achieve its foreign policy goals and would encourage it to use diplomacy instead. The exporting state may prefer to avoid the economic and political costs involved in imposing an embargo or export ban, especially if diplomacy can be used to reach its goals instead. Diplomacy would be more likely to work if the two states have an existing diplomatic relationship and a high degree of political linkages.

Thus, I expect that import dependent states that have close political linkages to major exporters would view those relationships as potential deterrents against food power. In that case, they would be more likely to engage in cereal trade with major exporters, which would result in more efficient trade.

H₂: Among import dependent states, an increase in diplomatic representation in importing states by major exporting states results, on average, in a decrease in import prices.

2.5.2.2.2 Economic Linkages

A similar concept applies to economic linkages between importing and exporting states. Based on the theory of trade interdependence (Kant, 1795; Russett & Oneal, 2000; Oneal & Russett, 1999; Keohane & Nye, 1977), increased trade between states will decrease their likelihood of conflict. Hypothesis 1 tests the effect of trade interdependence when strategic goods in particular are being traded. Hypothesis 3 will examine trade interdependence more broadly and determine whether general increased trade between states will deter them from conflict. If increased trade does indeed reduce the likelihood of conflict, then import dependent states should feel confident in trading with major exporters for cereal products and should experience low import prices.

H₃: Among import dependent states, an increase in bilateral trade with major exporting states results, on average, in a decrease in import prices.

Foreign aid can be another form of economic linkages. If a major exporter provides the import dependent state with a large amount of foreign aid, it may signal an increased level of commitment to that state. By sending aid, the donor is investing in the future security and stability of the recipient state. This may make it less likely to use food power, since it would result in increased instability and conflict inside the import dependent state and counteracting their own aid efforts. Thus, the import dependent state may view the risks of trading with major

cereal exporters as lower, prompting it to engage in these trade relationships. This would result in more efficient trade and lower import prices.

H4: Among import dependent states, an increase in foreign aid from major exporting states will result, on average, in a decrease in import prices.

2.5.2.2.3 Social Linkages

Lastly, social linkages may act as a deterrent against food power as well. If the import dependent state has a large diaspora community inside the major exporting state, it may encourage diplomatic discourse and improve communication between the two states. Similarly to political linkages, this could promote diplomatic solutions to conflicts rather than the use of coercive measures like food power.

Diaspora communities could also increase the domestic political costs for the exporter if it uses food power against the community's origin state. Particularly in democracies, large diaspora communities can mobilize against their host government and punish leaders politically. This may increase the costs of using food power for the exporter, from not just economic costs but political ones as well.

For these reasons, import dependent states that have large diaspora communities in major exporting states may view these social linkages as a deterrent against food power. Thus, they may be more likely to trade with major exporters, resulting in lower import prices.

H5: Among import dependent states, an increase in importer diaspora communities within major exporting states will, on average, result in a decrease in import prices.

2.6 Research Design

Much of the existing empirical research on food security has been focused on macroeconomic studies of food price trends (FAO 2009; Abbott, Hurt, & Tyner, 2009; Von Braun et al, 2008; Godfray et al, 2010) or the effects of these food prices on domestic politics (Delgado, 1992; Ivanic & Martin, 2008; Pinstrip-Anderson, 1985; Wodon & Zaman, 2010). Many of these studies rely on domestic food prices to draw conclusions and ignore import prices of food as a unit of measure that is devoid of domestic price manipulations or subsidies.

I use yearly cereal import prices as a proxy for a state's food security status, as the two are closely correlated. This measure also allows for cross-country comparisons, since, unlike domestic food prices, it is not distorted by domestic subsidies that make it difficult to draw accurate comparisons between states with different policies. I test the theory proposed in this chapter by using time series-cross sectional regression with a large-N dataset of about 160 states from 1961-2011.

Following the large-N quantitative analysis, I use a case study approach to investigate the specific ways in which states use leverage to mitigate the threat of food power. Here, I can look more closely at specific trade deals and regional trade agreements that can result from the appropriate use of political or economic leverage against major exporters. I use the Middle East and North Africa (MENA) region as a case study to demonstrate the effectiveness of both

political and economic leverage in achieving lower food prices in a heavily import dependent region. I use the Sub-Saharan African region as a contrasting example to show how an import-dependent state that lacks leverage will experience higher import prices than other regions, and how their recent development of certain natural resources as economic leverage has begun to have an effect on their import prices.

Chapter 3: Quantitative Analysis

In this chapter, I use quantitative statistical analysis to test the relationship between an importer's leverage and its food security. I use several different measures of an importer's leverage – political, economic, and social – to estimate its impact on an importer's trading habits. These models demonstrate how an importer's leverage against a major cereal exporter can create a situation in which it can confidently make trading decisions without the fear of coercion by the exporter. In other words, having an effective form of leverage against an exporter increases the costs of coercion for that exporter. In this way, the importer's leverage acts as a deterrent which then allows them to trade efficiently and increase their food security – something that I measure by using cereal import prices.

By using this proxy for food security and using multiple indicators of leverage, I am able to show that import dependent states that have leverage against exporters are able to secure lower import prices, thereby increasing their food security. In this way, I address some of the fundamental research questions of this project – i.e. Why are some states more food insecure than others? Why do some import-dependent states trade inefficiently and pay higher import prices than others? This study is the first to examine food security as a function of an importing state's use of leverage, rather than as purely an economic question.

3.1 Dependent Variable: Price of Cereal Imports

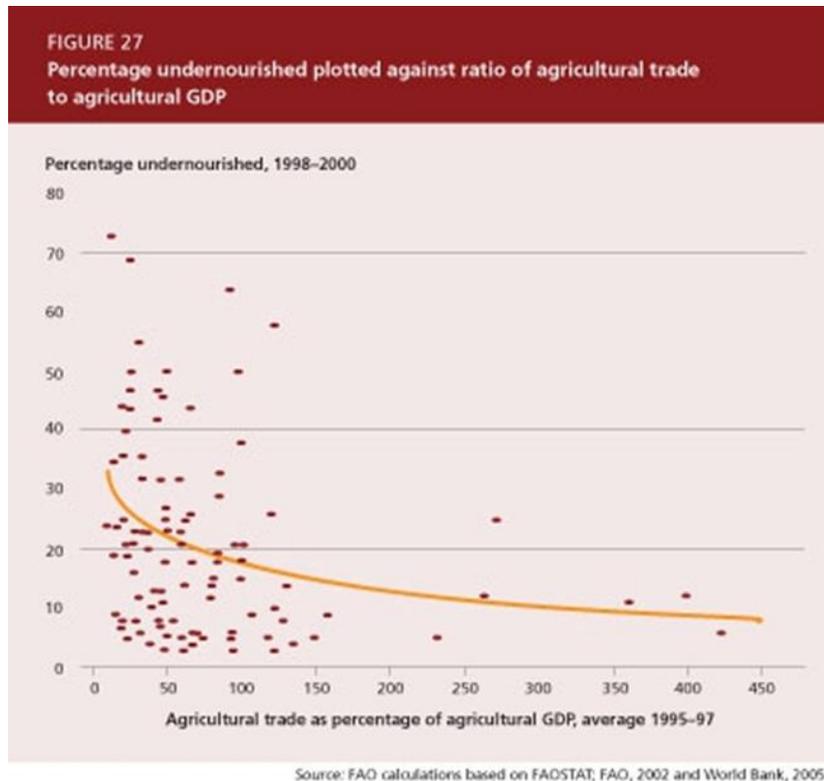
While the FAO has a specific definition of food security that provides a conceptual framework for the term, researchers have debated over the best way to operationalize it (Maxwell, 1996; Bickel, Nord, Price, Hamilton, & Cook, 2000; Staatz, D'Agostino, & Sundberg, 1990; Barrett,

2010; Bouis, 1993; Haddad, Kennedy, & Sullivan, 1994). One of the major debates is over what level of measurement is most appropriate. While individual- or household-level indicators can be ideal for measuring food security, these types of data are often unavailable or suffer from sampling bias (Maxwell, 1996). However, national or regional data are often too highly aggregated and distort the true levels of food security in the area, especially when trying to determine specific pockets of food insecurity within a country or region. Indeed, when comparing these two levels of measurement in the case of Mali, Staatz, D'Agostino, and Sundberg (1990) found that aggregate level data were a poor predictor of household or individual level food security. Although individual level data seem to be an optimal level of measurement for food security, they are often unavailable or unable to be compared across cases due to a lack of standardized surveying (Barrett, 2010). To add to this problem, there is no specific way to measure food insecurity. Data are often based on individual perceptions of hunger or access to food, which can be vulnerable to bias.

As a result of these measurement issues, one must use more reliable data to create a viable proxy for food security within the country in order to draw cross-national comparisons. For this project, I use food trade as a proxy for food security levels, specifically food import prices per ton. This indicator is useful for several reasons. First, it allows me to compare food security across countries using a common, reliable measurement that is not as vulnerable to bias as survey questions. Second, it is also a statistic that can be cross-referenced with multiple sources to obtain the most accurate measure. Food security indices, such as the Global Food Security Index (GFSI) (2014), calculate food security scores based on complex methods that take into account dozens of sources, making it difficult – if not impossible – to cross-reference with scores from

other organizations. Indices like the GFSI also assign aggregate scores to states indicating their level of food security, but these scores are difficult to unpack. Two states may have the same score, but for entirely different reasons (e.g., one may be deficient in importing food, while the other fails at providing the appropriate infrastructure to distribute food). Meanwhile, trade data, including the price of imports for food products, are available from sources like the FAO, World Trade Organization, and the World Bank, making them more easily verifiable and comparable across sources. Third, and most importantly, food trade is positively correlated with food security. This graphic (see Figure 3.1) from the FAO (Raney, 2005) illustrates the relationship between agricultural trade and undernourishment (one of the key indicators of food insecurity). While correlation does not imply causation, it suggests that as agricultural trade increases, the proportion of the population that is undernourished shrinks – thereby increasing food security. Food prices in particular have also been correlated to food security (HLPE, 2011; Ianchovichina, Loening, & Wood, 2012), as price volatility affects household incomes and purchasing power. In fact, because of its importance to food security, scholars have begun investigating food prices more closely; in particular, they have used international and domestic food prices to predict political instability (Arezki & Bruckner, 2011) and civil conflict (Dube & Vargas, 2013).

Figure 3.1 - Percentage undernourished versus ratio of agricultural trade, 1998-2000. Source: Raney, T. (2005). *The State of food and agriculture, 2005: Agricultural trade and poverty: Can trade work for the poor?* Rome: Food and Agriculture Organization of the United Nations.



To further establish the connection between food import prices and food security, I run a series of correlation tests comparing food import prices to consumer food price indices, and subsequently these price indices to GFSI's food security scores.²⁰ I use data from the GFSI (2014) and FAO (2015) for the year 2012²¹. The results of these tests show a statistically

²⁰ I use this two-step correlation process because food import prices are not specifically used in determining food insecurity scores, and therefore showed little correlation to them directly. However, they show a significant correlation to domestic food prices, which do have a strong correlation with food security scores. I do not use domestic food prices as the main dependent variable because they are heavily influenced by domestic policy and subsidies, which make it difficult to test my theory. Import prices provide a more exogenous measure of food prices.

²¹ This was the only year with data readily available for all three indicators.

significant correlation between import prices and domestic prices, and also domestic prices to food security scores.

Table 3.1 – Correlations between Cereal Import Price per Ton and Domestic Food Prices, and Domestic Cereal Prices and Food Security Score

	Domestic Cereal Prices	Food Security Score
Cereal Import Price Per Ton	0.229* (0.134)	
Domestic Cereal Prices		-0.287*** (0.0617)
Constant	3.884*** (0.809)	5.481*** (0.326)

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Thus, the first dependent variable is the *price of food imports* relative to the average price paid by non-import dependent states. I calculate this variable as the difference in the price per ton of cereal products²² paid by each state compared to the average price per ton paid each year by all

²² The basis of the dependent variable, import prices, reflects an aggregate measure of the unit price of all cereals imported to the country in a given year. The variable reflects the import value divided by the import quantity, creating a unit price measure of real U.S. dollars per ton of cereals. The import values and quantities are sourced from the United Nation’s Food and Agriculture Organization, which provides an import value and import quantity for an aggregate measure of cereal products. In other words, the variable is a direct manipulation of the aggregate cereal import values and quantities provided by the FAO and not a composite variable created by the author by combining the unit prices of various types of cereals. The FAO aggregates cereal import values and quantities by combining the import values and quantities for 17 different types of cereals.

Countries may import various levels of each type of cereal product based on their dietary compositions. I analyzed the proportion of different types of cereal to the overall cereal imports for each country and found that import dependent states are fairly evenly divided on the types of cereals they predominantly import. Wheat, rice, and maize were the top types of imported cereals

non-import dependent (NID) states in the sample. I use the difference in prices paid – as opposed to the absolute value of prices paid – because it allows me to control for volatility in the cereal market and set a baseline for cereal prices in any given year. I am able to compare the cereal import prices of import-dependent states to the import prices paid by non-import dependent states that are, according to my hypotheses, trading based on economic principles alone and therefore represent the average market price of cereal products. Using those prices as a baseline, I can then compare the import prices of dependent states to one another and isolate the effect of political and economic leverage.

Formally, the price difference is the price per ton paid by country (x) at time (t) subtracted from the average price per ton paid by all non-import dependent states (z) at time (t):

$$\text{Price difference dependent variable} = \text{Import price per ton}_{xt} - \text{Average import price per ton}_{zt}$$

by import dependent countries, making up 34, 22, and 19 percent of total cereal imports, respectively. Preferences for a specific type of cereal were, however, not significantly correlated with any of the types of leverage tested in this dissertation. In other words, import dependent states that primarily imported maize were not significantly more likely to have economic leverage (or any other type of leverage discussed here) than states that primarily imported wheat, rice, etc. In addition, specific types of cereal were not correlated with significant increases or decreases in import prices per year. In a given year, switching from maize to wheat, for example, did not result in a statistically significant change in total import prices.

Given the lack of correlation between specific types of cereals and import prices or leverages, it is unlikely that disaggregating by the type of cereal imported would give me much statistical leverage over the data. If a country that primarily imports wheat rather than maize is no more or less likely to possess political or economic leverage than other countries, then it would also be just as likely to experience higher or lower import prices as a result of the leverage it does have. By determining that cereal types themselves are not correlated with significant changes in import prices paid, it is also unnecessary to control for the type of cereal imported.

For these reasons, I feel comfortable using an aggregated measure of cereals, as calculated by the FAO. The use of this measure makes for a more parsimonious theory and estimation model. It also eliminates the need for multiple dependent variables that do not necessarily have distinct impacts on the predictor variables in the model.

Positive values indicate how much more the state paid than the NID average price, while negative values indicate how much less the state paid. While prices that are significantly lower than the NID average price may indicate a beneficial trade deal for the importer, the main focus of this dependent variable is to compare prices between import dependent states only. For the purposes of this study, it is less important how much less than NID states an importer pays; the main point of comparison is how much less than *other import dependent states* an importer might pay. I make this distinction because the fundamental differences between import dependent and independent states make it difficult to draw valid conclusions about price discrepancies between them.

It is important to note that although this dependent variable measures import prices, my theory does *not* imply that prices paid by states are directly manipulated by political relationships. Instead, import prices serve as the *observable implication* of inefficient trade behaviors that stem from political maneuvers. I assume that states that do not fear coercion by food exporters will form trade relationships and deals that will maximize their gains – in the case of food trade, that is importing food at the lowest possible cost. Since I argue that import dependent states without leverage must take into account the threat of exporter coercion, I assume that they cannot make trade decisions based solely on economic principles – thereby making it less likely that they are maximizing their trade gains. States with leverage can trade based on maximizing their own gains because they are assured that their form of leverage will prevent the exporter from using food power against them, for fear of retaliation or adverse effects on themselves. Thus, if these

states are trading efficiently and states without leverage are not, I would expect to see lower import prices among the former.

The dependent variable is a continuous measure of how much the states' cereal import prices deviate from the average price per ton each year between 1961 and 2011. Prices are measured in US dollars per ton (import value divided by import quantity). This variable is limited to the import prices of cereal products. These data are sourced from the Food and Agriculture Organization's statistical dataset (FAOSTAT) on trade indices. These trade data have the import and export values of all cereal products traded annually by all countries, as well as import and export quantities. They are presented as Cost-Insurance-Freight (CIF) values, which include the "transaction value of the goods, the value of services performed to deliver goods to the border of the exporting country and the value of the services performed to deliver the goods from the border of the exporting country to the border of the importing country" (FAO, 2015). They are sourced from national authorities and other international organizations (FAO, 2015).

3.2 Independent Variables: Political and Economic Leverage

The independent variables of this project focus on the types of political and economic leverage available to net-importing states.

3.2.1 Political Linkages

The political leverage variables represent forms of political, economic, and social linkages. *Political linkages* refer to the political and diplomatic ties between the importing state and the major cereal exporting states. Since I hypothesize that a higher degree of political linkage between states would deter the exporter from coercive action, I focus on diplomatic exchanges

going from the major exporter to the importing state. This variable ranges from 0 to 16²³, with 0 indicating no diplomatic representation from any major exporter (in the form of an ambassador, chargé d'affaires, minister, or other type of diplomatic representative) and 16 indicating maximum representation from each exporter in the importing state for each year between 1961 and 2011. I also include individual measures of diplomatic representation in the importing state from each major exporter to see if particular exporters have different effects.

The data for this variable come from the Correlates of War's Diplomatic Exchange dataset (version 2006.1) with data on diplomatic exchanges (Bayer, 2006). This dataset captures various levels of diplomatic representation between states every five years from 1950 to 2005. The data for 2005-2011 are imputed using the last observation carried forward. To ensure that these imputed data do not alter the results of the model, I also run the model excluding these imputed years and show that the relationships still hold (see Appendix 3.1).

3.2.2 Economic Linkages

Economic linkages refer to the economic ties between the importer and major cereal exporters. These include foreign aid or assistance, as well as bilateral trade between the importer and major exporters. A higher degree of economic interconnectedness (higher monetary amounts of aid or trade) indicates a greater amount of economic leverage for the importing state. In the case of foreign aid, this is because the exporter has invested its own assets into the importer, indicating that it has a vested interest in maintaining stability in that state. Using food power against them

²³ The maximum value is 16 since the maximum level of diplomatic exchange (ambassador) is coded as 4. This variable is a composite score of the level of diplomatic exchange with each of the four major exporters. For example, if a state has an ambassador from three of the major exporters and no representation from the remaining major exporter, it would have a composite score of 12 (4 + 4 + 4 + 0).

would counter these efforts at stability. Thus, greater amounts of foreign aid to an importing state signal a greater commitment to maintaining their stability. In terms of bilateral trade, greater amounts of trade between the two states increase the costs of coercion because they risk the existing trade relationships. So, greater amounts of bilateral trade between two states should decrease the risks of coercion from the food exporter. This is in line with existing theories on trade and peace that suggest that states with a high degree of trade interdependency are less likely to engage in conflict with one another (Oneal, Oneal, Maoz, & Russett, 1996; Barbieri, 1996; O'Neal & Russett, 1997, 1999).

The data for foreign aid between the importer and exporters come from AidData's dataset (version 2.1) on foreign assistance from 1973 to 2010 (Tierney et al., 2011). This dataset indicates the amount of aid committed (in 2009 US dollars) by each of the major exporters to each import dependent state in a given year.

The data for bilateral trade come from the Correlates of War Project's Trade Dataset (version 3.0), with data on annual bilateral trade between states from 1961 to 2009 in current US millions of dollars (Barbieri & Keshk, 2012). For this variable, I use the total amount of trade flow between the major exporters and importer.

3.2.3 Social Linkages

Social linkages refer to the degree of social connections between the states. I measure this using the size of the diaspora from the importing state located in the major exporting states. Larger diaspora communities indicate a higher amount of social linkages between the major exporters

and the importing state. If an exporter has a significantly-sized diaspora community from the importer, it may increase the domestic political costs of coercing the importer.

These data come from the World Bank Global Bilateral Migration database, which track the migration of individuals dyadically from 1960 to 2000 in increments of ten years (World Bank Group et al., 2011). I impute the data for each individual year based on the original number of migrants in the first year of the decade. While this is not an ideal method for determining the diaspora in each individual year, this dataset provides the best estimates for migration levels in each decade and also prevents any assumptions about the growth rate of the diaspora from year to year.

3.2.4 Economic Leverage

To measure economic leverage, I use the amount of total natural resource rents as a percentage of GDP. I use rents rather than the gross production of natural resources in order to account for costs of production, and since they give a clearer picture of how much a state profits from natural resources. I use natural resource rents as an indicator of economic leverage because it is a strategic good that states can use for leverage against one another. Note that strategic goods differ from goods that are merely scarce. For instance, diamonds are a scarce resource that form a substantial part of some states' exports, but they do not have the same strategic value as an export like oil. An interruption in diamond supply would not have the same impact on the food-exporting state as an interruption in oil supply, given that oil plays a significant role in the daily consumption and production activities of a state, whereas diamonds and other luxury products

are not necessities to the majority of people. Exports such as clothing and textiles, manufactured goods, and food products such as coffee or tea are also not considered strategic goods, even if they are the most valuable or largest export for the state in question. This is because the substitutability of these goods is high; if a state cannot get textiles from one state, it can easily get them from a multitude of other states *and* it would be able to politically withstand the time and cost of switching trade partners.

The data for this variable come from the World Bank's World Development Indicators (World Bank, 2011), which document the total natural resource rents (the sum of oil, natural gas, coal, mineral, and forest rents) as a percentage of a state's GDP annually from 1970 to 2011 for all countries. Higher levels of resource rents indicate that the importer has higher economic leverage over other countries, including major food exporting states.

3.3 Control Variables

I include several variables to control for other reasons why import dependent states' import prices may deviate from one another. First, I include a variable for *regime type* to indicate whether the importing state is a democracy. The literature on international trade has debated whether democracies are more likely to trade with one another (Olson, 1993; O'Neal & Russett, 1997) and net-importers may think the threat of future coercion is lower if it is also a democracy (3 out of the 4 major exporters are strong democracies). These data come from the Polity IV dataset (Marshall, Jaggers, & Gurr, 2002) and help to create an ordinal variable measuring on a scale between -10 and 10, with 10 indicating a strong democracy.

I also use a *GDP per capita* measure, to account for the effect of the importing state's economic stature. Importers with a higher GDP per capita may be at a lower risk of coercion because they are more powerful world economic players, or because they are better able to commit to a long-term trade deal. In addition, I include the state's *food trade openness ratio*²⁴ to control for the importing state's existing food trade network. If an importer has a high degree of trade openness, it can use those preexisting relationships to lower the risk of coercion or to make more beneficial trade deals. These data come from the Penn World Tables, covering the time period 1950-2010 for 189 countries (Heston, Summers, & Aten., 2012).

I include a dichotomous measure of *civil war* in the given country-year to indicate whether the importing state was engaged in a civil war during any years between 1961 and 2011. These data come from Fearon and Laitin's (2003) constructed dataset of violent civil conflicts. This dataset includes incidents up to 1999. I append the data for the remaining years (up to 2011) using data from the UCDP/PRIO Armed Conflict Dataset (version 4-2015; Gleditsch et al., 2002) applying the same restrictions used by Fearon and Laitin in their dataset. These coded incidents include civil conflicts that involve a non-state actor fighting against the state, at least 1000 battle deaths over the course of the conflict with an average of 100 deaths per year, and at least 100 killed on both sides (in order to rule out one-sided massacres). I include this civil conflict variable because the presence of intense conflict in a state could increase transportation costs (which are a component of overall import prices) and could compromise the state's ability to use its political or economic leverage against exporters.

²⁴ This variable is calculated similarly to traditional trade openness ratio measures, which is the proportion of import and export values to overall GDP. For this variable, I use the proportion of total food import and export values to overall GDP in order to isolate how open the state is in relation to food trade in general, as that may influence its cereal import prices.

Lastly, I include a *population* variable to control for the effect of demand. If an import dependent state has a large population – and therefore a higher demand for staple food products – it can alter the calculus of both the importer and exporter in making trade decisions or when considering the use of food power. These data also come from the Penn World Tables (Heston et al., 2012).

3.4 Descriptive Statistics

This dissertation focuses on the distinctions between import dependent states when it comes to the use of leverage and resulting food prices. Therefore, it is important to first describe this subset of import dependent states and how they fundamentally differ from non-import dependent (NID) states.

Import dependent states are those that rely more on imported food than domestically produced food to feed their populations. The FAO (2001) defines a state’s import dependency ratio (IDR) as a country’s “share of imports in relation to domestic food utilization, excluding stock changes” (Loke & Leung, 2013; FAO, 2001). Here I focus on cereal products, but states can be import dependent on any type of product. To calculate a state’s import dependency ratio (IDR), I use the following formula (Loke & Leung, 2013), where M =cereal imports, P =local production of cereals, and X = cereal exports:

$$IDR = \frac{M}{P + M - X} \cdot 100\%$$

Higher ratios indicate increased import dependency. In addition to this ratio, I construct an ordinal measure that groups states into different categories of dependency (Very Low Dependency, Low Dependency, High Dependency, Very High Dependency) based on the IDR variable quartiles. In addition, I create a dichotomous measure, where the high import dependency category consists of the upper 10% of IDR's. Lastly, I create another dichotomous measure that splits states into high and low categories based on the upper and lower 50% of ratios. These divisions allow me to compare states across these groups and identify differences between them based on multiple levels of aggregation.

Table 3.2– Average Import Dependency Ratios, All Categories, 1961-2011. Source: FAOSTAT. Compiled by author.

Average Import Dependency Ratio per Category	
<i>High-Low Dichotomy</i>	
<i>Lower 90% of cases</i>	0.27
<i>Upper 10% of cases</i>	1.12
<i>Split Dichotomy</i>	
<i>Lower 50% of cases</i>	0.03
<i>Upper 50% of cases</i>	0.68
<i>Quartiles</i>	
<i>Very Low Dependency</i>	-0.09
<i>Low Dependency</i>	0.15
<i>High Dependency</i>	0.40
<i>Very High Dependency</i>	0.96

Within these classifications of import dependency, there are significant variations in the price paid per ton of cereal products. Across the different categories, import dependent states tend to pay higher prices per ton for cereal products than non-import dependent states. The exception to this is among the four-category measure of IDR, where the highest and lowest categories pay more per ton than the middle categories. However, states with the highest IDR still pay the most

for cereal products. The differences in means for the High-Low Dichotomy and Split Dichotomy groups are tested using a two-group independent t-test. Since the Quartiles group has more than two categories, I use a one-way ANOVA test. In all three comparison tests, the differences in the average price per ton of cereals between each group are statistically significant, indicating that the differences between them are not random and that import dependent states do in fact pay significantly more for cereal imports.

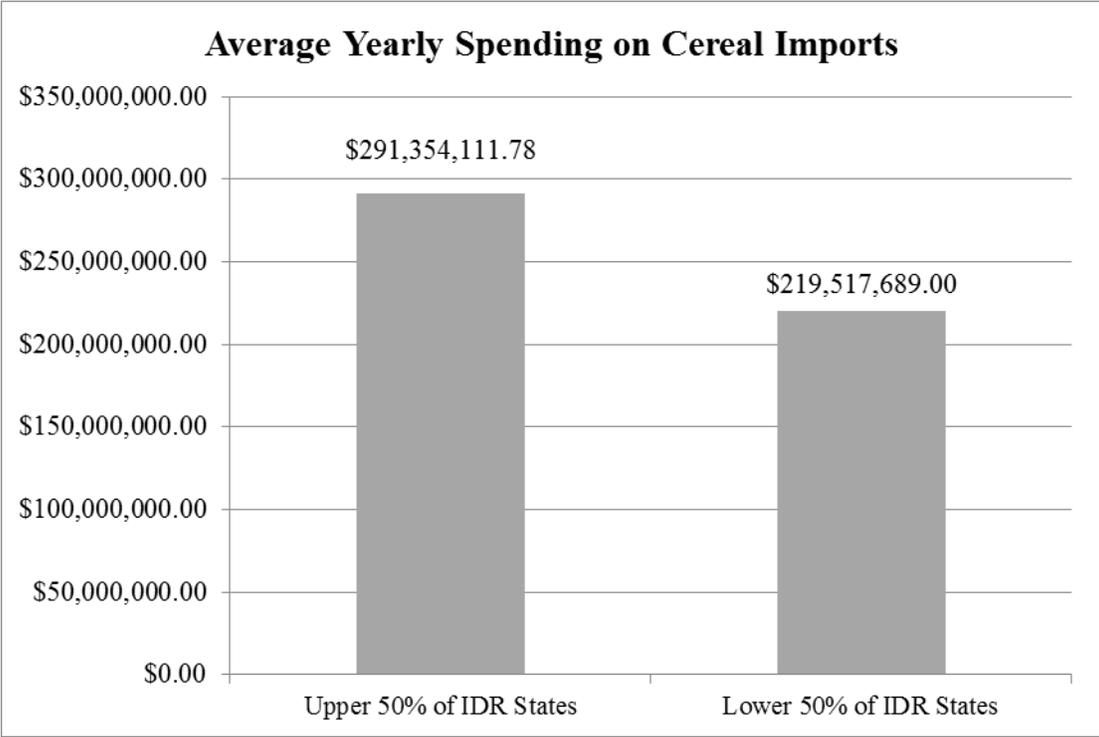
Table 3.3– Average Price per Ton of Cereal Products, All Categories, 1961-2011. Source: FAOSTAT. Compiled by author.

Average Price Per Ton of Cereal Products per Category	
<i>High-Low Dichotomy</i>	
<i>Lower 90% of cases</i>	\$206.54
<i>Upper 10% of cases</i>	\$269.23
<i>Split Dichotomy</i>	
<i>Lower 50% of cases</i>	\$212.78
<i>Upper 50% of cases</i>	\$220.48
<i>Quartiles</i>	
<i>Very Low Dependency</i>	\$238.94
<i>Low Dependency</i>	\$186.83
<i>High Dependency</i>	\$188.23
<i>Very High Dependency</i>	\$245.07

It is important to note the substantive significance of these differences as well. While the difference between price per ton for the upper and lower 50% of IDR levels is only \$8.15 per ton, this difference becomes more pronounced when it is put in the context of how much food is imported each year and the tendency of import dependent states to import more food per year than non-import dependent states. Based on the average tons of cereal products each group of states imports in a year, the upper 50% of IDR states spend about \$72 million *more* per year for

cereal product imports than the lower 50% of IDR states. As a proportion of their respective GDP's, the upper 50% of IDR states spend *four times* more than lower 50% of IDR states on their cereal imports.

Figure 3.2– Average Yearly Spending on Cereal Imports in US Dollars, Split Dichotomy group. Source: FAOSTAT. Compiled by author.



3.5 Statistical Models

The distinctions in cereal import prices between ID and NID states suggest that these two types of states experience fundamental differences when it comes to food trade. I argue that part of the reason import dependent states pay higher prices on average is because they are more likely to make inefficient trade deals in an effort to avoid future coercion by food exporting states.

However, some ID states pay less than others, and I argue that this is because these states use

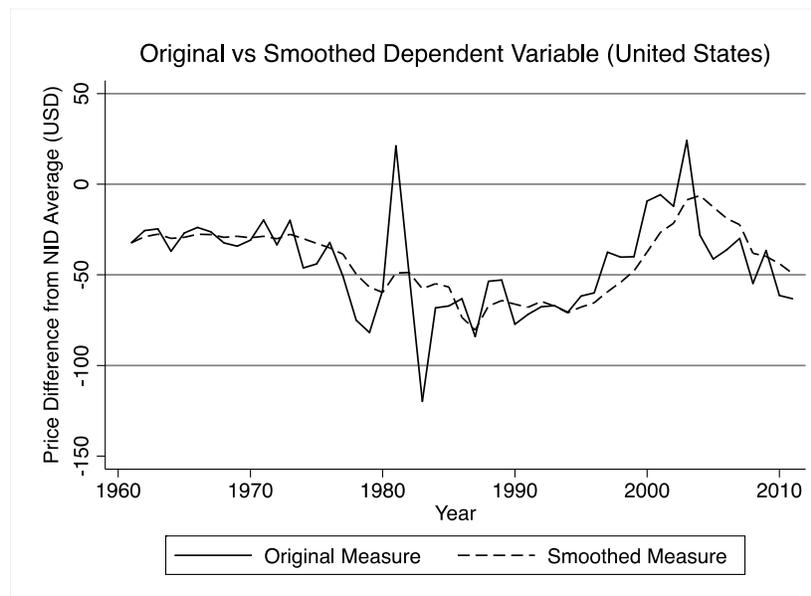
various forms of leverage to mitigate the threat from exporters, allowing them to trade efficiently – thereby lowering their import prices. It is important to note that in my hypotheses, trade decisions are not only dependent on the state’s available leverage, but also on whether or not they are import dependent. Since I expect no relationship between trade decisions (and their resulting import prices) and the political or economic leverage of non-import dependent states, I test my hypotheses only on the subset of import dependent states.²⁵

To test the hypotheses, I use a cross-sectional time-series ordinary least squares regression model with fixed effects to account for latent country variation and robust standard errors to correct for heteroskedasticity. As import prices tend to be volatile, I create a 5-year moving average of the dependent variable²⁶ to lessen the impact of external price shocks. I also use log-transformed versions of the resource rents, bilateral trade, foreign aid, diaspora communities, GDP, and population variables to correct for skewness.

²⁵ See Appendix 3.2 for model results run on non-import dependent states, which demonstrate the lack of relationship between import prices and these states’ levels of political and economic leverage.

²⁶ This measure averages the import price differences for the current year and the four previous years.

Figure 3.3 – Original vs. Smoothed Versions of Dependent Variable, United States case. Source: FAOSTAT. Compiled by author.



Since the import prices of one year can influence those of the next year, I include a two-year lagged version of the dependent variable in each model. I use this two-year lag rather than a one-year lag in order to prevent serial correlation, since the errors of adjacent time periods are likely to be correlated. I also use a lagged version of the IDR measure in order to avoid endogeneity as the IDR measure in time t is determined using import quantities in time t , which can be significantly influenced by import prices in time t . Import prices in time t have a minimal impact on a state's IDR in time $t-1$, but a state's IDR in time $t-1$ can still affect import prices in time t .

3.6 Results

The results, corresponding with each hypothesis, are presented below.

3.6.1 Hypothesis 1

Among import dependent states, an increase in resource rents as a percentage of GDP results, on average, in a decrease in import prices.

The results for Hypothesis 1 are shown in Table 3.4. Model 1 does not show statistically significant support for the negative relationship between resource rents and import prices. These results indicate that an increase in a state's resource rents does not necessarily result in a decrease in import prices.

Looking at different types of resource rents, it is interesting to note that while natural gas, coal, mineral, and forest rents (Models 4-6) have a statistically significant effect on import prices, oil rents do not. This is especially surprising given the strategic importance of oil, but could be due to the rising emergence of the United States, Canada, and Russia as major oil producers in the world. The fact that three out of the four major wheat exporters are also major oil exporters – and Russia is the world's largest natural gas exporter – is likely reducing the efficacy of oil and natural gas as deterrents against food power. With the exception of Australia as a leading exporter of minerals, the major exporters are less dominant in the production of the other natural resources included in this model. Again, this may be why a larger share of these types of resource rents can still have a deterrent effect against food exporters.

In addition, high corruption levels within a state may overshadow the deterrent effect of its resources. High levels of corruption may allow importers to make trade deals that are not the most economically efficient by making it possible to bribe or pay off officials. In these

situations, states are not trading efficiently, despite the opportunities to do so provided by the deterrent effect of their high resource rents.

Corruption can be particularly likely to occur in high levels in states with abundant natural resources, given the value of such resources in the world market. Based on the International Country Risk Guide's (ICRG) (Political Risk Studies Group, 2007) corruption ratings from 1992 to 2003²⁷, import dependent states with the top 25% of oil rents have an average corruption rating of 3.3 out of 6, while those among the lowest 25% of oil rents had an average rating of 2.6.²⁸ To a lesser extent, this difference also exists among import dependent states with high natural gas rents – states with high natural gas rents have an average corruption rating of 3.2, versus a rating of 2.9 in states with low natural gas rents.

When this corruption measure is included in Model 2 (oil rents), it has a statistically significant positive effect on import prices. A one unit increase in corruption ratings results in an almost \$4 increase in the price paid per ton. Oil rents still do not have an effect on prices, but again this may be due to the high oil production of major exporting states. The results of these supplemental models can be found in Appendix 3.3. In addition, I explore the relationship

²⁷ These dates were selected based on available data. While there are alternative datasets for corruption ratings, like Transparency International's Corruption Perceptions Index or the World Bank's Governance Indicators, the ICRG data has the most observations for the largest number of years covering the largest number of countries.

²⁸ ICRG rates corruption on a 0 to 6 scale at 0.5 increments, with 0 indicating high corruption levels and 6 indicating low corruption levels. When including this measure in my dataset, I inverted these ratings (making 0 indicate low corruption) to make the results more intuitive for the reader. The averages displayed here represent the inverted values, so higher numbers indicate higher levels of corruption.

between corruption and import prices in the oil-rich Gulf Cooperation Council states in Chapter 5. In conclusion, Models 3-6 find support for Hypothesis 1.

Table 3.4 – Effects of Resource Rents (% of GDP) on Cereal Import Prices (Models 1-6)

	(1)	(2)	(3)	(4)	(5)	(6)
	Total Resource Rents	Oil Rents	Natural Gas Rents	Coal Rents	Mineral Rents	Forest Rents
Price difference (lagged 1 year)	0.991*** (0.0117)	0.992*** (0.0119)	0.991*** (0.0122)	0.988*** (0.0117)	0.991*** (0.0122)	0.988*** (0.0127)
Total Resource Rents (% of GDP)	-0.103 (0.0705)					
Oil Rents (% of GDP)		-0.0529 (0.0625)				
Natural Gas Rents (% of GDP)			0.235** (0.113)			
Coal Rents (% of GDP)				-9.418* (5.317)		
Mineral Rents (% of GDP)					-0.796*** (0.268)	
Forest Rents (% of GDP)						-0.286*** (0.0729)
Import Dependency Ratio (lagged 1 year)	-2.511 (3.154)	-2.508 (3.151)	-2.670 (3.215)	-2.046 (3.118)	-3.093 (3.410)	-2.664 (3.622)
GDP per capita	6.23e-05 (0.000118)	5.04e-05 (0.000115)	1.66e-05 (0.000119)	3.11e-05 (0.000112)	7.42e-05 (0.000106)	3.68e-05 (0.000117)
Population	2.20e-08 (1.06e-07)	5.39e-09 (1.06e-07)	-1.02e-08 (1.01e-07)	-2.22e-08 (1.00e-07)	6.76e-09 (1.07e-07)	1.10e-08 (9.89e-08)
Civil Conflict	1.668 (1.416)	1.602 (1.362)	1.694 (1.324)	1.730 (1.261)	2.008 (1.354)	2.017 (1.541)
Food Trade Openness	-25.26 (17.49)	-27.51 (17.01)	-26.96 (16.83)	-31.68* (17.14)	-33.86** (16.91)	-20.63 (20.53)
Polity IV	0.0777 (0.114)	0.0697 (0.116)	0.0565 (0.114)	0.0675 (0.110)	0.0850 (0.117)	0.115 (0.121)
Year	-0.161*** (0.0603)	-0.159*** (0.0588)	-0.167*** (0.0591)	-0.146** (0.0574)	-0.180*** (0.0601)	-0.175*** (0.0620)
Constant	319.9*** (118.1)	315.8*** (115.2)	332.3*** (115.8)	290.2** (112.3)	358.0*** (117.7)	347.0*** (121.3)
Observations	2,262	2,253	2,233	2,262	2,194	2,160
R-squared	0.899	0.899	0.897	0.901	0.898	0.897
Number of States	98	97	98	98	97	96

DV: Price difference from NID states' average

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.6.2 Hypothesis 2

Among import dependent states, an increase in diplomatic representation in importing states by major exporting states results, on average, in a decrease in import prices.

The results for Hypothesis 2 are shown in Table 3.5. Model 7 shows statistically significant support for the notion that import dependent states that have increased diplomatic representation from major exporters pay lower import prices than import dependent states with lower levels of representation. The results show that states which lack diplomatic representation from major exporters paid an average of about \$5 more per ton than states that had high levels of diplomatic representation. Based on the average imported quantities per year, these states pay about \$3 million more each year than states with strong diplomatic ties to major exporters.

Models 8-11 show the effect of diplomatic representation by specific exporters on the import prices of dependent states. First, Model 8 tests the effect of representation by the United States in the importing state; results suggest that a one-unit increase in US representation (e.g. moving from no representation to the presence of a chargé d'affaires) in the importing state lowers the import price by \$0.65 per ton. States with the highest level of US representation pay, on average, about \$2.50 less per ton than states without American representation. At average import quantities, this results in about \$3.80 million less in import prices a year for states with high representation.

Models 10 and 11 show similar statistical support for the relationship between Australian or Canadian diplomatic representation and import prices. Both models show a decrease in import

prices – \$0.82 and \$0.84, respectively – as diplomatic representation by either country increases by one unit.

Table 3.5 - Effects of Diplomatic Representation on Cereal Import Prices (Models 7-11)

	(7) Major Exporter Representation	(8) USA Representation	(9) Russian Representation	(10) Australian Representation	(11) Canadian Representation
Price difference (lagged 1 year)	0.934*** (0.00929)	0.940*** (0.00924)	0.941*** (0.00942)	0.933*** (0.00971)	0.938*** (0.00780)
Major Exporter Diplomatic Representation	-0.332*** (0.0840)				
USA Diplomatic Representation		-0.646* (0.361)			
Russian Diplomatic Representation			-0.187 (0.254)		
Australian Diplomatic Representation				-0.821*** (0.249)	
Canadian Diplomatic Representation					-0.836*** (0.202)
Import Dependency Ratio (lagged 1 year)	-4.167* (2.213)	-4.290* (2.199)	-4.462** (2.231)	-4.265* (2.172)	-4.799** (2.223)
GDP per capita	0.000194** (8.84e-05)	0.000157* (9.16e-05)	0.000160* (8.83e-05)	0.000194** (9.30e-05)	0.000186** (8.81e-05)
Population	1.10e-07* (6.13e-08)	6.06e-08 (6.05e-08)	6.96e-08 (6.38e-08)	1.03e-07* (6.16e-08)	1.32e-07** (6.59e-08)
Civil Conflict	0.156 (1.189)	-0.0775 (1.215)	-0.120 (1.212)	-0.0670 (1.181)	-0.0166 (1.221)
Food Trade Openness	5.206 (15.47)	-4.851 (14.41)	-7.546 (13.26)	2.348 (14.09)	4.985 (14.50)
Polity IV	0.0645 (0.0698)	0.0714 (0.0713)	0.0883 (0.0727)	0.0612 (0.0716)	0.0572 (0.0683)
Year	0.00161 (0.0367)	0.00459 (0.0425)	-0.0178 (0.0378)	-0.0346 (0.0349)	-0.0312 (0.0347)
Constant	-3.990 (71.57)	-9.476 (82.85)	33.35 (73.73)	66.20 (68.11)	60.10 (67.60)
Observations	2,047	2,047	2,047	2,047	2,047
R-squared	0.906	0.905	0.905	0.906	0.906
Number of States	98	98	98	98	98

DV: Price difference from NID states' average

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

At the highest levels of Australian or Canadian diplomatic representation, import dependent states pay \$3.25 and \$3.33 less per ton than the states without representation – or \$4.2 million and \$4.14 million less a year, respectively, based on average import quantities.

Interestingly, Model 9 suggests that Russian diplomatic representation alone does not have a statistically significant effect on import prices. This could indicate democratic bias in the deterrent effect of diplomatic representation. Import dependent states that have stronger linkages with democratic states are able to use those ties to deter future coercion and therefore trade efficiently in the short term. This may be because they view democratic states as more constrained in their ability to use food power against them; democratic states that have links to importers may face higher domestic costs if they jeopardize those links. On the other hand, political links to Russia – which has had a history of political repression and an average Polity IV score of -2 (categorizing it as an anocracy) – do not necessarily have the same effect, which implies that import dependent states do not view political links to a non-democratic state as a strong enough deterrent against future coercion.

Models 7-11 all indicate that a state's Import Dependency Ratio in the previous year has a statistically significant effect on import prices, as does an increase in GDP per capita, though these findings are not substantively significant as a 1% increase in GDP per capita results in only a 5-cent increase in import prices.

The main findings of these models are that import dependent states that have strong diplomatic ties to major exporters are freer to make economically-driven trade decisions, knowing that their

political links to major exporters will deter them from using food power in the future. These economically driven trade decisions translate into lower prices, as these states trade more efficiently. While the effect of political representation on import prices is modest, it represents a small part of overall political linkages between states. It is a useful measure because it captures the minimum level of linkages and does not overestimate the cooperation between states. The existence of an effect between political ties and import prices here suggests that stronger political linkages have an even more pronounced effect on import states' trade decisions. Thus, Models 7-8 and 10-11 supported Hypothesis 2.

3.6.3 Hypothesis 3

Among import dependent states, an increase in bilateral trade with major exporting states results, on average, in a decrease in import prices.

Model 12 shows no statistical support for Hypothesis 3, and when disaggregated by each of the major exporters, only bilateral trade with Russia (Model 14) and Australia (Model 15) have a statistically significant negative effect on import prices (see Table 3.6). Russia and Australia trade with import-dependent states in similar quantities and frequencies as the other major food exporters, but there could be other latent reasons why bilateral trade with these countries would have a stronger deterrent effect on food power than trade with the other major food exporters. These reasons could involve the types of goods that are traded between the states or the trade history between them, but a more in depth study of Russian and Australian trade relations with food importers would be necessary to draw any definitive conclusions about the results of this model, which is beyond the scope of this project.

The results of Models 12, 13, and 16 indicate that a change in bilateral trade between import dependent states and major cereal exporters does not have an effect on that country's cereal import prices. This means that increased trade between the two states does not give confidence to the importer that the exporter will not use food power against them in the future. Based on these results, an increased amount of trade in all sectors does not necessarily provide protections against coercion in cereal trade. This may be because other sectors of trade offer more elasticity than food trade, where quantities and trading partners are determined by climate and crop yields. If a cereal exporter can easily replace goods imported from the target state with an alternative trading partner, then it is not an effective form of deterrence against future coercion in cereal trade. So, bilateral trade may not act as a potent form of economic leverage against the major cereal exporters.

Table 3.6 – Effects of Bilateral Trade on Cereal Import Prices (Models 12-16)

	(12)	(13)	(14)	(15)	(16)
	Major Exporter Trade	USA Trade	Russia Trade	Australia Trade	Canada Trade
Price difference (lagged 1 year)	0.967*** (0.00784)	0.965*** (0.00753)	0.957*** (0.0105)	0.963*** (0.00856)	0.967*** (0.0127)
Bilateral trade with major exporters¹	-0.751 (0.528)				
Bilateral trade with USA¹		-0.494 (0.370)			
Bilateral trade with Russia¹			-0.896*** (0.292)		
Bilateral trade with Australia¹				-0.626** (0.302)	
Bilateral trade with Canada¹					-0.346 (0.231)
Import Dependency Ratio (lagged 1 year)	-3.039 (2.703)	-3.090 (2.585)	-3.195 (3.061)	-3.937 (3.107)	-1.063 (2.756)
GDP per capita	4.48e-05 (8.21e-05)	3.99e-05 (8.11e-05)	8.43e-05 (8.08e-05)	6.33e-05 (8.48e-05)	4.64e-05 (8.40e-05)
Population	1.499 (1.205)	1.557 (1.217)	1.341 (1.280)	1.085 (1.247)	1.648 (1.365)
Civil Conflict	-6.30e-08 (7.14e-08)	-4.72e-08 (6.83e-08)	2.81e-09 (7.12e-08)	-1.33e-08 (7.53e-08)	-8.24e-08 (8.20e-08)
Food Trade Openness	-36.01** (17.24)	-32.00* (16.51)	-29.16 (19.72)	-28.41 (18.89)	-51.43** (25.75)
Polity IV	0.101 (0.0800)	0.0397 (0.0818)	0.0631 (0.0833)	0.0891 (0.0903)	0.137 (0.0963)
Year	-0.0261 (0.0522)	-0.0471 (0.0449)	-0.0661 (0.0450)	-0.0641 (0.0499)	-0.0566 (0.0557)
Constant	67.50 (96.68)	103.5 (84.80)	145.7* (87.47)	137.2 (96.36)	118.2 (107.7)
¹ Logged					
Observations	2,280	2,318	2,256	2,187	1,853
R-squared	0.899	0.898	0.893	0.896	0.885
Number of States	99	99	97	97	94

DV: Price difference from NID states' average

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In sum, Models 12, 13, and 16 do not support Hypothesis 3. Models 14 and 15 do support the hypotheses, but further investigation must be done to discover why Russian and Australian trade relationships differ significantly from other exporters' trade relationships.

3.6.4 Hypothesis 4

Among import dependent states, an increase in foreign aid from major exporting states will result, on average, in a decrease in import prices.

Model 17 finds statistical support for Hypothesis 4 (see Table 3.7). The results of the model show that as foreign aid from major exporters to import dependent states increases, the import prices paid by those states decreases. One standard deviation increase in foreign aid to these states leads to an import price decrease of \$2.82, meaning that states with the lowest levels of aid pay an average of about \$20 more per ton than states with the highest amounts of aid. When comparing states in the upper and lower 25% of the foreign aid distribution, states that receive less foreign aid pay about \$5.5 million more each year based on the average import quantities of import dependent states. At the highest and lowest levels of aid, states with low aid pay over \$19 million more each year than states with the highest levels of aid.

Some of the variation in import prices may be related to tied aid – foreign aid given to recipient states with the requirement that at least some of it be spent on goods and services from the donor country. In these situations, import dependent states may be receiving foreign aid that is tied to food exports from the donor country, and these food exports may also be discounted.

Unfortunately, it is unclear if the AidData dataset differentiates between tied and untied aid.

Tierney et al. (2011) make note of tied aid in their presentation of the AidData dataset, but do not explicitly mention if it is excluded from the sample. Thus, I must assume that tied aid is included in the dataset, which makes it impossible to exclude it from the analysis.

However, it is still possible to draw some conclusions from tied aid spending. Donor countries gain significant benefits from tied aid. For instance, the Cargo Preference Act of 1975 mandates that 75% of all American food aid must be shipped on private U.S. commercial vessels, with a crew that is 75% U.S. citizens. This translates to major gains for U.S. shipping interests, who lobby politicians to prevent changes to this policy (United States Senate, 2013). This also makes it politically and economically costly for the donor state to alter the aid policy or distribution amount, as a reduction in aid amounts would negatively affect the gains of their domestic shipping actors. Thus, as untied aid signals to recipient states that the donor is politically invested in their stability, tied aid creates a credible commitment between the two states. Import dependent states that receive high amounts of foreign aid – tied or untied – from major exporters can view it as a signal that the exporter is invested in maintaining the stability of their state and would gain little in coercing them in the future.

Models 18-20 show the relationship between foreign aid and import prices with aid disaggregated by donor country. In these models, only three of the four major exporters are represented; Russia is not a unilateral donor to any import dependent countries in the AidData dataset. The results of these models shed some light on the specific impact of each major exporter. In particular, they indicate that foreign aid from the United States has a statistically significant impact on import prices. On average, a one standard deviation increase in American

foreign aid to import dependent states leads to a \$2.28 decrease in import prices per ton. At the highest levels of American foreign aid, states pay about \$13.68 less per ton than states at the lowest levels of aid. At the upper and lower 25% of aid distribution, states with higher levels of American aid pay about \$3.8 million less each year than states with lower amounts of aid, based on average import quantities for import dependent states.

Australian and Canadian aid by themselves did not have a statistically significant effect on import prices. This could indicate that American foreign aid is a stronger signal of commitment to import dependent states; perhaps because of the larger quantities of aid that is distributed by the United States (on average, the United States distributes about ten times more foreign aid to import dependent states than Canada or Australia). These higher amounts of aid would indicate to import dependent states that the United States is literally and politically invested in their country – signaling that they are less likely to use food power against that country in the near future.

Table 3.7 – Effects of Foreign Aid on Cereal Import Prices (Models 17-20)

	(17) Major Exporter Aid	(18) USA Aid	(19) Australia Aid	(20) Canada Aid
Price difference (lagged 1 year)	0.981*** (0.0110)	0.982*** (0.0138)	0.992*** (0.0142)	0.949*** (0.0157)
Total Aid¹	-1.608*** (0.518)			
USA Aid¹		-0.929*** (0.336)		
Australia Aid¹			0.224 (0.249)	
Canada Aid¹				-0.0973 (0.446)
Import Dependency Ratio (lagged 1 year)	-3.145 (4.259)	-0.630 (4.059)	-4.502 (5.160)	-9.569 (8.239)
GDP per capita	-0.000152 (0.000336)	-8.49e-05 (0.000379)	-0.000662* (0.000356)	-0.000230 (0.000618)
Population	-1.62e-07* (9.68e-08)	-5.79e-08 (1.09e-07)	-1.90e-07 (1.17e-07)	-1.74e-07 (1.40e-07)
Civil Conflict	0.899 (1.446)	0.255 (1.652)	1.641 (1.441)	-1.181 (1.188)
Food Trade Openness	-36.56 (23.99)	-30.30 (25.82)	-45.34* (25.68)	11.76 (28.99)
Polity IV	0.120 (0.129)	0.117 (0.131)	0.132 (0.132)	-0.221 (0.194)
Year	-0.0530 (0.0782)	-0.190** (0.0844)	-0.0273 (0.0788)	-0.123 (0.151)
Constant	139.9 (152.2)	394.0** (167.4)	57.59 (154.5)	251.0 (298.3)
¹ Logged				
Observations	1,550	1,330	1,304	535
R-squared	0.895	0.898	0.892	0.877
Number of States	81	79	77	58

DV: Price difference from NID states' average

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The absence of a relationship between Australian and Canadian foreign aid and import prices may also speak to the effects of tied aid. Both Canada and Australia recently pledged to eliminate tied aid from their foreign aid allocations (Provost & Davidson, 2013; Government of

Canada, 2008). So, while the lower quantities of foreign aid may have signaled a lack of commitment to import dependent states, the reduction in tied aid may have caused a reduction in the effects of their foreign aid spending as well. In conclusion, Models 17 and 18 offer support for Hypothesis 4.

3.6.5 Hypothesis 5

Among import dependent states, an increase in importer diaspora communities within major exporting states will, on average, result in a decrease in import prices.

Model 21 indicates statistically significant support for Hypothesis 5 (see Table 3.8).

Unexpectedly, it also indicates a positive relationship between import prices and diaspora growth, suggesting that as importer diaspora communities in major exporting countries increase, import prices increase. This means that larger diaspora communities have a negative effect on deterrence, with importing states viewing major exporters as more likely to use food power against them if they host a large amount of their diaspora community.

While the size of the diaspora community may be increasing over time, it may still be small relative to the overall population of the host country, limiting the amount of political influence that can come with the mobilization of a large number of people. For example, Mexican immigrants are one of the largest diaspora communities in the United States, making up 29% of the total foreign-born population in America in 2010 (Grieco et al., 2012). Their substantial size would give them the ability to mobilize effectively against potential American coercion of Mexico (Oberholzer-Gee & Waldfogel, 2005; Shain, 1999; Shain & Barth, 2003). I would expect

a diaspora community of this size to have a deterrent effect on the host state, resulting in lower import prices for Mexico. A correlation test between Mexican cereal import prices and the size of the Mexican diaspora in the United States (including the control variables from the original model) indicates that the two have a strong negative correlation coefficient (-.75). This suggests that these types of cases do support Hypothesis 5, but that their effect is diluted in the aggregate sample. It is also difficult to accurately predict this relationship through regression models because of the small sample of import dependent states with significantly large diaspora communities in exporting countries. To illustrate how small this sample is: the Mexican diaspora community is the only one from an import-dependent state that, on average, comprises more than 0.4% of the population in the United States.

Similarly, the size of an importing state's diaspora community may not accurately represent their political power in the host country. A state with a relatively small diaspora community may still wield substantial political leverage in the host state through lobbying efforts. For example, while the Israeli diaspora community in the United States is very small in proportion to the overall population of the country (.04% of the American population is foreign-born Israeli) the Israeli lobby is one of the most powerful political lobbies in the United States (Mearsheimer & Walt, 2006).

Table 3.8 – Effects of Diaspora Community on Cereal Import Prices (Models 21-25)

	(21) Diaspora in Major Exporters	(22) Diaspora in USA	(23) Diaspora in Russia	(24) Diaspora in Australia	(25) Diaspora in Canada
Price difference (lagged 1 year)	0.992*** (0.0113)	0.992*** (0.0115)	0.914*** (0.0306)	0.991*** (0.0116)	0.992*** (0.0119)
Diaspora in Major Exporting States¹	2.532*** (0.736)				
Diaspora in USA¹		1.349*** (0.443)			
Diaspora in Russia¹			5.161 (3.263)		
Diaspora in Australia¹				1.325*** (0.315)	
Diaspora in Canada¹					2.203*** (0.458)
Import Dependency Ratio (lagged 1 year)	-4.348 (2.901)	-4.492 (2.896)	1.687 (6.741)	-2.863 (2.789)	-4.138 (2.869)
GDP per capita	0.000182** (8.83e-05)	8.51e-05 (9.69e-05)	0.000497 (0.000633)	6.27e-05 (8.10e-05)	0.000105 (8.64e-05)
Population	-4.35e-09 (7.78e-08)	-6.59e-09 (8.29e-08)	-6.26e-07* (3.65e-07)	1.07e-08 (8.21e-08)	-2.72e-09 (7.54e-08)
Civil Conflict	1.902 (1.151)	1.710 (1.157)	-9.142*** (3.236)	2.141* (1.231)	1.254 (1.237)
Food Trade Openness	-18.12 (16.54)	-20.13 (17.31)	56.82 (42.12)	-22.76 (16.34)	-22.15 (16.26)
Polity IV	0.0226 (0.0967)	0.0684 (0.0975)	-0.605 (0.453)	0.0742 (0.0874)	0.0647 (0.0904)
Year	-0.307*** (0.0706)	-0.234*** (0.0662)	-2.201*** (0.408)	-0.220*** (0.0472)	-0.294*** (0.0609)
Constant	584.3*** (133.6)	451.1*** (127.1)	4,380*** (792.4)	425.9*** (91.13)	570.0*** (118.1)
¹ Logged					
Observations	2,486	2,456	530	2,470	2,446
R-squared	0.907	0.907	0.877	0.907	0.905
Number of States	99	99	52	99	99

DV: Price difference from NID states' average

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The Israeli diaspora community in the United States – through a combination of fundraising, outreach, and strong political networks built over time with non-Israeli Americans and Jewish Americans – has significant power over American foreign policy, particularly as it relates to the Middle East and Israel. This type of political leverage in the host country can act as a deterrent against coercion against the origin country, as predicted by Hypothesis 5. When examining the trend through time of Israel’s import prices, it is clear that their prices have decreased steadily

through the years (Figure 3.4). Since the Israeli diaspora community and their supporters' lobbying power in the United States has increased steadily since the 1960's (Weber, 2004), one can draw some general inferences from this correlation. Assuming that in this case lobbying power increases through time, it is associated with a decrease in import prices for Israel over time.²⁹ These quantitative results indicate a relationship, but the effect of lobbying power would perhaps best be tested using a case study approach.

Figure 3.4 – Israeli Cereal Import Prices, 1961-2011. Source: FAOSTAT. Compiled by author.



Although Models 21-22 and 24-25 do not show statistical support in the expected direction of Hypothesis 5, this may be because the relationship between diasporas and import prices is limited to cases of large or politically powerful diasporas, particularly in democracies.

²⁹ The correlation coefficient of import prices and years shows a strong negative relationship (-.89).

3.7 Conclusion

The results of this chapter shed light on the effects that various forms of leverage can have on a states' food security. By using a proxy for food security rather than relying on the limited data available through aggregated scoring systems, I am able to show that leverage can have a significant effect on a state's import prices. This is an important contribution to food security research as it shows an alternative method for testing the relationships between politics and food security. By using import prices, a more nuanced measure of food security can be gleaned, offering more predictive power than an aggregated food security score with little transparency.

The models used in this chapter show that leverage in the form of diplomatic exchanges, resource rents, and foreign aid spending can have a significant effect on lowering a state's import prices. They support my hypotheses that having these forms of leverage can have a deterrent effect on the exporter, allowing the importer to trade more efficiently and ultimately improve its food security. Bilateral trade between an importer and food exporter does not have this same effect, casting doubt on the idea that increased trade between states necessarily acts as a tool of political cooperation. Lastly, social linkages between the importer and exporter may be better examined using a case study approach, and certain thresholds for diaspora size or lobbying power must be reached before it can have an effect on import prices. This highlights the complex relationship between diaspora communities and their influence on their host states, and would be an interesting avenue for future research.

In the next chapter, I use a case study approach to illustrate how these forms of leverage have helped the Middle East secure lower import prices than other import dependent regions in the world.

Chapter 4: Political Linkages and Cereal Prices: Jordan

This chapter explores the effects of leverages on efficient trade in the context of a specific country case. Here I focus on the Middle East and North Africa (MENA) region³⁰, and specifically one country within that region – Jordan – as an illustrative case of how a state with political leverage can engage in efficient food trade. MENA is an overwhelmingly food import dependent region, but within it are distinct variations of food security outcomes and levels of trade efficiency. For this reason, it is an interesting region to examine and the Jordanian case provides an opportunity to examine one of these varied states more closely. Jordan is an import dependent state, but it has significant political linkages in relation to major exporting states, particularly the United States. These relationships have allowed Jordan to pursue the most economically efficient trade deals and have resulted in low import prices and strong food trade relationships with major food exporting states.

In this chapter, I will first provide some background on the general food security situation in the Middle East and demonstrate some of the variation that exists among the states there. Then, I will introduce the Jordanian case as an illustration of some of the results that were found in the large-n quantitative analysis in Chapter 3. I will detail Jordan's background and food security concerns, and also detail its various forms of leverage. Lastly, I will explore Jordan's food trade patterns, trading partners, and import prices to highlight the relationships between its political leverages and trade behavior. I find that political linkages seem to be correlated with trade behavior. In addition, the effect may not be permanent as the impact of political linkages diminishes with time – until the next episode of linkage arises.

³⁰ See Appendix 4.1 for a list of countries included in this region.

4.1 Food Security in the Middle East and North Africa

The Middle East and North Africa region has been plagued with food security concerns for decades. The rapid rise in population in the 1970's, coupled with increased per capita incomes, has led to a growth in demand for grains, fruits and vegetables, and meat products (Babar & Kamrava, 2014). This has pushed these states to depend increasingly on food imports to meet demands. It is currently the most food import dependent region in the world (Breisinger et al, 2010). This dependency makes them particularly susceptible to fluctuations in food prices and the political aims of food exporters. For example, MENA states experienced the high costs of this import dependency in 2008, when many major grain exporters banned grain exports because of domestic pressures (Woertz et al, 2008) and domestic food prices skyrocketed.

4.1.1 Variation among States

The Middle East and North Africa is not the most food insecure region in the world³¹, but the significant variation of food security levels within it make it an interesting region to examine. This variation can be largely attributed to the different climates and domestic economies within this region.

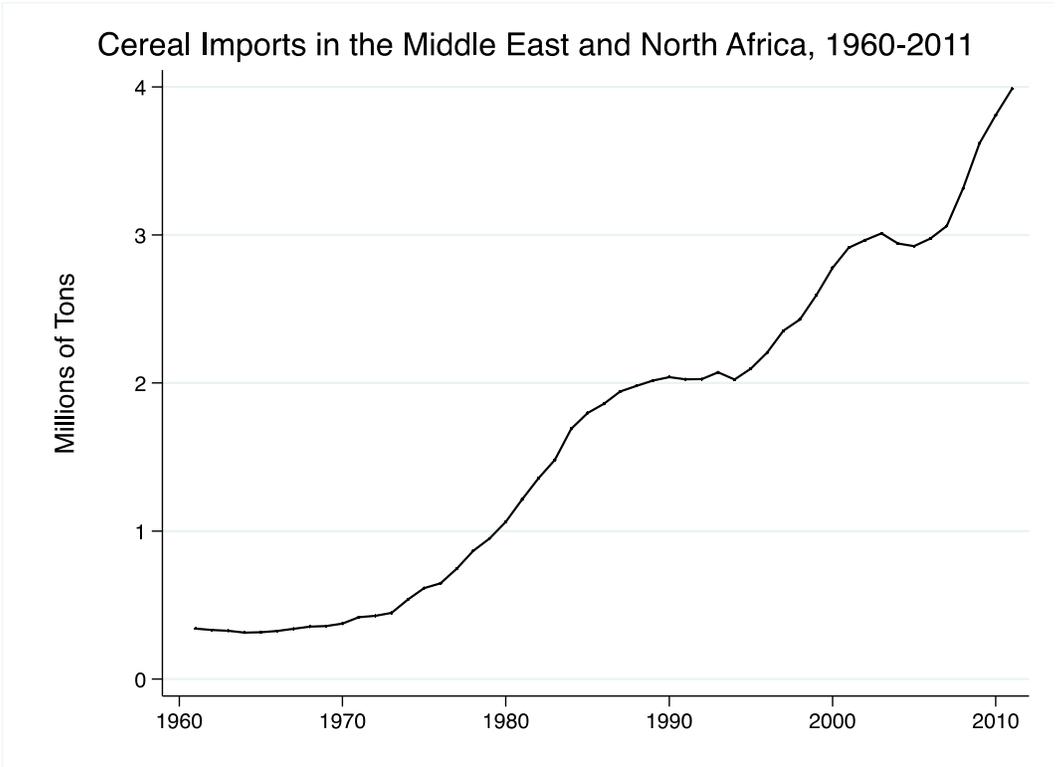
The Middle East and North Africa region, as it is specified in this dissertation, covers 20 countries and territories across almost 5 million square miles of land. It contains a variety of environments, from dry, arid deserts to Mediterranean-like climates with long summers and mild winters (Dixon, Gibbon, & Gulliver, 2001). The vast majority of the land area is arid and

³¹ Sub-Saharan Africa and East Asia are similar to MENA in their food insecurity levels.

difficult to farm, resulting in limited agricultural production and a reliance on expensive irrigation methods to increase supply.

The gap between the agricultural supply produced within MENA countries and the growing demand for them has created a need for outside sources of food. For this reason, MENA countries have become increasingly dependent on foreign imports of food products. As Figure 4.1 illustrates, cereal imports in the region have grown at a steady pace since 1960.

Figure 4.1 – Cereal Imports in the Middle East and North Africa, 1960-2011. Five-year moving average. Source: FAOSTAT. Compiled by author.

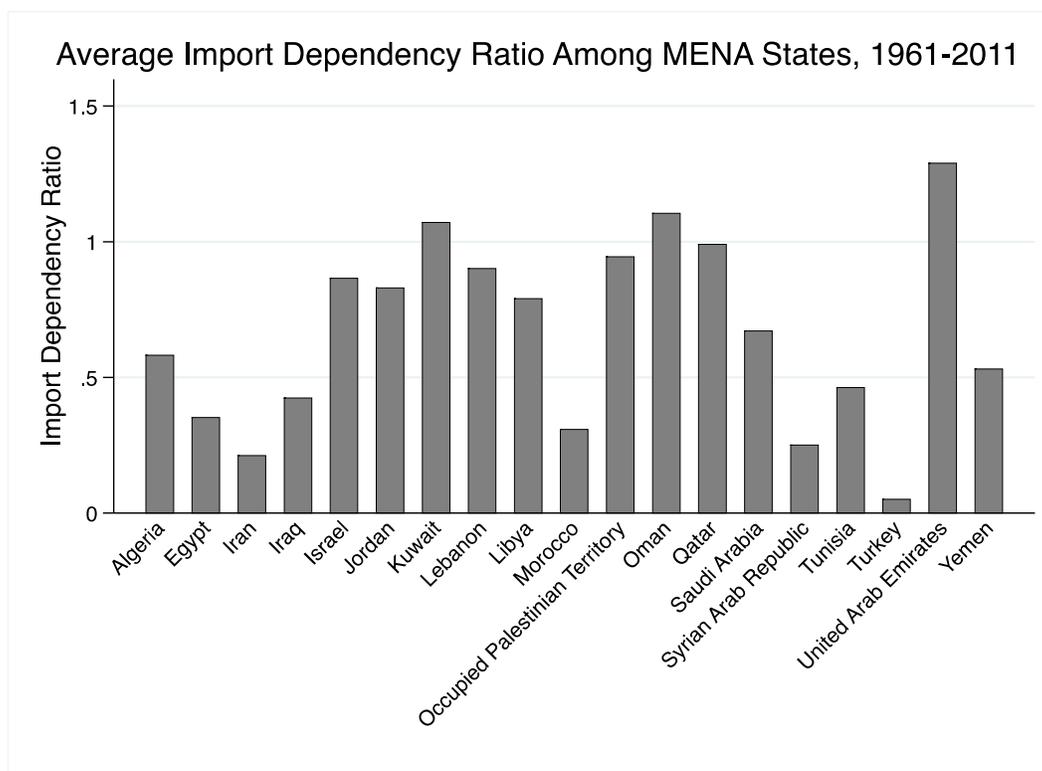


While high levels of import dependency are not unique to MENA countries, they do hold particular political salience for this region. The U.S.’s threatened grain embargo against OPEC following the 1973 oil crisis has shaped the region’s approach to food politics, making these

states wary of relying too heavily on outside states for food sources. Adding to these fears, the U.S. also considered a grain embargo against Iran following the 1979 revolution and subsequent hostage crisis (Woertz, 2013). The use of food power in the region has not been limited to the U.S. however; the United Nations instituted a trade embargo against Iraq from 1991 to 1996 that led to significant malnutrition in Iraq and was a reminder to MENA states of the dangers of outside reliance for food (Harrigan, 2014b). Logistically, instability in the region could impact import routes and shipping lanes, cutting off or severely restricting the amount of goods that can reach states. Lastly, some states' heavy reliance on income from energy exports (and subsequent lack of economic diversification) to fund these food imports can have negative ramifications in the future if the price of energy exports decreases (Bailey & Willoughby, 2013).

Dependency on food imports has varied among states, however. Some states, like Turkey, Syria, or Iran, have relatively favorable climates for agriculture and have been able to keep import dependency low over time. Others, particularly those in the GCC like the UAE, Kuwait, Oman, and Qatar, have very high import dependencies because of their inability to grow enough food in their arid climates. These countries import 80-90% of their total consumed food products (Bailey & Willoughby, 2013).

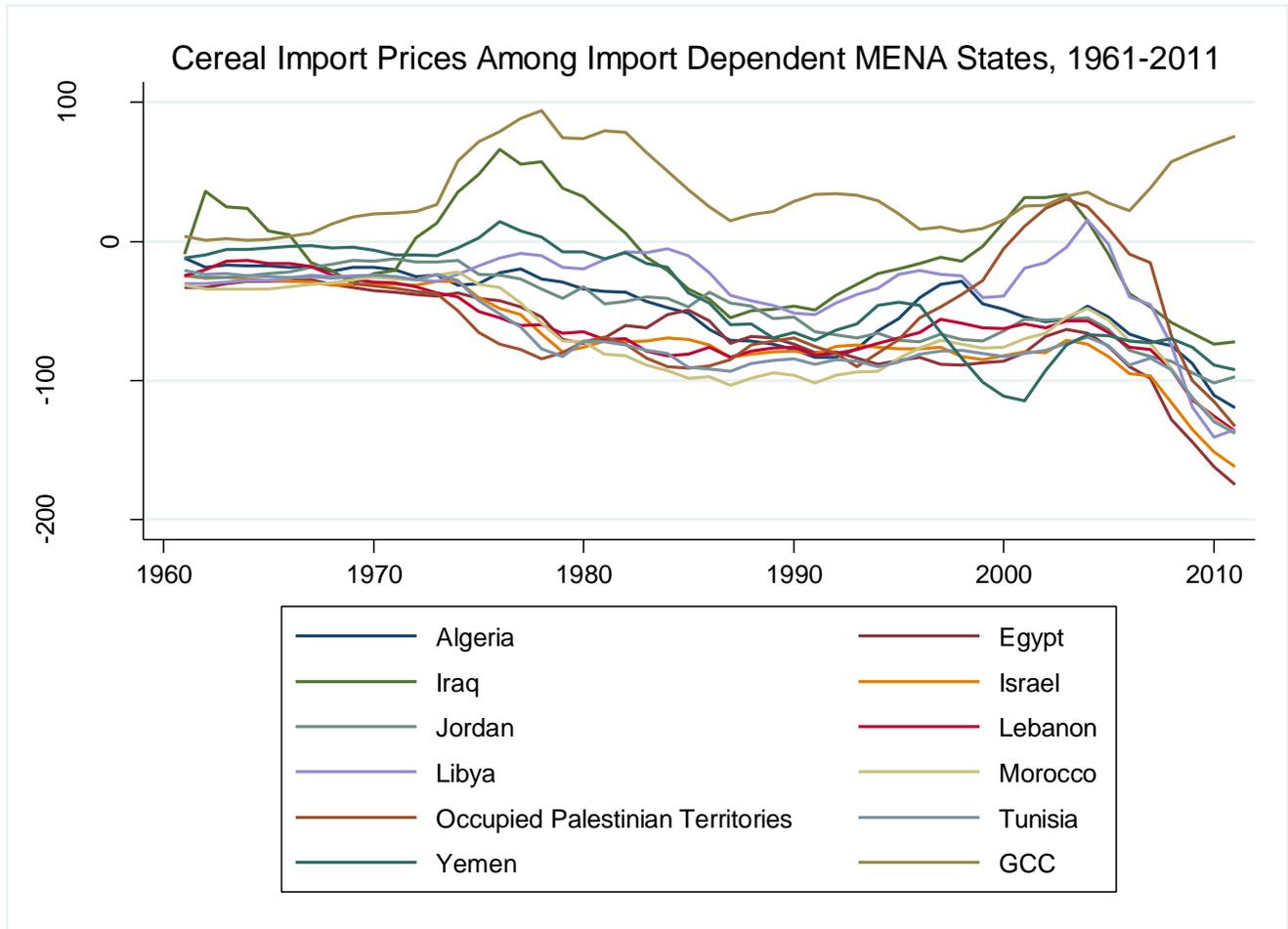
Figure 4.2 – Average Import Dependency Ratio Among MENA States, 1961-2011³². Source: FAOSTAT. Compiled by author.



The International Food Policy Research Institute’s IMPACT model (International Model for Policy Analysis) as well as the FAO’s Food Balance Model have indicated that population growth and demand for staple foods in the MENA region are set to increase substantially by 2030, but that regional food production will not match this pace (Harrigan, 2014b). Thus, levels of import dependency in this region will likely increase in the future despite concerns about its potential political risks.

³² Bahrain is excluded from Figure 4.2 because of missing cereal production data, making it difficult to calculate an accurate average IDR.

Figure 4.3 – Cereal Import Prices (Difference from NID Prices) Among Import Dependent MENA States, 1961-2011³³. Source: FAOSTAT. Compiled by author.



Among import dependent states, there is also variation in the prices paid for food imports. Figure 4.3 illustrates the extent of this variation. GCC states pay some of the highest prices for cereal imports; In Chapter 3, I noted that states with high oil rents tend to pay higher import prices and that this may be a function of corruption within the state. The GCC states are some of the most oil-rich countries in the world and also

³³ The import prices of GCC states (Saudi Arabia, Oman, Qatar, Bahrain, UAE, and Kuwait) are averaged in Figure 4.3 for clarity. Appendix 4.2 shows the import prices of these six states disaggregated.

have moderately high levels of corruption, with an average score of 3.5 out of 6 on the ICRG corruption scale (Political Risk Studies Group, 2007).³⁴ Others, like Lebanon, Egypt, and Morocco, pay import prices that are not significantly different from the prices paid by non-import dependent states. This variation in the import prices paid by dependent countries raises the question of what is driving these differences. Why are some states in the region trading more efficiently than others?

I argued in Chapter 2 that various forms of leverage effect a state's trading efficiency. In Chapter 3, my analysis suggested that political linkages – more so than economic leverage in the form of oil or natural gas exports – would have a positive effect on trade efficiency. In this chapter, I use the case of Jordan to further explore this relationship between political linkage and food trade, as Jordan enjoys considerable political linkage with major food exporters.

4.1.2 The Jordanian Case, 1990-1999

Among the MENA states, Jordan during the 1990 to 1999 decade serves as an ideal case study for how political linkages can impact trade behavior. This decade contained multiple instances of ebbs and flows in Jordan's political linkages, demonstrating situations where its political linkages vis-à-vis major food exporters increased and decreased significantly. This presents within-case variation of the independent variable, allowing for a comparative study of trade behavior during times of high and low political linkage while controlling for factors such as regime type, conflict, GDP, and culture that can make cross-country comparisons difficult.

³⁴ I discuss the GCC case in depth in the following chapter.

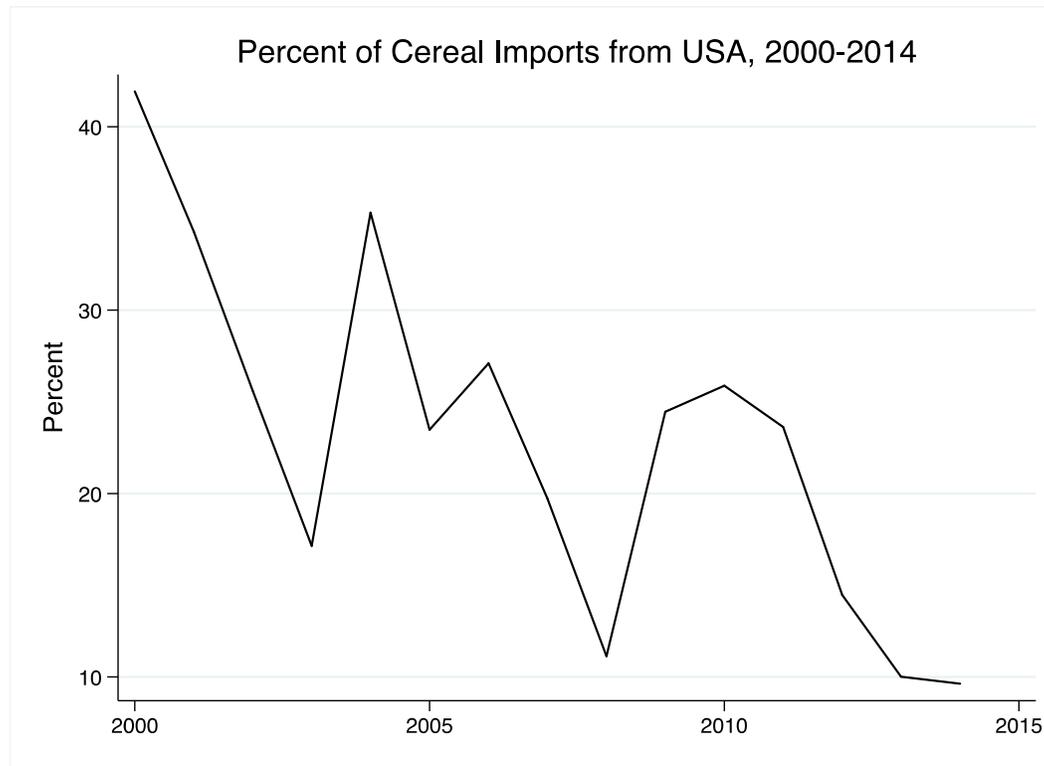
This time period also provides consistency in terms of other factors that could influence food trade behavior. During this decade, Jordan was (and continues to be) heavily dependent on cereal imports to feed its populations (FAO, 2015). From 1990 to 1999, Jordan had an average Import Dependency Ratio of 0.95 -- a very high level of dependency. For comparison, non-import dependent states had an average IDR of 0.1. Jordan also experienced relative stability within its borders, with no instances of civil war. It maintained an above-average food trade openness ratio of 0.08 (compared to an average ratio of 0.03 worldwide), most likely because of its reliance on outside food imports to feed its population. This trade openness suggests that Jordan had an existing preference to engage in trade to obtain food rather than try to invest in greater self-sufficiency measures. Jordan was also led by the same monarch for almost the entirety of the decade, and its regime type remained consistent. The consistency of these potential alternative explanations for trade behavior during the decade allow for a clearer relationship between changes in political linkages and trade behaviors.

While I do not include the post-1999 years in this case study, it is important to note that many of the same relationships between trade and political leverage continued to exist. After the 1990's, two specific events shaped Jordan's political linkages with the United States (one of the most significant major cereal exporters). First, the Jordan-United States Free Trade Agreement (FTA) was signed on October 24, 2000. Jordan was the first Arab country to create an FTA with the U.S., and this signaled a strong

political relationship between the two states. The U.S.'s economic interests in Jordan were limited, but it stood to gain from a strong bilateral political relationship (Rosen, 2004). In part, the FTA was intended to reward King Hussein for his participation in peace talks with Israel and to keep King Abdullah – who succeeded his father in 1999 – involved in the peace process (ibid.). It was a clear example of trade policy being used to shape foreign policy.

The FTA virtually eliminated tariffs on goods, including cereals, traded between the U.S. and Jordan over the course of the decade. This would have an impact on domestic prices of imported cereal, but not necessarily on the import price at the port of destination before subsidies and domestic markups are applied. An FTA would, however, have an effect on the importer's perception of risk vis-à-vis the exporter. The Jordan-US FTA included provisions for dispute settlements where a panel could issue a non-binding report to resolve the issue with the option for the affected country could pursue the matter further (Rosen, 2004). The presence of a free trade agreement between Jordan and a major cereal exporter like the United States could encourage greater dependence on U.S. cereals, since the risk of coercion is reduced by this mutually beneficial agreement. Based on the theory outlined in Chapter 2, I would expect to see greater levels of trade with the U.S. during the 2000's decade because of the increased political linkage created by the FTA. In general, this expectation holds, as the cereal trade with the U.S. as a proportion of overall cereal trade increased from the 1990's to 2014 (see Figures 4.4 and 4.12).

Figure 4.4 –Percent of Jordanian Cereal Imports from USA, 2000-2014. Source: NBER-UN. Compiled by author.



While the share of cereal imports from the United States decreases over time, it still constitutes a significant trade relationship for Jordan. The share of cereal imports from the U.S. often far surpasses imports from any other single country. For example, the U.S. is Jordan’s third largest cereal provider in 2008, although it is a low point in the share of imports from the U.S. (about 11 percent of total cereal imports). In fact, over the course of the 15 years between 2000 and 2014, the U.S. was always among Jordan’s top five cereal trading partners and its top trading partner for seven of those years (Feenstra & Lipsey, 2000). The spike in global food prices in 2008 could have also encouraged Jordan to diversify its import origins, although it continued to primarily import from the U.S. and Russia, with which it also has good political relations (ibid).

In addition to the free trade agreement, another major political event solidified the US-Jordanian relationship: 9/11 and the subsequent Iraq War. Jordan became a boon for the U.S. when they agreed to join the latter's "Coalition of the Willing" publicly in 2003 (Newnham, 2008). Jordan received nearly \$700 million in economic aid from the U.S. that year (ibid.) in exchange for supporting the war against Saddam Hussein's regime – a move they refused to make in the first Gulf War. The alliance ushered in a decade of strong Jordanian-U.S. cooperation in regional matters, especially as Jordan remained "relatively unscathed" compared to its neighbors during the Arab Uprisings in 2010 and onward (Murad, 2014).

Despite the continuation of good Jordanian relations with one of the major cereal exporters in the world, I exclude these post-1999 years from the remainder of this case study. As previously mentioned, many of the control variables that could influence import decisions and prices were held constant during the 1990-1999 decade. The shift from one decade to the next saw the introduction of a new monarch, a significant war in the region, and the worst food price crisis since the beginning of the previous decade. While the general theory holds – as is evidenced by Jordan continuing to import most from the major exporter it has the closest political relationship with – it is difficult to empirically compare Jordan's political motivations from one decade to the next given the inconsistencies in outside factors. Limiting the study to a ten-year period also allows for a smaller, more detailed examination of Jordan's political linkages as well as its trade behaviors. A detailed study of the entire

50 year (1961-2011) time period – or even a 25 year period – examined in the large-n analysis would be beyond the scope of this chapter, but could be a worthwhile continuation of this project. The post-1999 Jordanian political environment, and particularly its political and trade relationship with the U.S., is certainly worth examining as a stand-alone case at a later date.

In the following section, I discuss Jordan’s geographic, political, agricultural, and food security backgrounds before examining its types of leverages. I then draw connections between instances of increased political linkages and subsequent trading behavior, arguing that the episodes of heightened linkages led to a corresponding increase in trade with major exporters.

4.2 Jordan

4.2.1 Background

The Hashemite Kingdom of Jordan³⁵, with a population of about 8 million people, is located on the eastern bank of the Jordan River, bordered by Saudi Arabia to the south and east, Iraq to the north-east, Syria to the north, and Israel and Palestine to the west. It is almost entirely landlocked, with the exception of a 16-mile stretch of shoreline at its southern-most tip. Much of the eastern portion of Jordan is a plateau with mountainous topography. To the west, the land dips to create the Jordan Rift Valley, which runs along the entirety of the Jordan River.

³⁵ “The Hashemite Kingdom of Jordan” is the official name of Jordan.

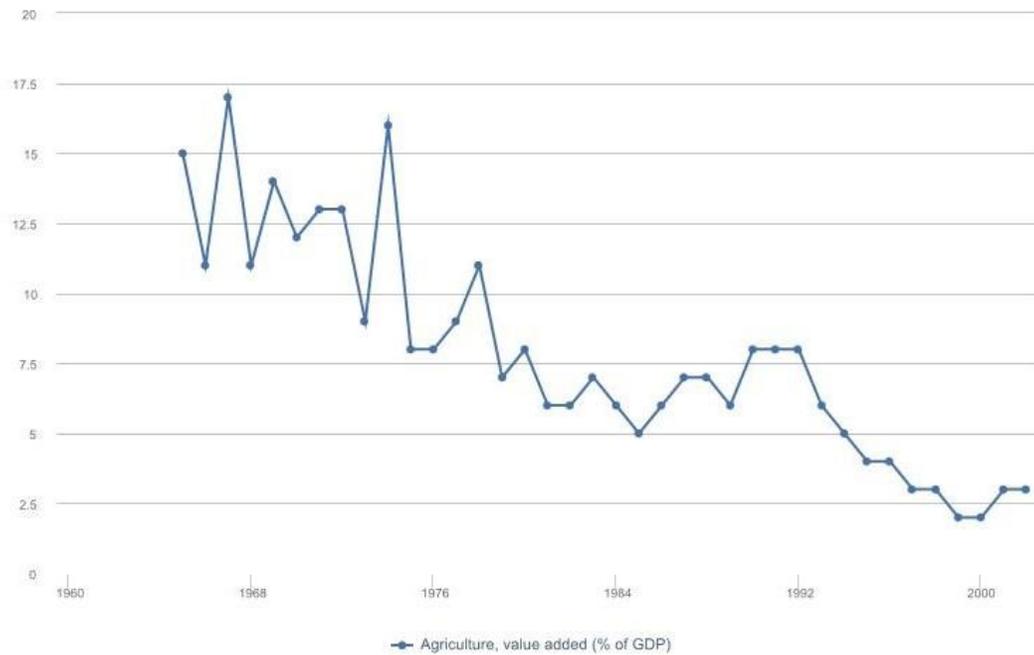
Most of Jordan's arable land is located in the western portion of the country, but this amounts to only 4.3% of Jordan's total land area (Harrigan, 2014a). Of this arable land, 84% is rain-fed, but total rainfall in these areas averages less than 100mm a year (ibid.). Coupled with Jordan's limited access to renewable water sources, this limits the country's potential for irrigation and agricultural expansion.

Jordan has a Mediterranean-style climate, with hot, dry summers and cool winters. The rainy season lasts from November to April, with dry weather during the rest of the months (CIA, 2014a). Temperatures range from 89-97 degrees Fahrenheit in the summer days to moderately cool to cold temperatures of about 55 degrees Fahrenheit in the winters.

Agricultural Development

Jordan's agricultural development has been declining since its independence in 1946 (Chapin Metz, 1989). At that time, agricultural production made up about 40% of total GDP. By 1967, this percentage had dropped to about 17.5%, and by the 1990's, agriculture comprised less than 10% of total GDP and was steady declining (Figure 4.4). In contrast, agricultural production in Egypt and Syria during the 1980's was at 20% of total GDP (ibid.).

Figure 4.5 – Agriculture as a Share of Total GDP, 1960-2000. Source: World Bank.



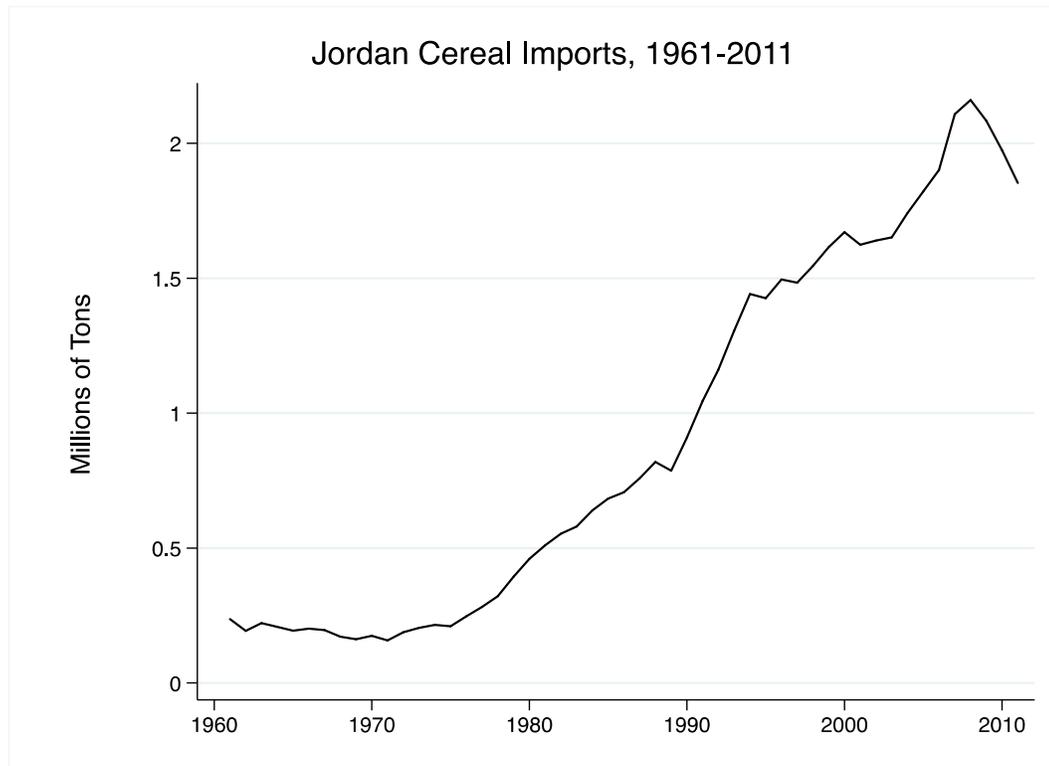
There were several reasons behind this decline. First, Israeli occupation of the West Bank following the 1967 Six-Day War significantly reduced Jordan's access to arable land. In the 1970's, Jordan also experienced a flood of labor emigration, as peasants left the country to work abroad at higher-paying jobs. Some relocated to cities where labor shortages had created higher wages. Some of these deserted farms were essentially paved over to create urban areas (Chapin Metz, 1989).

While agriculture as a percentage of GDP declined, absolute levels of agricultural production actually increased. Primary crops included some cereals, and in the early 1970's Jordan was fairly self-sufficient in wheat production (Harrigan, 2014a), importing only enough to supplement its domestic supply. The production rate,

however, was insufficient for sustaining Jordan's population growth and food demands and met only 15 percent of total demand for wheat products (Hjort, Zakaria, Salah, 1998). Despite growing incomes and demand for meat products, cereal consumption as a proportion of the per capita diet remained steady. This indicated that Jordanians were not replacing cereals with other types of food in their diets (ibid.).

Thus, Jordan had to turn to increased cereal imports to bridge the gap between domestic supply and demand (see Figure 4.6). It went from importing about 200,000 tons of cereal products a year in 1970 to 1.3 million tons by 1990 – increasing six-fold in only two decades (FAO, 2015). With this shift, Jordan began growing only durum wheat, which is used to create freekeh (durum that is picked while still green and cooked similarly to rice), pasta, and for blending with imported wheat (Hjort, Zakaria, Salah, 1998). It relied on imports of hard winter wheat and soft wheat flour to produce breads and other baked goods, and relied completely on imports for rice needs. Jordan also grew barley on small farms, but the majority of the crops were sold for consumption on the farms or for livestock feed (ibid.).

Figure 4.6 – Cereal Imports in Jordan, 1961-2011. Five-year moving average. Source: FAOSTAT. Compiled by author.



Jordan is relatively self-sufficient in many non-cereal food products. Its main fruits and vegetable crops include tomatoes, eggplants, citrus, grapes and olives (Beintema, Fardous, & Alrusheidat, 2006; Harrigan, 2014a). This development of non-cereal products is part of an agricultural strategy of concentrating on water-efficient crops rather than cereals, which require greater amounts of both land and water (Harrigan, 2014a).

As a result of its growing food gap (the difference between food supply and demand), Jordan's trade openness also increased. Between 1970 and 1990, Jordan's food trade openness ratio quadrupled, from about .02 to .08. This signaled Jordan's willingness

to rely on food trade to meet domestic demands rather than pushing to invest in attempts at self-sufficiency, especially in cereal products. In order to understand how this decision to rely on imports intersects with Jordan's political decision making, it is important to examine its political system and agricultural trade institutions.

4.2.2 Political Landscape

Jordanian Political Regime

Jordan is a constitutional monarchy and was led by King Hussein for almost the entirety of the 1990 to 1999 time period.³⁶ The monarch is the chief executive of Jordan, and appoints a prime minister in charge of organizing a cabinet of ministers to be appointed by the King. The Lower House of Parliament, the House of Deputies, which is comprised of 150 elected members, approves these ministers. By contrast, the Upper House of Parliament, the Senate, is made up of 75 members directly appointed by the King. Similar to the U.S. government, the chief executive (in this case the monarch) must approve all bills that pass Parliament. His veto can, however, be overridden by a two-third majority vote of both Houses. The King also ratifies all treaties and agreements.

During his reign, King Hussein held extensive executive and legislative powers. In 1989, riots and protests in southeast Jordan called for greater political liberalization, and King Hussein began a series of reforms that aimed to stabilize the country, increase parliamentary powers, and ease restrictions on the media (Ryan & Schwedler, 2004). By the early 1990s, Jordan had completed the Jordanian National

³⁶ King Hussein died in February of 1999 and was succeeded by his son, Abdullah II.

Charter, which “formalized the political principles of pluralism, liberalization, and loyalty to the Hashemite monarchy” and had legalized political parties for the first time in 30 years (ibid.). During the mid-1990s however, Jordan began to roll back some of these reforms. The monarchy was concerned with the growing power of Islamist groups in Parliament, particularly when it came to threatening the ongoing peace talks with Israel. Election laws were changed and new press regulations forced many newspapers to shut down (ibid.). These measures culminated in the dissolving of the 1997-2001 parliament by King Abdullah II in 2001.

Economy of Jordan

Compared to many of its oil-rich neighbors, Jordan is a small economy heavily dependent on the service sector (CIA, 2014a). In the 1990s, its per capita income averaged at about \$5,000 USD, and the World Bank has categorized it as an “upper-middle income” country (World Bank, 2012b). Jordan is heavily dependent on outside sources for its energy needs due to its lack of natural resources. The majority of its labor force works in the service sector, with only 2% working in the agricultural sector as of 2013 (CIA, 2014a).

In the 1990’s, Jordan underwent major financial restructuring spearheaded by the International Monetary Fund. It devalued its currency (the *Dinar*) in 1989, and began liberalizing trade (Hjort, Zakaria, & Salah, 1998). Jordan received a loan from the World Bank to restructure its agricultural sector in 1994, and in 1995 those loans were extended to the entire financial system (ibid.). Because of these measures, per

capita income grew by about 6% per year and government debt shrank (ibid.).

However, Jordan still remained significantly dependent on foreign aid and continues to battle chronic poverty, inflation, and unemployment (CIA, 2014a).

Trade History

Since the economic reforms of the early 1990's, Jordan has liberalized its trade practices – culminating in becoming a World Trade Organization member in April 2000. This liberalization is evidenced by its previously discussed trade openness ratio as well.

Trade laws in Jordan are implemented through specific laws and regulations rather than a general basic law of trade (Malkawi, 2006). The National Assembly (the Jordanian Parliament) approves all trade legislation. Giving even more trade control to the government, the Customs Law No. 20 of 1998 established that the Council of Ministers (the Cabinet in Jordan, which includes the Prime Minister and ministers appointed by the king) has the ability to restrict imports and exports of certain goods from certain entities if it is deemed harmful to the national economy (Customs Law No. 20 of 1998, art. 15). This government involvement is also extended to agricultural trade, where the Ministry of Supply has had considerable influence in the past.

Regime Involvement in Agriculture

Jordan strives for a balance between trade efficiency and food security in its agricultural policies. For food security reasons, it is important to provide incentives

for domestic farmers to produce cereals efficiently and sustainably. From a trade efficiency perspective, it is important to obtain cereals from the least expensive source in order to keep domestic food prices down. Often, that would require importing cereals rather than relying on domestic production. In the past, Jordan had used government subsidies to control the price of cereals, but attempts at economic liberalization caused Jordan to abandon that policy in favor of non-market distorting methods (Hjort, Zakaria, & Salah, 1998).

Jordan enacted a policy in the 1990's of increasing self-sufficiency through the export of high-value products and the import of lower value products (ibid.). This meant that Jordan diverted its limited water resources to the production of high value exports like fruits and vegetables, at the expense of lower-value goods like cereals.³⁷ This decision is particularly interesting, since it would mean that Jordan fully embraced foreign trade as the source of its staple food products, rather than attempt to be self-sufficient in them. It also signals that the government of Jordan was confident in its ability to use leverage to procure cheap, steady imports from cereal exporters. In addition, Jordan also prioritized low domestic food prices over maximizing its own competitive advantage in exporting fruits and vegetables, sometimes banning exports temporarily if it perceived scarcity in the domestic market (Norton & Jaberin, 2006). These strategies in the 1990's emphasized Jordan's focus on reducing domestic food prices – a key element of food security in import dependent states.

³⁷ Note that “value” here refers to monetary values, not strategic values.

The Jordanian government maintained strict control over its import and exports. The Ministry of Supply (MOS) was the sole importer of foodstuffs until 1997, when importation abilities began to be available to the private sector (Hjort, Zakaria, & Salah, 1998). The MOS's involvement continued through privatization as well, as it continued to require prior approval for the importation of most cereal products (ibid.). If the MOS finds that insufficient quantities of cereals are being imported by the private sector, it can purchase supplementary goods on the international market itself. When making a trade deal, the Ministry of Supply (and after 1998, the Ministry of Trade and Industry) issues a tender for a specific quantity, quality, and country origin for cereals. International grain trading companies then present bids for the tender, competing to become the supplier. The MOS grants the contract to the supplier of its choosing. These deals are typically done in private, however, so public information on the specifics of the deal is not available (S.Schwab, personal communication, Jan. 8, 2016). Former U.S. Ambassador to Jordan Edward "Skip" Gnehm confirmed that the Jordanian government had almost complete control over trade decisions, especially when it came to choosing trading partners (personal communication, Jan. 28, 2016). According to Amb. Gnehm, "King Hussein always left most of the specifics to the government, meaning the ministers, but on the big picture, he would have been engaged," (ibid).

Because of its extensive involvement in imports and exports in the 1990's, the Ministry of Supply would have been considered a state trading enterprise (STE) prior to 1998. During this time, it was "granted exclusive or special rights or privileges,

including statutory or constitutional powers, in the exercise of which they influence through their purchases or sales the level or direction of imports or exports” (WTO, 2015). As the MOS gave up some of its importing privileges to private enterprises in 1997, it would not technically be considered an STE from that point on. However, for the remainder of the decade the MOS continued to be involved in cereal importation, sometimes making its own trade deals to supplement supplies and overseeing all cereal imports as well. For this reason, the government continued to be the primary actor in grain trading decisions during the time period examined in this chapter. This consistent government involvement in import decisions highlights Jordan’s concern over the vulnerability of its cereal supply and the perceived danger of a disruption in supply.

4.2.3 Available Leverage

Among the modes of leverage discussed in the previous chapters, Jordan is perhaps strongest in its political linkages to the United States. The Jordanian-American political relationship was particularly dynamic in the 1990 decade, and serves as an interesting illustration of how political linkages can promote food trade by deterring coercive actions.

Outside of political linkages, Jordan is lacking in significant amounts of other leverage. As I detail below, Jordan has limited natural resources, small diaspora communities in major exporting states, and has low levels of bilateral trade with these states. It does rely heavily on foreign aid from the United States, but these levels of aid are small compared to some of the major recipients of U.S. aid. Thus, the primary

focus of this section will be on the trends in political linkages between Jordan and the United States and how that correlated with trade activities during the decade. Before this discussion, however, I will outline Jordan's leverages – or lack thereof – in other categories during this decade in order to provide a more complete picture of Jordan's political and economic standing and relationships with major exporters.

Economic Leverage (Natural Resources)

Oil and Natural Gas

Jordan has undergone a series of unsuccessful explorations to find oil. Beginning in 1947, the Iraqi Petroleum Company conducted geological surveys to no avail, and these searches were later reignited by companies such as Edwin Pauley, Phillips Petroleum INA, Total Filon, and Fuyo until 1978 (NRA, 2006). From 1981 to 1996, the Jordanian government began funding explorations itself, drilling a total of 83 wells using treasury funds. Among these 83 wells, oil was discovered in Hamzeh Field in 1984, and commercial gas was discovered in the Risha area in 1987.

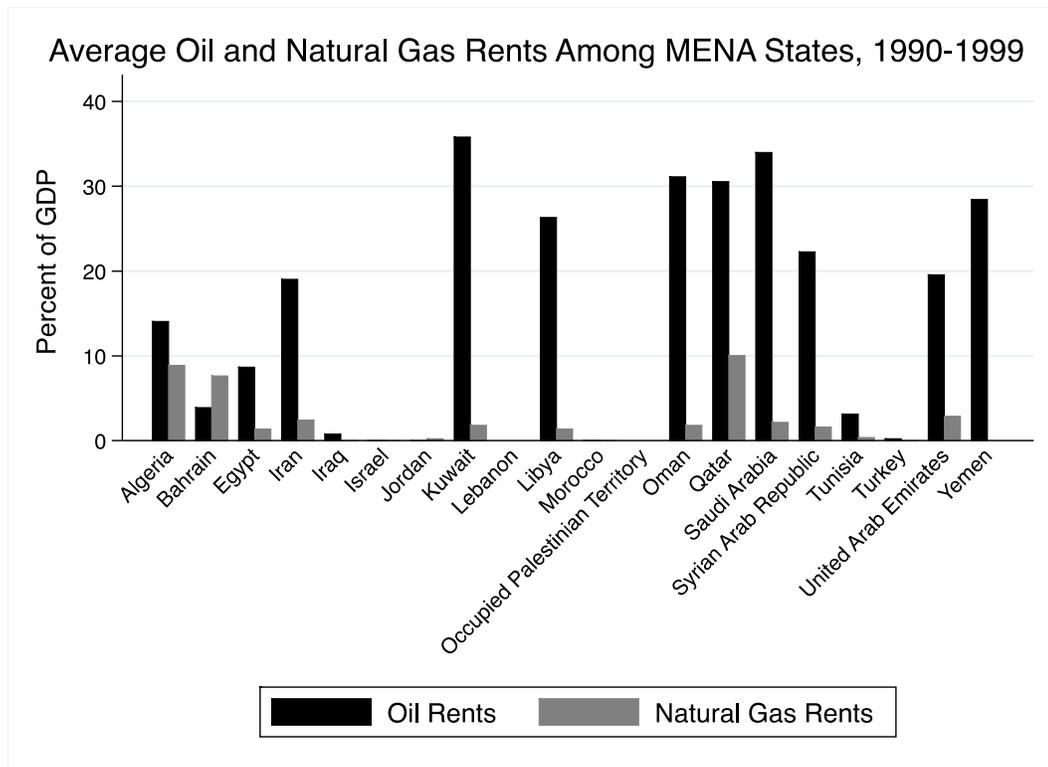
Hamzeh Field has produced an average of 40 barrels of oil a day since 1985, totaling to about one million barrels of production (ibid.). The Risha gas field produces an average of 30 million standard cubic feet per day, with a cumulative production from 1989 to 2005 of about 138 billion cubic feet (ibid.). As of January 2015, Jordan ranked 98th in the world in proven crude oil reserves (CIA, 2014b) and 88th in the world in proven natural gas reserves (CIA, 2014c).

Jordan does not export any crude oil or natural gas (CIA, 2014d; CIA, 2014e), and must import additional supplies in order to meet domestic demand. Jordan imported

between 54 and 75 thousand barrels of oil per day between 1990 and 1999 (USEIA, 2015).

In comparison to its regional neighbors, Jordan’s oil and natural gas rents are negligible. From 1990 to 1999, Jordan’s oil rents averaged only .01 percent of its GDP, while others in the region had rents of 30-35 percent of their GDPs (Figure 4.7).

Figure 4.7 – Average Oil and Natural Gas Rents among MENA States, 1990-1999. Source: The World Bank. Compiled by author.



Minerals

Jordan is a major producer and exporter of potash and phosphates (Yager, 2000).³⁸ It is also a minor producer of industrial minerals including feldspar, kaolin, lime, and salt (ibid.). The majority of Jordan's potash reserves are located in the Dead Sea, and its phosphate reserves are mined at four locations scattered across the country (ibid.).

In 1999, Jordan's mining industry comprised 3.1% of its total GDP, and exports of potash and phosphates totaled \$195 million and \$128.2 million, respectively (Yager, 2000). However, data from The World Bank indicates that Jordan's mineral rents (the difference between the value of minerals on the world market and the total cost of their production) fell to zero percent of its GDP between 1990 and 1999, before increasing again in the following decade (World Bank, 2012c). This suggests that during the time period examined in this case study, the costs of producing and exporting minerals were higher than their global value. Indeed, in the 1990's the market price of phosphates was significantly lower than it is currently – at about \$30 per metric ton versus an average of about \$200 per ton in the subsequent decade (World Bank, 2014). This calls into question the strategic value of such resources during this time period, despite Jordan's role as a major exporter of these minerals. For this reason, I do not assume that Jordan was able to use its mineral exports as a significant source of leverage against food exporters during this decade.

³⁸ Potash refers to mined or manufactured salts that contain potassium in a water-soluble form. Phosphates refer to rocks containing phosphate ions. Both of these minerals are commonly used in fertilizers.

Forestry and Coal

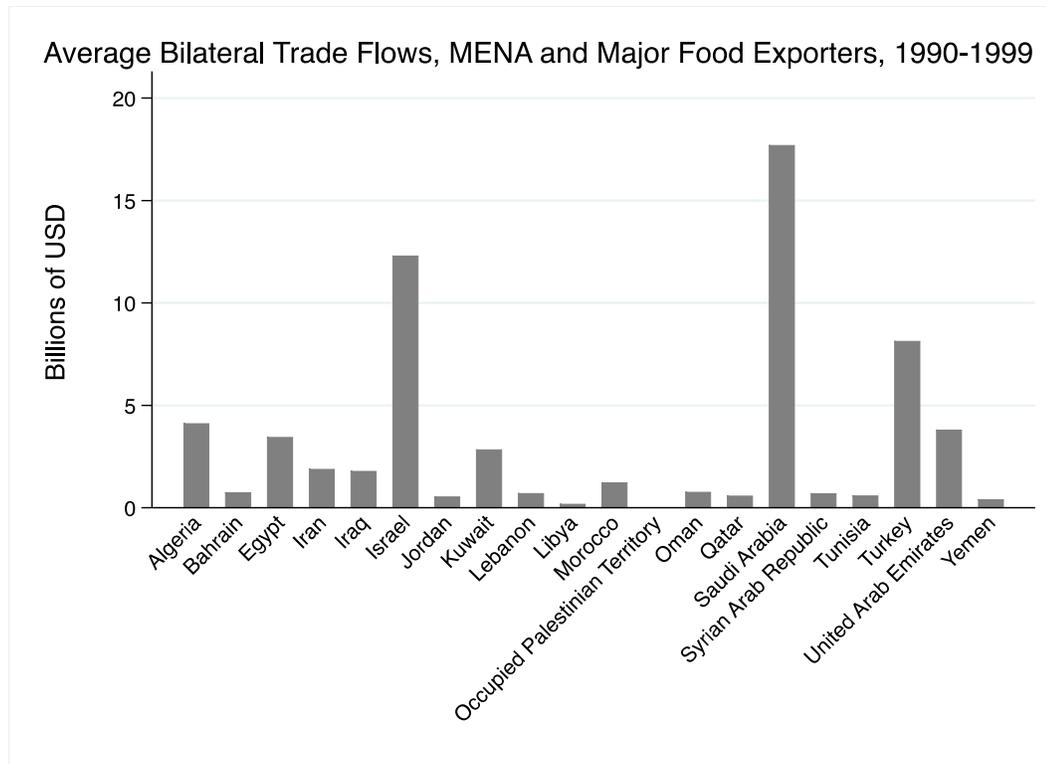
Jordan's forestry and coal sectors are negligible. It does not produce coal (World Bank, 2012d) and while its forest rents averaged 0.6% of its GDP in the 1990s (World Bank, 2012e), it is not a significant worldwide producer of forestry goods. In the 1990's, Jordan produced significantly less roundwood³⁹ compared to the top exporters, averaging about 170,000 cubic meters per year versus about 300 million cubic meters produced by top exporters (including the United States, USSR, China, and India) (FAO, 2015).

Economic Linkages (Bilateral Trade)

Jordan has limited trade with major food exporters and is not a significant trading partner for these countries. From 1990 to 1999, bilateral trade between Jordan and the U.S., Canada, Australia, and Russia averaged to \$509 million per year (Barbieri & Keshk, 2012). This total fell well below the yearly regional average of \$3.42 billion of bilateral trade a year. Even when disaggregating the trade of individual countries in the region, Jordan's average trade levels fall well below most other countries (see Figure 4.8).

³⁹ Roundwood refers to timber in its natural state, used for industrial purposes or processed into other industrial products.

Figure 4.8 – Average Bilateral Trade Flows between MENA States and Major Food Exporters, 1990-1999. Source: Barbieri & Keshk, 2012. Compiled by author.



Jordan’s limited trade relationship with major exporters is not surprising. Given its lack of oil and natural gas resources, as well as its small size and economy, Jordan’s relationship with major exporters (especially the United States) was typically one of dependence on foreign aid. Compared to its wealthier and more resource-rich neighbors, Jordan was not a significant economic or trading powerhouse in the region. Bilateral trade with the United States increased following the implementation of the Jordan-U.S. Free Trade Agreement in 2001, but this time period falls outside the scope of this chapter.

Social Linkages

From 1990 to 1999, Jordanian emigration to the major food exporting states was below the worldwide average (World Bank Group et al., 2011). By 1999, the Jordanian diaspora in the United States totaled to 34,011 immigrants, 1856 immigrants in Canada, no immigrants recorded in Russia, and 2101 immigrants in Australia (ibid.). Compared to other states in the Middle East, Jordan's diaspora communities in these exporting states is below average; other states averaged 84,412 members in diaspora communities across the major exporting states while Jordan averaged 37,968 people in its diaspora communities. It was also below average in comparison to diaspora communities from similar sized countries⁴⁰ worldwide. These states had an average of 142,600 people in diaspora communities in major exporting states (ibid.).

While it is possible to have political influence even with a small diaspora community, this does not appear to be the case with Jordanian emigrants. Jordanians participate in political life in the United States, but do not have a significant lobbying presence like some of their Middle Eastern neighbors, including Israel and Iran. The bipartisan Congressional Friends of Jordan Caucus seeks to strengthen bilateral ties between Jordan and the United States, but this caucus was established in 2008 and therefore falls outside the scope of this study. Communities in Australia and Canada are

⁴⁰ In comparison with countries with similar sized populations, between 4-5 million people.

similar, with no highly influential lobbying groups shaping political decision making in those states.

The small size and limited political influence of Jordanian diaspora communities in the major exporting states makes it unlikely that these groups shaped food policy toward their home countries in a meaningful way. For this reason, I do not argue that Jordan has significant social linkages to major exporting states, and do not expect the existing social linkages to deter exporters from exercising food power.

Economic Linkages (Foreign Aid)

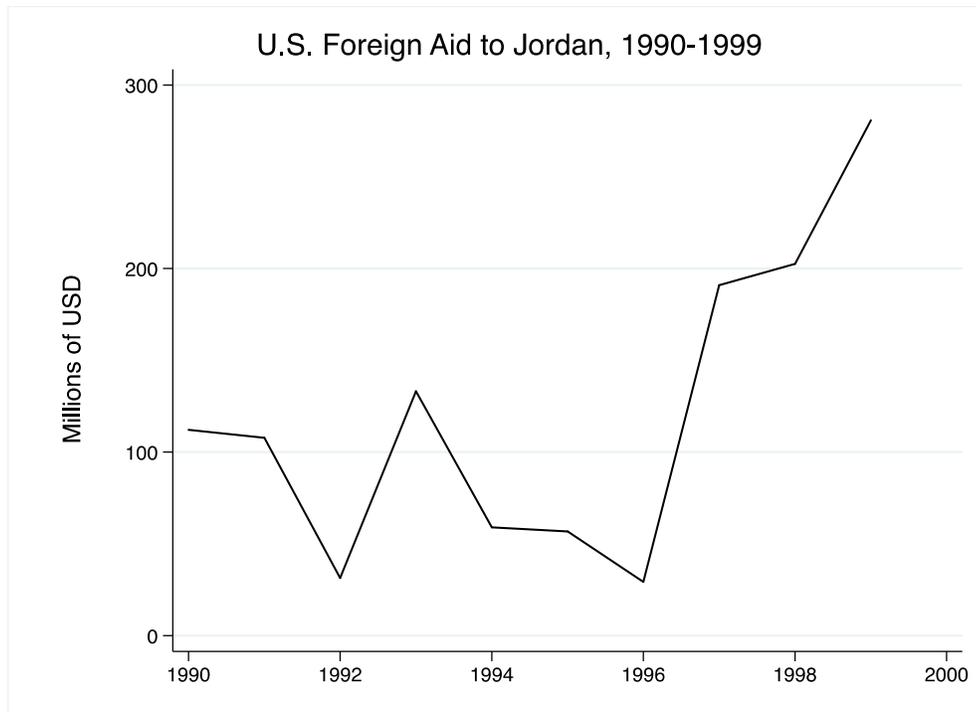
Between 1990 and 1999, Jordan received a total of \$1.33 billion in foreign aid from the United States, Australia, and Canada combined (Tierney et al., 2011).⁴¹ About 92% of that aid (approximately \$1.2 billion) was given by the United States, and Jordan ranks third among MENA states receiving US foreign aid during this time (ibid.). It is important to note, however, that Jordan received a fraction of the amount of aid given to the two primary recipients of U.S. foreign aid in the region – Israel and Egypt. Average U.S. aid to Jordan was about 8% and 7.5% of the amount of aid given to Israel and Egypt, respectively (ibid.).

The U.S. provided the vast majority of foreign aid to Jordan during this decade, but its financial support was volatile. Foreign aid spending would fluctuate with the

⁴¹ Russia did not give unilateral foreign aid to Jordan from 1990-2000.

political relationships of the two countries, hitting a low by 1992 and 1996 after steadily increasing in the latter half of the decade (see Figure 4.9).

Figure 4.9 – U.S. Foreign Aid to Jordan, 1990-1999. Source: Tierney et al., 2011. Compiled by author.



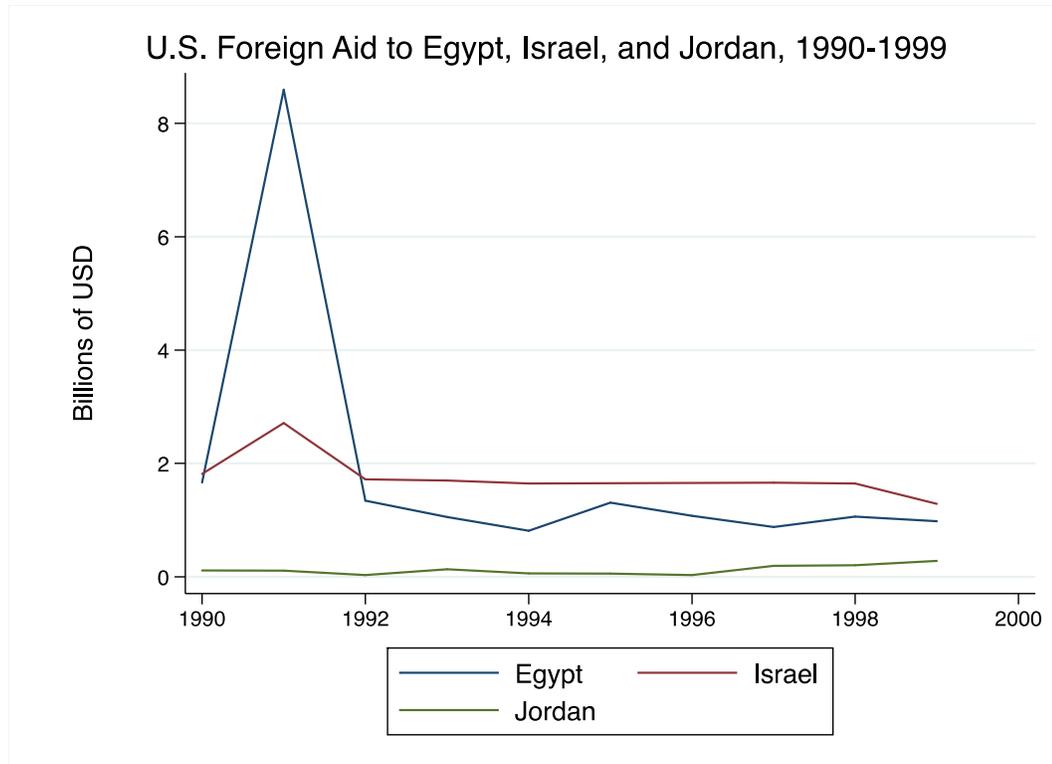
The drop in U.S. foreign aid in 1992 was a direct result of King Hussein’s backing of Saddam Hussein in the first Gulf War. In March 1991, Congress passed a bill revoking \$55 million in military and economic aid to Jordan unless President Bush felt it would help facilitate the Israel-Palestine peace process (Tolchin, 1991). Mr. Bush signed the bill the next month (“Bush Signs Bill Cutting Off \$55 Million in Aid to Jordan”, 1991), marking a steep decrease in aid to Jordan. This action was followed by another cut of \$50 million in military and economic aid in FY1992, and \$26 million cut in FY1993 (Sciolino, 1993).

The drop in foreign aid in 1996 reflects a different political reality. By this time, the U.S. foreign affairs budget had been reduced by 51% in real terms since 1984 (Friedman, 1996). Foreign aid spending in the Middle East had been reduced to virtually only include Israel and Egypt (ibid.). The drop in aid to Jordan, however, is not necessarily a signal of reduced political support from Washington. While Jordan received less in foreign aid spending, it had recently been granted \$275 million in debt forgiveness in FY1995 (Grey, 1995). This number is not reflected in Figure 4.7 since it is not a direct foreign aid payment.

After 1996, foreign aid spending to Jordan increased exponentially compared to previous years. In comparison to Israel and Egypt however, Jordanian aid grew at a relatively low rate (see Figure 4.10).⁴² Thus this increase over time certainly reflects improving relations between the U.S. and Jordan, but the sharp increase at the latter end of the decade must also be kept in perspective. It indicates that while the United States is a key provider of aid to Jordan, this amount of aid is significantly less than the amount given to some of the U.S.'s other strategic allies. This makes it difficult to assume that Jordan could use these foreign aid levels as a signal of American commitment. Foreign aid flows give some indication of political relations, but a closer look at political linkages is necessary.

⁴² The spike in foreign aid to Egypt likely reflects its heightened military role in the Gulf War.

Figure 4.10 – U.S. Foreign Aid to Egypt, Israel, and Jordan, 1990-1999. Source: Tierney et al., 2011. Compiled by author.



Political Linkages

Among the four major cereal exporters, Jordan had the closest political ties to the United States from 1990 to 1999. During the Cold War, the United States and the U.S.S.R. raced to build alliances across the Middle East and North Africa (Ryan, 2009). The Soviets were successful in forming alliances with Egypt, Iraq, Syria, and South Yemen, but Jordan remained a staunchly Western ally due to its long-standing relationship with Washington (ibid.). The other two exporters – Australia and Canada – had friendly relations with Jordan, but their political relationships did not run as

deep as the United States. For this reason, I focus this section on the Jordan-U.S. political relationship from 1990 to 1999.

The First Gulf War, 1990-1991

The First Gulf War, which pitted the United States against Iraq, marked a major shift in Jordanian-U.S. relations. Much to the surprise of the U.S., the historically pro-Western Jordanian regime did not immediately align itself with the U.S.-led coalition of countries against Iraq. Following the Iraqi invasion of Kuwait in August 1990, Jordan immediately framed itself as a neutral mediator in the conflict, both between Iraq and other Arab countries as well as with the global community (Ryan, 2009). In the first four weeks of the conflict, King Hussein personally travelled to the capitals of Algeria, Libya, Mauritania, Morocco, Sudan, Tunisia, and Yemen, as well as European capitals of countries like France, Italy, Germany, Spain, and the United Kingdom (ibid.). On August 16, 1990, King Hussein even travelled to Kennebunkport, ME to discuss the crisis with President Bush at his home there (George Bush Presidential Library, n.d.). During all of these meetings, King Hussein argued both against Iraq's violation of territorial sovereignty, but also against foreign intervention (Ryan, 2009). In an August 1990 speech to the Jordanian Parliament, the King alluded to the United States' intervention in the crisis, saying "The foreign powers aim to regain control of this Arab land and those who live on it" (Treaster, 1990b). He also accused the U.S. of creating an "explosive situation" that threatened the entire region (ibid.).

As the situation drew on and Jordanians held pro-Saddam demonstrations in the streets (Ryan, 2009), critics began to question Jordan's neutrality, suggesting that it had secretly allied itself with Iraq. Marvin C. Feuerwerker, an expert on Jordan at the Washington Institute for Near East Policy, framed the choice as one about survival:

The King is now trapped between his Arab obligations, his international obligations and his desire to survive...he made a strategic choice to side with Iraq in hopes that this will put him at the bottom of Saddam Hussein's enemies' list. This is not a good time to be a traditional monarch on the border of Iraq. (Friedman, 1990)

Others pointed to the personal friendship between King Hussein and Saddam Hussein. During an interview with NBC News, the King said of Hussein, "I believe he is a person to be trusted and be dealt with. He is an Arab patriot in the eyes of many" (Treaster, 1990a). Just before this conflict, Jordan had supported Saddam Hussein in the eight-year Iran-Iraq War (1980-1988) and had reprimanded other Arab states like Syria and Libya for supporting Iran in the war (Ryan, 2009). It had also actively lobbied for pan-Arab support of Iraq at the 1980 Arab League summit (ibid.). In addition, the relationship between Jordan and Kuwait was strained. Some Jordanian officials suggested that Kuwait shared far less of its oil riches with Jordan than it deserved for being a buffer state with Israel (Treaster, 1990a).

In addition to these explanations, there is also a politically motivated economic explanation. In the 1990s, there was a strong constituency of Jordanian business people pushing for trade with Iraq. These business people had serious investments with agents in Baghdad, and were quickly becoming a constant irritant for the Jordanian monarchy who was trying to balance complying with American sanctions and keeping its constituents in business. According to Pete Moore, an expert on Jordanian business relations in the 1990's, American officials – Ambassador Gnehm – disclosed to him that it was well known that the Hashemites needed Iraqi oil trade to continue, and that it was putting them at odds with the Americans' foreign policy in the region. The subsequent Oil for Food program had the side effect of allowing for some trade between the Iraqis and Jordanians, effectively bringing the Jordanians “in from outside the cold” with the Americans (P. Moore, personal communications, Dec. 30, 2015). In my own conversation with Amb. Gnehm, he confirmed that the Jordanian business class had strong ties to the Iraqi market, and there was significant pressure on the monarchy to maintain those avenues of trade (E. Gnehm, personal communication, Jan. 28, 2016).

This highlights the potential effects domestic politics can have on trade policy. In the early 1990's, the Jordanian monarchy had to make a strategic decision between maintaining close relations with the Americans or pursuing economic relations with Iraq that would appeal to their growing business class. Their decision to err on the side of the Iraqis – and thus abandon the U.S. in their foreign policy against Saddam Hussein – was very much a result of these domestic forces. These damaged relations

had an impact on Jordan's cereal imports as well, evidenced by the dip in cereal imports from the United States at that time. By maintaining trade relations with the Iraqis, the Jordanian government was making a strategic decision to ally itself with that power rather than the Americans. The consequences of this decision were an inability to count on American cereals as a reliable source for food – if the Jordanians had relied heavily on American cereal at this time, it would have given the Americans a significant form of leverage over the Jordanians with which they could have coerced a severing of ties with Iraq.

On January 16, 1991, the United Nations Security Council resolution authorizing the use of force against Iraq went into effect and the U.S.-led coalition began its aerial bombardment campaign. As the campaign continued, Jordan distanced itself further away from the U.S. On February 6, 1991, King Hussein gave a 30-minute public address on television that gave unequivocal support to Iraq in the crisis (Cowell, 1991a). He used themes of pan-Arabism to argue that the attacks by the West are “against all Arabs and all Muslims and not against Iraq alone” (ibid.). The speech caught some Western officials by surprise, as they had thought the King would continue his message of neutrality (ibid.). President Bush responded to the speech later in the day, saying Jordan “made a mistake to align themselves so closely to Saddam Hussein against the rest of the world” (ibid.).

Ultimately, Jordan did not send troops to fight alongside Iraqi forces, but it also remained lenient when enforcing the embargo against Iraq (Ryan, 2009). Its position

of pseudo-neutrality did not pay off with the vanquished Iraqis nor the disillusioned United States, and “by attempting to alienate no one...the Hashemite regime may well have succeeded instead in alienating almost everyone” (ibid.).

The years during and immediately after the Gulf War marked a low point for Jordanian-U.S. relations. U.S. Secretary of State James A. Baker embarked on a post-war tour of the region in March of 1991, meeting with leaders in Saudi Arabia, Kuwait, Israel, Egypt, and Syria – a trip where Jordan was noticeably left off the itinerary (Cowell, 1991b).

After the war, the United States had shifted its focus to the Israeli-Palestinian peace process, and Jordan viewed it as an opportunity to rebuild damaged ties (Ryan, 2009). Both sides acknowledged this, and President Bush said as much in a meeting with Jordanian Foreign Minister Abu Jabir on October 30, 1991: “I hope that one by-product of this [cooperation with the peace process] will be a resumption of good US-Jordanian relations” (George Bush Presidential Library, 1991).

Relations began to improve as Jordan cooperated with the peace process. This conversation between President Bush and Dr. Abd Al-Salam Majali, head of the Jordanian Peace Process Delegation, on December 17, 1992 summarized the status of the two states’ relations and foreshadowed improved relations in the near future:

Dr. Majali: ...there is a realization that something went wrong with the Kuwaiti business which caused the whole area to suffer, and Jordan in particular.

President Bush: There is no point in rehashing the Gulf War. My feeling is that relations have been better since. U.S.- Jordanian relations have an historic basis after all. In spite of our differences, we have wanted to be helpful...As I leave office, I hope we have done what we could to put U.S.- Jordanian relations on a firm footing. This is not to deny that we had our differences. I recall in Maine we had some tough meetings. You could feel the tension. And, while we can't change our views on Saddam Hussein, we don't want to needlessly harm the Jordanian people. I think the new administration will see it the same way. I know it will support the peace process. (George Bush Presidential Library, 1992)

The Israel-Jordan Peace Treaty, 1994

After the Gulf War, Jordan faced a period of political isolation, which it began to remedy by engaging in the Israeli-Palestinian peace process. Jordan participated in the 1991 Madrid Peace Talks, where it acted as an intermediary between the Israeli and Palestinian delegations. The Palestine Liberation Organization's peace deal created the opportunity for Jordan to strike its own agreement with Israel. It could now make its own deal with Israel without appearing to break from Arab states.

A peace deal with Israel would hardly risk alienating Jordan's regional neighbors, since those relationships were already strained as a result of the Gulf War. These strained relationships also created an incentive for Jordan to look outside of the region for political support, and it sought to reestablish its ties to the United States.

As Ryan (2009, 151) explains:

Beyond the benefits of peace for its own sake, a full agreement with Israel would bring benefits from the United States in the form of greater economic assistance and enhanced military linkages, both of which would help ensure the long-term survival of the Hashemite regime and of Jordan as a state...By moving in sync with the peace process designs of the United States, the Hashemite regime hoped to reestablish its firm relationship with the U.S. government, and also to use that relationship as a vehicle to restore its political and economic linkages to U.S. allies such as Saudi Arabia and the other Arab Gulf monarchies.

On October 26, 1994, Jordan and Israel signed a peace treaty, and within hours, President Bill Clinton outlined an economic development plan for the Middle East in front of a joint session of Jordanian Parliament (Jehl, 1994). Mr. Clinton was the first American President to address the body and the first to visit Jordan in two decades (ibid.). In the speech, he announced a \$75 million regional investment fund to promote American projects in the Rift

Valley, provided by the Overseas Development Investment Corporation (Clinton, 1994). This assistance was in conjunction with \$900 million in debt forgiveness for Jordan approved by the U.S. Congress a few months earlier (ibid.). Jordan's political linkages with the United States were on the rise once more, and as Clinton promised in his speech: "The United States admires and supports the choice you have made. And we will stand with you in months and years ahead...And I say again, on behalf of the United States, we will not let you down," (Clinton, 1994).

Major Non-NATO Ally Designation, 1996

In the years immediately following the Israel-Jordan peace treaty, the Clinton Administration was "seeking every possible means to bring 'the fruits of peace' to Jordan" (Jones, 1998). One of these methods was to designate it as a Major Non-NATO Ally (MNNA).

The National Defense Authorization Act of 1987 (H.R. 1748) set aside funding for "cooperative projects with major non-NATO allies", which are states that held particular strategic importance for the United States. Originally, Section 517 of the Foreign Assistance Act bestowed this designation upon Israel, Australia, Egypt, Japan, New Zealand, and the Republic of Korea. States have to meet several criteria designated by the Department of Defense in order to qualify for the status. Among these criteria, the state must represent "a unique and strategic U.S. interest which argues persuasively for increased rationalization, standardization, and interoperability

which parallel many of our efforts with NATO allies” (ibid.). In order to designate a state with MNNA status, Congress or the President may use Section 517 of the Foreign Assistance Act to grant the state (Jones, 1998):

- “Priority for the transfer of Excess Defense Articles
- Exemption from prohibition on the sale of depleted uranium munitions
- Use of Foreign Military Financing for commercial leases instead of government-to-government sales
- Basing of DOD War Reserve Stockpiles for Allies
- Cooperative training on a reciprocal basis”

In sum, states that acquire MNNA status are able to gain significant military and economic advantages. In addition, it signals a heightened level of political commitment between the state and the U.S.

By the summer of 1996, King Hussein was facing increased domestic unrest, partly as a result of the recent political developments in the country’s foreign policy. In August 1996, protests and riots broke out in Amman over increases in food prices, including bread prices. New International Monetary Fund loan conditions had required a significant cut in food subsidies (“Jordanians Rioting Over Bread Prices”, 1996), increasing bread prices.

Many protesters however – and some government officials – noted that the bread prices had brought deeper seeded issues to light (Schmemann, 1996). Jordanians were frustrated with the lack of tangible results from recent political maneuvers, including the introduction of limited democracy, the IMF program, and the Israeli peace deal (ibid.). Former Jordanian Interior Minister Jawad A. Anani explained:

There's no doubt the peace was oversold. The Government should have been more forthright about the economic problem, about the fact that the national debt amounts to \$2,700 for every Jordanian. The riots were the cumulative effect of disappointments in economic promises. When the prices were raised, the reaction was, 'If even bread is not spared, what is there to look forward to?' (Schmemann, 1996)

The State Department's Near East Affairs bureau turned its focus toward lobbying for MNNA status for Jordan, as it would simultaneously act as a show of political support while also requiring limited budgetary costs for the U.S. (Jones, 1998). An August 1996 memorandum from the Director of the Office of Jordan, Lebanon, Syria and Palestinian Affairs to the Deputy Assistant Secretary of State indicated that although Jordan would receive “few substantial benefits” from the designation, it would highlight the “symbolism of Jordan being given a privileged status enjoyed by few other non-NATO countries which would underscore our increasingly close military and security ties” (Department of State, 1996).

Indeed, Jordan had little to gain from the designation in practical terms. It already had access to Excess Defense Articles, it had never expressed interest in purchasing uranium munitions, it did not conduct advanced level training that would allow it to participate in cooperative training agreements, and it did not have the scientific capability to carry out advanced research and development projects (Jones, 1998). This emphasizes the idea that the MNNA designation would be a primarily political maneuver rather than a mutually beneficial military relationship.

On September 25, 1996, President Clinton requested that the State Department notify Congress of his intention to designate Jordan as a Major Non-NATO Ally. In her letter to the Congressional Committee on Foreign Relations, Assistant Secretary of State for Legislative Affairs Barbara Larkin wrote that Jordan was qualified for MNNA status because it “represents a unique and strategic U.S. interest” (Larkin, 1996). Congress granted the designation, and Jordan became a Major Non-NATO Ally on November 12, 1996 (The White House, 1996).

4.2.4 Food Trade

Among the various forms of leverage discussed in the previous chapters, Jordan is strongest in its political linkages. In this section, I will explore how the political relationships highlighted above relate to Jordan’s cereal imports. Based on Hypothesis 2 detailed in Chapters 2 and 3, periods of increased political linkages

should correlate with increased cereal imports from corresponding countries, while periods of low political linkage should see a decrease in those imports.

Jordanian Cereal Imports from Major Exporters

From 1990 to 1999, Jordan imported a total of \$705 million worth of cereal products, \$175 million of which were from the United States, Canada, Australia, and Russia (Feenestra & Lipsey, 2000)⁴³. About one quarter of all dollars spend on cereal products in the decade came from these four major exporting countries.

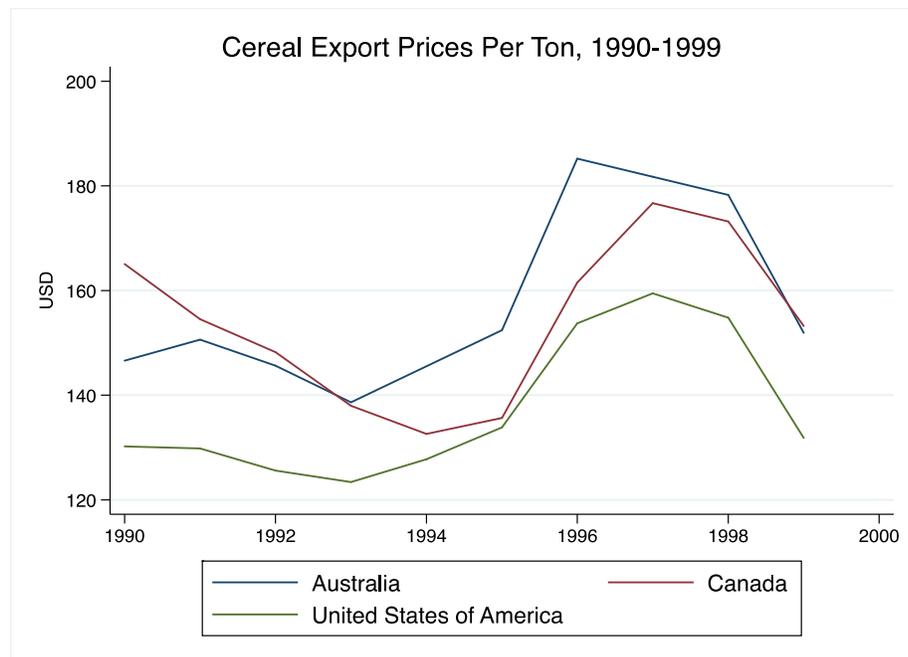
Among these four countries, the value of imports from the United States far outweighed values from the other three countries. Of the \$175 million of imports from major exporting countries, \$148 million of it came from the United States. This means that over the course of the decade, about 85% and 21% of dollars spent on cereal imports from major exporting countries or all countries, respectively, were spent on imports from the U.S.

Based on the Cold War history of political linkages detailed in the previous section, Jordan would be most likely to trade with the United States, Australia, or Canada. But why would Jordan rely so heavily on U.S. exports rather than get its food more evenly from across all three states? The answer may lie in the cost of exports from these three countries. Cereal exports from the United States are attractive because of their consistently low price during this decade. From 1990 to 1999, U.S. cereal

⁴³ The data on cereal imports comes from Robert Feenestra and Robert Lipsey's data set on bilateral commodity trade for 1962-2000, which used data from the National Bureau of Economic Research and the United Nations. Quantity data is not available for all exporters and years, so export values (nominal USD) are used.

exports averaged at about \$136 per ton, versus about \$151 per ton for Canadian exports and about \$157 per ton for Australian cereal. Jordan imported an average of about 1.5 million tons of cereal products per year. At \$15 and \$20 more per ton, Canadian and Australian cereal imports would have cost Jordan about \$23 million and \$31 million more than U.S. imports, respectively. This would have had a significant effect on the Jordanian budget, since the government offered significant food subsidies in the early half of the decade and the government would have had to not only spend more to purchase the food, but also spend more on subsidies to lower its price in the domestic market. Even when reducing subsidies per IMF loan conditions, Jordan would have had an incentive to import from the cheapest possible exporter in order to keep prices low. From 1990 to 1999, the United States was the least expensive major cereal exporter (see Figure 4.11).

Figure 4.11 – Cereal Export Prices per Ton from the United States, Australia, and Canada, 1990-1999, Three-year moving average. Source: FAOSTAT. Compiled by author.

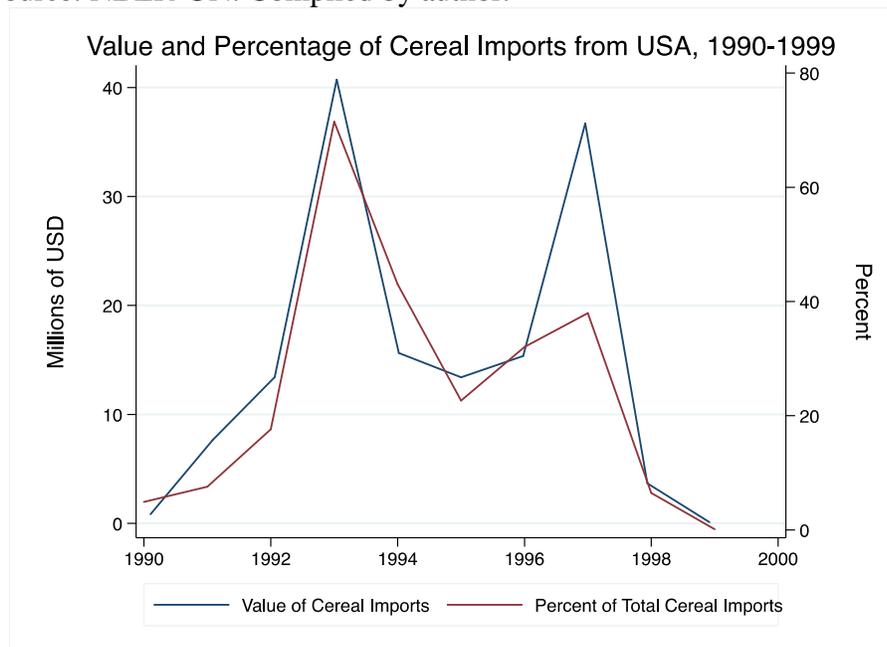


Food Trade with U.S., 1990-1999

Given Jordan's significant reliance on cereal from the United States, I focus on the trade relationship between these two countries and relate it to their political linkages during the decade.

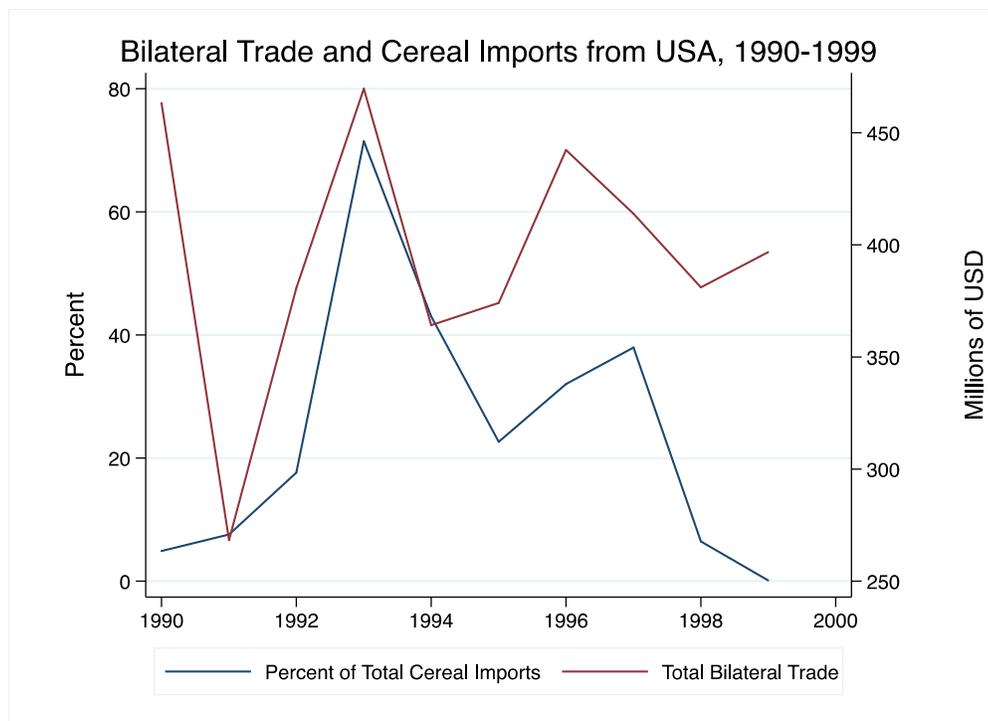
Jordan imported an average of \$14.8 million worth of cereal products per year from the United States between 1990 and 1999. These imports, however, were considerably volatile during these ten years (see Figure 4.12). As a proportion of the total value of cereal imports from all trading partners, the United States provided an average of 24% of cereal imports per year to Jordan over the decade. The volatility in this statistic is similar to that of the total amount of cereal exports from the U.S.(Figure 4.12).

Figure 4.12 – Value and Percentage of Jordanian Cereal Imports from USA, 1990-1999. Source: NBER-UN. Compiled by author.



Some of the variation in the amount of imports from the United States may be explained by overall economic patterns and trade flows. To confirm this, it is useful to look at general bilateral trade. If conditions for trade are favorable, then the share of cereal imports from the United States may be high as well. If this were the case, then I would expect to see food import levels rise and fall in tandem with overall bilateral trade. Indeed, upon first glance this seems to be the case in a side-by-side comparison of the two trend lines (see Figure 4.13).

Figure 4.13 – Jordan-USA Bilateral Trade and Cereal Imports from USA, 1990-1999. Source: COW Project Trade Data & NBER-UN Data. Compiled by author.



In a closer examination, however, it is possible to see some variation in cereal import levels that is not necessarily correlated with overall bilateral trade. In 1990, bilateral trade was at some of the highest levels of the decade before falling sharply in 1991.

Cereal imports, however, were already low in 1990 and increased slightly in 1991. While both measures peaked simultaneously in 1993, the percentage of cereal imports from the United States dropped much more precipitously than the levels of bilateral trade. Trade peaked again in 1996, but the next peak in cereal imports was not until 1997. Both measures fell in 1998, but again, the proportion of cereal imports coming from the United States fell much more drastically than bilateral trade levels. Lastly, as bilateral trade began to recover between 1998 and 1999, cereal import levels continued to fall. I argue that Jordan's political linkages with the United States can explain some of the remaining variation in cereal import levels not explained by general trade behavior.

Political Linkages and U.S. Cereal Imports

Based on the previous discussion of Jordan's tumultuous political relationship with the United States in this decade, I would expect to see significant variation in the amount of food that Jordan imports from the U.S. This decade experienced both a significant low point in Jordanian-US relations as well as two significantly high points. According to the theory outlined in Chapter 2, import dependent states – like Jordan – will avoid trade with major exporting states if they lack sufficient political linkages to deter coercive actions by those exporters. Conversely, in times of strong political linkages, I would expect import dependent states to increase the share of cereal imports from major exporters, as this is usually the cheapest source of cereal products and would increase their trade efficiency.

Experts on food trade policy agree that countries like Jordan would have had to consider the political ramifications of their cereal dependence (R. Crowder, personal communication, Jan. 16, 2016; C. Sifferath, personal communication, Jan. 14, 2016; S. Schwab, personal communication, Jan. 8, 2016). Ambassador Richard Crowder, former Chief Agricultural Negotiator for the U.S. Trade Representative, explained, “I think anywhere you see [food trade] it has a foreign policy implication if not intent” (R. Crowder, personal communication, Jan. 16, 2016). Ambassador Susan Schwab, the former U.S. Trade Representative, called the idea of import dependent states being wary of political coercion through food “conventional wisdom” in the trade world (S. Schwab, personal communication, Jan. 8, 2016).

In the Middle East specifically, the constant threat of import dependency has a discernable impact on trade decisions and agricultural policy. Cary Sifferath, the Senior Director of Global Programs at the U.S. Grains Council, an organization that facilitates export markets for U.S. grains, explained that major exporters can and do use export quotas or taxes to manipulate exports, even if they are prohibited by the WTO from imposing outright export bans (C. Sifferath, personal communication, Jan. 14, 2016). This increases the risks involved for import dependent states, like those in the MENA region, who depend on reliable cereal imports. “The fastest way to be thrown out as a leader of any of these [import dependent] countries is to say ‘let’s not keep bread prices low’ or ‘let’s let it open up to the world market’” (ibid.). Maintaining reliable, cheap cereal trading partners is key to keeping up domestic subsidies, and a high priority for MENA governments, including Jordan.

Sifferath spent years as the regional director of the U.S. Grains Council's Middle East and North Africa offices and recalled the heavy government involvement in grain trade there. Most governments in the MENA region control grain imports, he explained, with many having an Office of Cereals that monitors, regulates, and initiates grain trade deals. By his estimation, Jordanian grain trade is "mostly" done by the government, with wheat being a particularly political component of the cereal trade (ibid.). Even among private grain traders, the origin of the imports must be identified and the government must approve it.

In some cases, the political motivations of importing states are clear. For example, as Russia has increased its cereal exports in recent years, many countries in the MENA region have increased their share of imports from it as well. Russian cereals are some of the cheapest on the market since it is a major exporter, but it also comes with lower transportation costs given its geographic proximity to the MENA region. Some countries with closer political ties to Russia are capitalizing on this export source for cheap cereals. For example, Egyptian-Russian relations improved after the fall of the Soviet Union and even more so after General Sisi came to power in 2013. This political connection has translated to increased cereal trade between the two countries as well, with Egypt and Russia recently announcing plans to form an alliance in building silos and grain storage units in Egypt ("Egypt and Russia to form alliance for silos and grain storage", 2016). In contrast, Saudi Arabian and Russian relations have been tense recently, in part because of Russian support of President Assad in the

Syrian Civil War and cooperation with the Iranian regime. The Saudis “outright hate the Russians ...[they] almost never buy Russian wheat or corn...they would much rather buy from the U.S.” (C. Sifferath, personal communication, Jan. 14, 2016) even though Russian wheat is often some of the cheapest and most convenient wheat for the MENA countries. The behavior of these countries can be extrapolated to others in the region that also battle import dependency. The MENA states have a unique history with food power and being on the losing end of a food trade relationship, making them particularly sensitive to import dependency. Thus it is not inconceivable that Jordanian perspectives on import dependency would resemble those of other states. As a whole, the MENA region has demonstrated that they are concerned about the consequences of import dependency on their food security, and do consider political motivations when making trade deals. Their behavior provides evidence for the idea that importers consider export origins closely for political as well as economic reasons.

According to Amb. Gnehm, King Hussein “tended to become involved with the government when things weren’t going well and he was hearing a lot of negatives,” (ibid.). Based on these insights, it is very likely that King Hussein would have been very involved in Jordan’s food dependency concerns. The 1990’s marked a time of high food prices in Jordan – and even a protest over bread subsidies – so it was clear that food prices were at the forefront of concerns over political unrest. The King and the Jordanian government would have had a vested interest in ensuring low import prices – which perhaps encouraged them to rekindle political relationships with the

U.S. in the second half of the decade. At the same time, Jordan had to find a way to obtain low cost cereal imports from the United States while avoiding a situation where the U.S. had a disproportionate amount of power over the relationship. The fear of the U.S. cutting off cereal imports would have been a valid concern; after Jordan refused to support the U.S. in the Gulf War, the U.S. “either terminated or slowed down” the trade relationship with Jordan (E. Gnehm, personal communication, Jan. 28, 2016). If the U.S. had used economic tools to punish Jordan’s political decisions in the past, then Jordan would have had to secure a valuable form of political leverage to prevent that from happening again. They managed to do so with the treaty with Israel, which allowed them to increase their cereal imports once again.

Recent behavior by the Jordanian government also suggests that politics is a significant motivator in their cereal trade. In December 2015, Jordan’s Ministry of Trade and Industry cancelled a tender to buy 100,000 tons of wheat after no offers were made by international suppliers (“Jordan cancels wheat tender, issues new one”, 2015). This move followed a similar situation in October when Jordan cancelled a tender for 100,000 tons of barley (El Dahan, 2015). According to Sifferath, the Jordanians are becoming increasingly specific with regard to the quality of cereals they request in tenders – a move which eliminates many export origins and discourages international grain traders from making offers. Economically, this move is both costly and risky for Jordan. It limits Jordan to just a few export origins that can meet its new quality requirements. While it is still unclear why Jordan has

implemented such stringent quality requirements – they have claimed it is to keep quality standards up, but this claim is suspect because their new standards far exceed typical quality controls – it could be a move by the government to encourage trade relationships with very specific suppliers. It also highlights the strong role of the Jordanian government’s Ministry of Trade and Industry in making these grain trading decisions.

Ultimately, Jordan, like other MENA countries, appears to be very sensitive to its import dependent status and maintaining a steady supply of cereals for its people. This is evidenced not only in their tight governmental control over trade decision making, but also these states’ reluctance to trade with certain exporters or the implementation of regulations that indirectly impact which exporters they deal with. For these reasons, I expect my hypotheses on the relationship between political leverage and trade decisions to hold true.

During the Gulf War, from 1990 to 1991, cereal imports from the United States were at some of the lowest levels of the decade – even though general trade remained high in 1990. In 1990, 5% of total cereal imports came from the U.S., and this number increased slightly to about 7.5% in 1991. This increase could be attributed to the end of the war – and the end of Jordan’s support for Saddam Hussein – but also to Jordan’s active efforts to rebuilding its relationship with the United States. Jordan’s participation in the Madrid Conference in late 1991, where it worked to revive peace talks between Israel and Palestine, somewhat repaired its relationship

with the U.S. These political gains increased in 1993 as Jordan worked to reach its own peace deal with Israel (“Israel and Jordan Seem Near To Peace Accord, Peres Says”, 1993) and import levels in 1993 and 1994 were at the highest levels of the decade (71% and 43% of all cereal imports were from the U.S., respectively). The proportion of cereal imports from the U.S. remained relatively high in 1995, although it did drop by about 20 percentage points. In 1996, however, import levels increased again to 32% of all cereal imports. This increase could correspond with the Major Non-NATO Ally designation given to Jordan in late 1996 – it would have signaled a strengthening in the political commitment between the two countries. After the 1996 MNNA designation, the share of cereal imports from the U.S. begins to fall precipitously, from 37% in 1997 to just 6.5% in 1998 and less than 1% in 1999. While there was no major political event that would have severely soured relations between the two countries, there is another development that may have had an effect on Jordan’s cereal trade policy: On July 28, 1998, King Hussein announced that he was battling lymphatic cancer (“King Hussein Fighting 'Treatable' Cancer”, 1998). He died less than six months later, on February 7, 1999 (Jehl, 1999). During this transitional period, from 1998 to 1999, the future of the US-Jordanian relationship may have still been uncertain. This could have created a reluctance to rely on cereal imports from the United States until the King’s successor, Abdullah II, began his regime.

Alternatively, this drop in the share of cereal imports could simply be a function of the world market. In 1998, world wheat prices had plunged to a seven-year low as a

result of excess supply (Schmitt, 1998). In extreme market conditions like these, import-dependent states may not need to import primarily from the major exporting states in order to trade efficiently. In 1998 and 1999, Jordan primarily imported cereals from Argentina (36% and 29% of total cereal imports in each year, respectively). Poor weather conditions in the United States had created an advantage for Argentinian farmers, especially with corn crops (Kannapell, 1998). By 1998, cereal exports from Argentina were about \$10 cheaper per ton than American cereal exports (FAO, 2015). In cases like these, where major exporters lose their competitive advantage in the world market, import dependent states are (politically) free to purchase cereals from the highest bidder, since avoiding trade with major exporters would no longer be inefficient. This may be a more likely explanation for the dip in American imports at the end of the decade.

Discussion

The data from this case study suggests that the relationship between political linkages and import levels is not necessarily immediate. This can be seen in Figure 4.14, which compares the major political events in the decade with the proportion of cereal imports from the U.S.

Figure 4.14 – Political Events and Cereal Imports from U.S., 1990-1999.

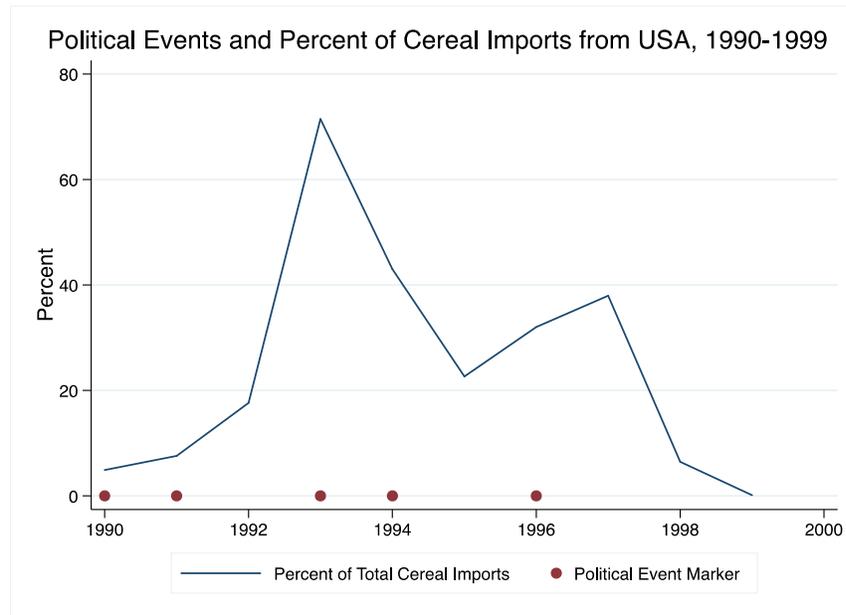


Figure 4.14 illustrates how political events are not necessarily an immediate catalyst for shifts in food import policy. Political events do not exist in a vacuum. Typically, the political environment leading up to a major conflictual or cooperative event is formed slowly. That is certainly the case with the events in this decade, which were not particularly spontaneous. The negative effects of the Gulf War diminished slowly over the course of the next several years. At the same time, Jordan’s involvement in the Israeli-Palestinian peace talks as well as its own peace talks developed over the course of a few years, from 1992 to 1994. During this time, the relationship with the United States was steadily improving. The 1996 MNNA designation occurred late enough in the year where it would have likely impacted trade decisions in 1997. All of these turning points in the political linkages between the United States and Jordan are difficult to pinpoint, and the linkages of this decade should be examined as a flow rather than a series of detached events.

This analysis also suggests that the effects of political linkages are not permanent. Each of the periods between the two major positive events in 1994 and 1996 are followed by decreases in the proportion of cereal imports from the U.S., which could indicate that events that mark the strengthening of political linkages have short-lived effects. In other words, institutional memory in these cases is limited, and trade patterns self-correct back to moderate levels of dependence. After periods of particularly strong political linkages, the effect diminishes and import dependent states may no longer view the linkages as deterrents. The limited time period and data in this case study are insufficient to draw significant conclusions about this relationship, but it would be an interesting trend to explore in the future.

4.3 Conclusion

This case study illustrated the potential correlation between political linkages and cereal imports, particularly as it pertains to the Jordanian-American relationship. Jordan from 1990 to 1999 served as a particularly interesting case study, since it was a time when many external factors remained constant but the independent and dependent variables varied significantly. The same monarch led the Jordanian regime for almost all of the decade, GDP and population remained stable, and Jordan was import dependent in cereal products for the entire decade. Much of the variation was limited to the political linkages between Jordan and the United States, which created a situation where the effect of these linkages could be isolated. In addition, this time period was a particularly formative one in Jordanian-American foreign relations, and

demonstrated both ups and downs in the relationship. This allowed for variation in the independent variable while benefiting from a within-case analysis that kept most other factors constant. Lastly, the extreme fall in world cereal prices did not occur until the tail-end of the decade – after most of the major shifts in political linkages – which made it possible to draw conclusions based on the theory presented in Chapter 2, as it assumes normal market conditions.

In the following chapter, I will examine the potential role of corruption in the Gulf Cooperation Council states, a group of countries that pay significantly higher import prices than their neighbors despite their strong economic leverage. After this brief secondary case study, I conclude by revisiting the findings of this dissertation and drawing connections between this work and the policy work being done in the field of food security and politics. Lastly, I will present some ideas for future work that can build upon the findings of this dissertation.

Chapter 5: Corruption and Cereal Prices: The GCC States

In the quantitative analysis of Chapter 3, I found that oil and natural gas wealth did not necessarily have a deterrent effect on major exporters of food, perhaps because of their own status as major energy exporters. This is potentially why states with high oil and natural gas rents traded inefficiently and therefore experienced higher import prices than non-import dependent states. I did, however, propose an alternative explanation for these higher import prices: corruption. I tested the idea that high levels of corruption in these countries results in inefficient trade practices and found that increases with corruption were positively correlated with higher import prices. This relationship between corruption and import prices – particularly among import dependent countries – requires a closer examination. Are certain import dependent states more prone to corruption, and if so, why? Does this result in higher import prices for cereal products for these states?

In this chapter, I examine the relationship between corruption and international and agricultural trade, and in particular the existence of corruption within the Gulf Cooperation Council (GCC) states. Among the states in the Middle East and North Africa region, the GCC states are the most resource-rich, yet they also pay the highest import prices (see Figures 5.1 and 5.2). A closer look at these countries could determine whether corruption is the cause of these higher prices. Lastly, I inquire about the relationship between corruption and internal security in import dependent states, suggesting that in resource-rich import dependent states with enough wealth to

provide food subsidies to the population, corruption will play a larger part in food trade deals.

Figure 5.1 – Cereal Import Prices (Difference from NID Prices) Among Import Dependent MENA States, 1961-2011. Source: FAOSTAT. Compiled by author.

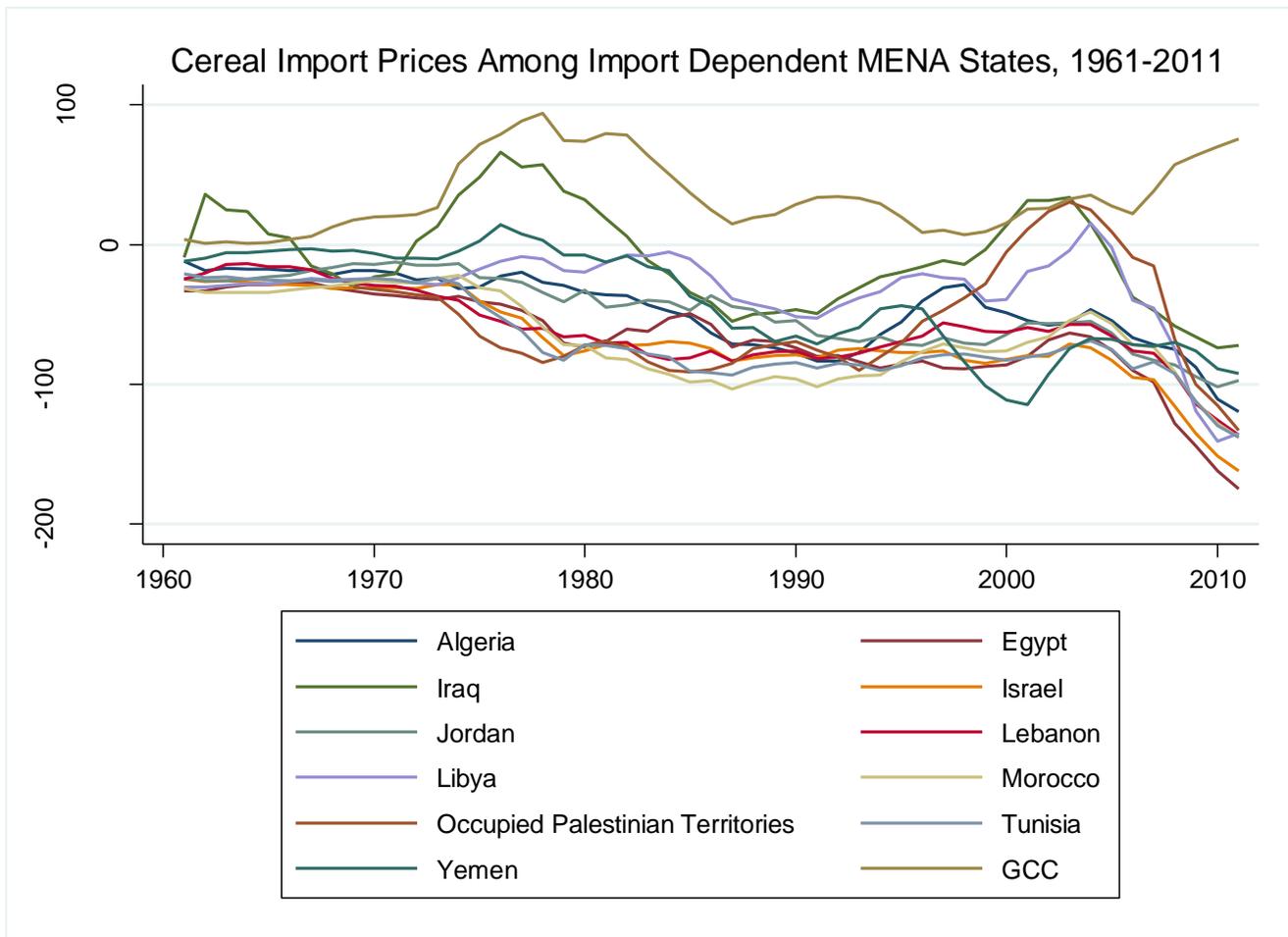
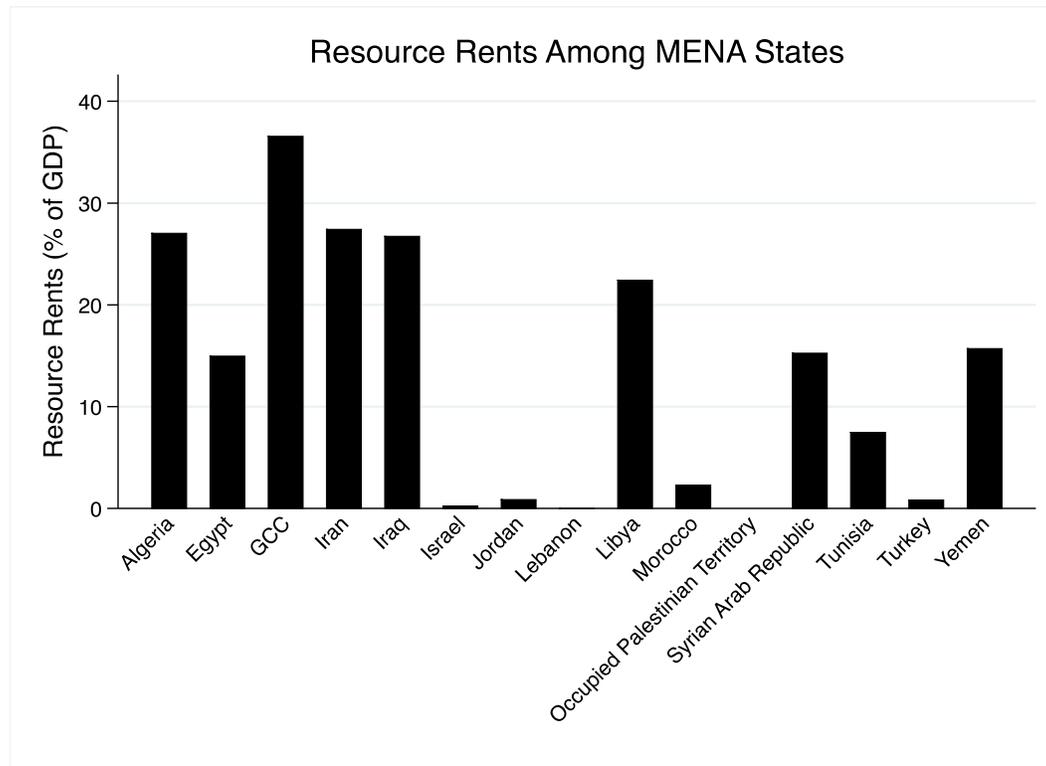


Figure 5.2 – Average Resource Rents Among MENA States, 1970-2011.
 Source: World Bank. Compiled by author.



I draw some preliminary conclusions about these relationships that suggest that further research into corruption and food trade would be warranted in future work.

5.1 Corruption and Trade

5.1.1 Definition of Corruption

Corruption is defined broadly by the World Bank (n.d.) as “the abuse of public office for private gain”, and more specifically by the United Nations Guide for Anti-Corruption Policies (2003, pg. 33) as “the promise, offering or giving to a public official, directly or indirectly, of an undue advantage...in order that the official act or refrain from acting in the exercise of his or her function”. Some limit the definition to only public officials, defining corruption as "an illegal payment to a public agent to

obtain a benefit that may or may not be deserved in the absence of payoffs" (Rose-Ackerman, 2002) or "the sale by government officials of government property for personal gain" (Shleifer & Vishny, 1993). While corruption can certainly occur between non-public officials, government organizations like the World Bank focus on corruption cases where government officials are involved due to their political associations. For this reason, I focus on corruption involving public officials as well.

Acts of corruption can take many forms, one of the most common forms being a bribe. Bribes are used as payment to government officials for certain outcomes, or are sought by officials as the price of supplying those outcomes. Bribes are not limited to monetary payments. They can include favors and material goods as well. Often, bribes are provided to public officials in order to procure government contracts, benefits, lower taxes, licenses, time, or even legal outcomes (World Bank, n.d.).

The causes of corruption are variable from case to case, but it is often perpetuated by weak institutions (Shleifer & Vishny, 1993), low levels of economic development (Kaufmann, 1997), and situations where public officials have ample access to economic rents (World Bank, n.d.). While most countries have formal laws against corruption, informal practices may ignore these laws – especially if corruption is systemic in the country (ibid.). Systemic corruption also self-perpetuates. As corruption becomes more widespread in a country, the costs of detection for any one individual decreases. This in turn, increases the likelihood of engaging, or continuing to engage in, corrupt behavior.

5.1.2 Effects on Trade

There has been a significant amount of research on the relationship between corruption and economic development in a country (Kaufmann, 1997; North, 1990; Olken & Pande, 2011). Some of this work has been focused on the negative effects of corruption on private investment (Kaufmann et al, 1999; Knack & Keefer, 1995; Mauro, 1995), while others try to identify the scope and prevalence of corruption in developing countries either through observing it directly (McMillan and Zoido, 2004; Sequeira and Djankov, 2010; Olken and Barron, 2009), through surveying those who give bribes (Mocan, 2008; Svensson, 2003), or measuring perceptions of corruption in a country (Olken, 2009; Banerjee and Pande, 2009).

In terms of corruption's effects on foreign trade, Dutt and Traca (2010) found that the relationship between corruption and trade is dependent on tariff levels, and De Groot et al. (2004) link institutional quality (one of the parameters when measuring corruption in the World Bank Governance Indicators) to trade flows. Zelekha and Sharabi (2012) used a case study of Israel to confirm and extrapolate that corruption can have a negative effect on trade in any country. Acts of corruption, like taking bribes to accept certain contracts or allowing firms to evade taxes or tariffs, can slow economic growth by promoting economic inefficiency. Public officials may also take grafts, where the official directs public funds toward private use. In these situations, contracts may be negotiated to be artificially inflated so that the official can take a cut. In these situations, the effect of corruption on economic development is direct;

the money that is grafted by the official can no longer be used for government expenditures.

5.1.3 Corruption in Cereal Trade

While there has been limited empirical research on corruption and agricultural trade in particular (Olken, 2006), there is an abundance of anecdotal evidence of corruption in agricultural trade. Perhaps one of the most publicized cases of corruption in grain trading occurred during Iraq's Oil-for-Food program and was known as the "Oil-for-Food Scandal" (McMahon, 2006). The program was begun in 1995 by the United Nations as a way to supply Iraq with food while it remained under a financial and trade embargo after the 1990 invasion of Kuwait. The program allowed Iraq to sell its oil, with the returns being kept in a U.N.-controlled bank account that the Saddam Hussein regime could access to purchase humanitarian supplies including food. During this time, the Australian Wheat Board (AWB), a government entity, maintained a strict monopoly on Australian wheat exports (Banham, 2006). In 2006, it was found that the AWB had been supplying the Hussein regime with over \$200 million in bribes in exchange for lucrative wheat contracts (McMahon, 2006).

More recently in 2013, the U.S. Securities and Exchange Commission (SEC) charged Archer-Daniels-Midland Company (ADM) with violating the Foreign Corrupt Practices Act (FCPA). ADM, along with Bunge, Cargill, and Louis Dreyfus are known as the "ABCD" companies of grain trading. Together, these four companies control about 70% of global grain trade (Murphy, Burch, & Clapp, 2012). The SEC found that ADM had failed to prevent its subsidiaries in Ukraine and Germany from

paying \$21 million in bribes to foreign government officials to receive value-added tax refunds (U.S.S.E.C., 2013). Its actions had resulted in about \$33 million in illegal profits (ibid.). ADM was the first commodities trading house to be charged with corruption since the FCPA was enacted in 1977, but this is not to suggest that corruption among these companies did not exist before 2013. In a Financial Times interview, a retired agricultural trader said that bribes were not uncommon as far back as the Soviet era, and that cars were often requested as a condition for doing business (Meyer, 2013). Another industry veteran recalled a grain vessel entering a port in Egypt “and chained to the top of the ship was a brand-new Mercedes-Benz. That’s what was required,” (ibid.). Indeed, a 2013 report by the Swiss government found that commodities traders, including grain traders, are particularly vulnerable to corruption as “the awarding of public contracts, the granting of licenses, the payment of royalties, the creation of monopolies, and the determination of customs policies are all procedures that tend particularly to attract incitement to bribery,” (FDFA, 2013).

Outside of the U.S., many countries’ governments have begun to prosecute corruption in grain trading among their public officials. In 2015, Ukraine began investigating officials at the state-owned State Food and Grain Corporation for the suspected embezzlement of millions of dollars (Gordilenko, 2015). The Ukrainian government has begun to focus on the corporation for its widespread use of graft and embezzlement (ibid.). Also in 2015, Iraq removed nine officials from its state Grain Board, which has the responsibility to procure grain imports for the country (Kent, 2015). It followed the removal and arrest warrant of Iraqi Trade Minister Milas

Mohammed Abdul Kareem on corruption charges of accepting bribes and “misusing his position” (Rasheed, 2015a). Before Abdul Kareem’s arrest warrant was issued, his media advisor was killed from a bomb planted on his car by a group of Trade Ministry security guards (Rasheed, 2015b). The adviser had been about to present evidence of Abdul Kareem’s involvement in corrupt dealings to the Iraqi Integrity Commission (ibid.) This bizarre situation serves to illustrate the stakes of the corruption issue in international agricultural trade– and the immense profits it can involve.

5.2 Corruption in the GCC States

The Gulf Cooperation Council states – Saudi Arabia, Bahrain, Kuwait, Oman, Qatar, and the United Arab Emirates – are some of the richest and highest income countries outside of the Organization for Economic Cooperation and Development (OECD) countries. The GCC states had per capita incomes that ranged from about \$38,000 to over \$140,000 in 2014 (World Bank, 2014). These six countries enjoy enormous oil and natural gas reserves that have fueled rapid economic growth. Meanwhile, the political institutions of these six states are all highly state-centric. In the GCC states, the income generated by oil and natural gas rents since the 1950’s have strengthened the public sector considerably while the private sector remains weak in comparison (Beck, 2013). There have been some attempts at diversifying the economies of these states, but the public sector still remains dominant in the Gulf (ibid.).

Because of these industries, the state bureaucracy has become “systematically superior” to the private sector in the GCC (ibid.). In situations like these, the state is the main producer and spender of income. Thus, if state officials behave in a corrupt manner where they steal public funds, they are “converting the superiority of their position into material benefits...such a behavior is not anti-systemic...since the public sector...is actually a tool to dominate the private sector and civil society,” (ibid.), making it much easier to participate in corrupt practices.

The oil and gas industries play a significant role in the corruption levels of the GCC states. There is a distinct lack of transparency in these industries, whether in the dealings between producers and government officials or in the allocation of revenues (Nugent, 2014). Empirically, large amounts of resource rents have been correlated with heightened corruption levels in many states (Ross, 1999; Karl, 2004; Bhattacharyya & Hodler, 2010). Arezki and Brükner (2011) found that increased oil and gas rents led to an increase in corruption, especially when the share of state involvement in the oil and gas industries was high as it is in the GCC states. Aslaksen (2007) found that oil wealth increased corruption in both democracies and non-democracies. In the Gulf states, the immense value of oil and gas exports creates ample opportunities for public officials to accept bribes for foreign contracts.

There have been numerous instances of corruption in GCC states, many of which cannot be confirmed until they are prosecuted. Still, there have been some notable examples of corruption in the region in recent years. Since 2011, over two dozen

government officials have been tried for corruption, including the head of tenders at Petroleum Development Oman, the government's gas and oil exploration company (E.A.D., 2014). Qatar has been battling allegations of corruption in its bid to win the 2022 FIFA World Cup ever since FIFA officials were charged in 2015 with accepting bribes (Morgenstein, 2015). Embezzlement by Kuwaiti officials in 2014 resulted in the loss of \$50 billion worth of public funds funneled to foreign banks (Biygautane, 2015). In 2014, the U.S.-based company Alcoa, Inc. agreed for pay \$384 million to resolve charges brought by the SEC that the company bribed Bahraini officials at Alba (Aluminum Bahrain), the state-controlled aluminum smelter (Martell, 2014). Europe's largest military contractor, BAE Systems, paid almost \$450 million in 2010 to the United States and Britain to settle corruption charges that it had spent billions of dollars bribing Saudi Arabian officials over the course of 20 years (Drew & Clark, 2010).

While none of these cases deal specifically with agricultural trade, it does not mean that the sector is immune from corruption. In fact, the presence of corruption in other sectors makes it likely that corruption is occurring in agricultural trade as well (G. Galinato, personal communication, Jan. 6, 2016; T. Graciano, personal communication, Jan. 24, 2016) – even if no charges have been filed yet. According to Tim Graciano, a former economist at the U.S. Department of Agriculture's Economic Research Service, agriculture can be susceptible to corruption, especially if it is centered in an “institution that concentrates market power and has the potential to be used in a way to benefit selected interests,” (T. Graciano, personal communication,

Jan. 24, 2016). Corruption can permeate across industries, spilling over directly or indirectly. Indirectly, the same public officials that are bribed for trade deals in one industry can be bribed for trade deals in other industries, “since their dollar speaks as loudly as the dollar by other firms,” (G.Galinato, personal communication, Jan. 6, 2016.). A direct spillover would be if corruption in one industry created favorable policies for that industry which also had benefits for the agricultural trade sector (ibid.). These policies may create economic inefficiencies if they were achieved through corrupt methods.

Both Cary Sifferath of the U.S. Grains Council and Ambassador Richard Crowder recalled the existence of corruption in agricultural trade deals. According to Amb. Crowder, “commissions” (bribes) were sometimes required to do business. “In a couple of cases I did not get the business; the terms were irrelevant. Without the commission you didn’t get the business,” (R. Crowder, personal communication, Jan. 19, 2016). Sifferath recounted experiences with corruption in the Middle East in particular. As he explained, government officials in some MENA countries oversee the unloading of cereal shipments for quality control purposes. These officials are transported to the ports by the grain trading companies, and often given a 10 to 15 day per diem in cash for hotel, food, and other costs, even if the official stays for less time than that. This is such a common practice in Egypt, for example, that “just about every major trading company in Cairo almost has a travel agent division because they have to get...visas for government officials to go, they have to get envelopes of cash...to spend while they’re on the trip,” (C. Sifferath, personal communication, Jan.

14, 2016). These expenses then trickle down to the price of imports. “If I’m a trader, I already know that cost, so if I think that’s a dollar a ton...in cost, then I factor that in. So the government is paying for it anyways,” (ibid.). In this way, corruption in cereal trade has a direct impact on the import prices paid by these countries.

The GCC states have attempted a host of anti-corruption programs in recent years to address the prevalence of corruption in their states.⁴⁴ The Saudis implemented the National Anti-Corruption Commission in 2011, intended to “[uphold] integrity, [promote] transparency, and [fight] against financial and administrative corruption,” (“World Bank praises Saudi Arabia for fighting graft”, 2015). Bahrain strengthened its anti-corruption legislation in 2013, creating stricter punishments for officials charged with corruption (Biygautane, 2015). Qatar ratified the United Nations’ Convention Against Corruption (UNCAC) in 2007, and created a National Committee for Integrity and Transparency to help implement the strategies outlined in the UNCAC (ibid.). The UAE also ratified the UNCAC, in 2006, and will use it as the framework for the Federal Anti-Corruption Law – the first of its kind in the UAE (ibid.). Oman was the last GCC state to ratify the UNCAC (not until 2014), and it also has the lowest amount of anti-corruption legislation among the states (ibid.). Similarly, Kuwait was also late to adopt anti-corruption programs. Corruption was monitored by three different agencies – the Kuwait Transparency Society, the State Audit Bureau of Kuwait, and the Kuwait Economic Society – until 2011 when the

⁴⁴ For an in-depth look at anti-corruption programs in GCC states, see Biygautane (2015).

Emir of Kuwait created a specific Public Authority for Anti-Corruption to address the issue (ibid.).

Despite these recent efforts at strengthening anti-corruption laws, the GCC states have had varying levels of success curbing corruption. Qatar and the UAE have improved their ranking in international corruption indices, while Oman and Kuwait still lag behind the other GCC states (Biygautane, 2015). When compared to other MENA states, the Gulf countries rank better in terms of petty corruption (small bribes, typically between individuals at the local level), but fare significantly worse when it comes to grand corruption via illicit financial flows (Nugent, 2014) and bribes – the type of corruption most likely to affect agricultural trade dealings (T. Graciano, personal communication, Jan. 24, 2016).

5.3 Corruption and Prices

The literature on corruption and trade has established the effect of bribes, grafts, or other forms of corruption on inefficient trading behavior through awarding undeserved deals and inflating contracts to provide kick-backs to officials. It is also clear that corruption permeates not only the oil and gas industries, but also other industries with heavy public sector involvement.

Among these is the grain-trading sector, which has significant government influence and involvement by public officials in each of the six Gulf states. The Saudi Grain Silos and Flour Mills Organization is a government-run organization in charge of purchasing grain for public consumption (GSFMO, 2015). In Oman, the Ministry of

Agriculture and Fisheries regulates and issues permits for all imported grains (USDA, 2011). Qatar's Central Tenders Committee is tasked with the purchase and distribution of all food items (CTC Qatar, 2015), and in Bahrain and Kuwait, the Central Tenders Committees regulate all tenders that are issued for imported food products (CTC Bahrain, 2015; CTC Kuwait, 2015). The UAE has private grain buyers, but they must all submit to government mandated import regulations. In all of these states, the government maintains significant oversight in the grain trade, with the ability to dictate what countries of origin for grain imports are permitted. The substantial influence of public officials produces opportunities for corruption in the grain trade. The limited numbers of grain trading companies that are vying for contracts, coupled with the lack of transparency in how these contracts are awarded, create optimal conditions for corruption to occur.

Indeed, while most states in the MENA region have moderate to severe levels of corruption, GCC states tend to be more corrupt on average. The Political Risk Studies Group's International Country Risk Guide (2007), which ranks corruption on a scale of 1 to 6⁴⁵, indicates that GCC states had an average corruption rating of 3.52 from 1990 to 2003, as opposed to an average score of 3.13 for non-GCC MENA countries and 3.24 worldwide. Transparency International (2014) measured perceptions of corruption in the GCC states and 177 total countries in 2014, with a score of 0

⁴⁵ As mentioned in Chapter 3, the original dataset ranks corruption from high to low, with 1 indicating highest corruption and 6 indicating lowest corruption. For the sake of clarity, I have reversed the direction of the measure. Greater values now indicate high levels of corruption.

indicating high perceptions of corruption and 100 indicating very low perceptions of corruption.⁴⁶ Table 5.1 shows the scores of the GCC states.

Table 5.1 – Corruption Perception Scores for GCC States, 2014. Source: Transparency International. Compiled by author.

<i>Country</i>	<i>Score (out of 100)</i>
Bahrain	49
Kuwait	44
Oman	45
Qatar	69
Saudi Arabia	49
United Arab Emirates	70

Some states performed better than others in 2014, perhaps because of a heightened focus on anti-corruption programs. The UAE and Qatar scored the best, although still about 30 points below the maximum score. The Transparency International scores indicate that while the GCC states are not the most corrupt group of states in the world, they still have significant amounts of corruption among public officials.

5.3.1 Corruption and Cereal Import Prices

Based on the relationship between corruption and trade, I propose several inquiries⁴⁷ regarding import prices and corruption levels. First, I propose that higher levels of

⁴⁶ Transparency International builds its corruption perception index “based on how corrupt a country’s public sector is perceived to be. It is a composite index, drawing on corruption-related data from expert and business surveys carried out by a variety of independent and reputable institutions.”

⁴⁷ I classify these as “inquiries” so as not to confuse them with this dissertation’s main hypotheses (see Chapter 3). These inquiries propose general relationships that are not tested as rigorously as the main hypotheses. This is due to data limitations

corruption will lead to higher food import prices in general. Corruption has an overall negative impact on international trade since corrupt public officials trade based on personal gain rather than the most economically sound option. For this reason, corrupt states would not necessarily award contracts to the least expensive option, but would award them to companies with which they have side deals. Although these companies may sometimes happen to be the least expensive option, that is not always the case. On average, corrupt states will give deals to both inexpensive and more expensive contracts. Corrupt states should experience higher import prices compared to non-corrupt states that will most frequently choose the most economically efficient deal.

Inquiry 1: States with high levels of corruption will experience higher cereal import prices, on average.

On average, states with higher levels of corruption (scoring greater than 3 on the International Country Risk Guide) paid \$7.42 more per ton for cereal imports than states with lower levels of corruption (scoring at 3 or less). A two-group independent t-test confirmed that the difference in the average import prices paid by these two

regarding corruption that make it statistically unsound to draw cross-sectional time-series conclusions from indices scores whose criteria change from year to year and are based on potentially biased perceptions (Svensson, 2005; Zelekha & Sharabi, 2012). In addition, the most comprehensive corruption statistics available only cover from 1990 to 2003, which reduces this dissertation's original sample size from 51 years to only 14 years. For these reasons, I resist making strong statistical claims using this data and instead use descriptive statistics to demonstrate correlations between corruption and import prices. Lastly, this chapter's intention is to propose an alternative explanation for a set of outlier cases in the data. A deep dive into the relationship between corruption and agricultural trade falls outside the scope of this dissertation's main research question and can perhaps be explored further in future work.

groups is statistically significant. At average import quantities, this results in \$8.8 million dollars of excess spending by corrupt states each year. This difference becomes even more pronounced as corruption increases. At the highest levels of corruption, states pay \$92 more per ton than other states, resulting in \$109.4 million in excess spending each year.

5.3.2 Corruption, Import Dependency, and Wealth

Import dependent states are vulnerable to public backlash if domestic cereal prices increase (see Chapter 2). To avoid this, these states are likely to seek the lowest priced cereal imports whenever they post a tender. Since corruption appears to be correlated with higher import prices (Inquiry 1), it would behoove these states to prevent corruption in agricultural trade.

In some circumstances, however, this assumption may be relaxed. If an import dependent state is wealthy with a high GDP per capita, it may be less concerned with preventing corruption in these deals. Not only can citizens in these states afford slight increases in domestic cereal prices more easily than people in poorer states, but also the government itself can afford to provide subsidies to offset potential price increases. In states like this, corruption levels may be higher, simply because prevention is less of a priority.

Alternatively, the literature on corruption and GDP suggests that richer states in general are less prone to corruption (Ades & Di Tella, 1999; Svensson, 2005). This is attributed to better institutions that have developed as a result of economic growth in

these countries. These institutions have higher degrees of transparency that discourage corruption.

Based on these potentially contradictory relationships, I propose Inquiries 2A and 2B to test these correlations between GDP per capita and corruption in import dependent states.

Inquiry 2A: Import dependent states with high GDP per capita levels will experience lower levels of corruption than their less wealthy counterparts, on average.

Inquiry 2B: Import dependent states with high GDP per capita levels will experience higher levels of corruption than their less wealthy counterparts, on average.

Among import dependent states, the average level of corruption in wealthy states (GDP per capita level of \$18,000 or greater) is lower than in poorer states. Wealthy states had an average corruption score of 3.2 out of 6, while poor states had an average score of 2.56. A two-group independent t-test indicates that this difference is statistically significant. This suggests that Inquiry 2B, which is in line with the literature on corruption and GDP levels, is more accurate.

Based on the documented evidence of corruption in GCC states however – which are rich and import dependent – and their high import prices, these Inquiries deserve a closer look. If rich states are typically less prone to corruption, then what explains the

high levels of corruption and subsequently high import prices in GCC states? I argue that the oil and natural gas industries play an important role in explaining these levels.

5.3.3 Import Dependency, Wealth, Oil, and Corruption

Corruption is a prevalent problem in states that have significant amounts of oil and natural gas rents. The literature on corruption draws a clear relationship between these industries and the likelihood of corruption because of the lack of transparency and immense amounts of capital involved. The GCC states are no exception, especially because they lack some of the stronger anti-corruption institutions of other natural resource producing countries like Canada or the United States. The opportunities for corruption in these sectors makes it possible for corruption to also occur in other sectors as well – including agriculture. The weak anti-corruption institutions in GCC states not only allow for corruption to occur in natural resource sectors, but it also allows for bribes, grafts, and contract awarding in the agricultural sector as well. Public officials that are used to the culture of corruption in the oil and natural gas industries are likely to also apply those practices to agricultural dealings. This is further exacerbated by the similarities between the agricultural and natural resource industries. Unlike imports and exports of low-value manufactured goods and services, agriculture is a high-value commodity with a relatively low number of producers. The agricultural export market is highly oligarchic – as is the oil and natural gas export market – with only a small number of large producers and exporters. This puts decisions into the hands of a small number of players vying for very lucrative contracts. In these situations, public officials have a lot to gain from accepting bribes or otherwise engaging in corrupt practices to award contracts to

certain exporters. In addition, wealthier states would be able to afford subsidies to counter the more expensive import prices, which lowers the political costs of corruption.

For these reasons, I predict that import dependent states that are wealthy *and* are major oil or natural gas exporters will experience higher levels of corruption than wealthy states where these industries do not play a large role in the domestic economy. In addition, I predict that import dependent states that are major oil or natural gas exporters and are wealthy will be more likely to engage in corruption than exporters that are less wealthy.

Inquiry 3A: Import dependent states with a high GDP per capita levels that are major oil or natural gas exporters will experience higher levels of corruption than import dependent states with high GDP per capita that are not major oil or natural gas exporters, on average.

Inquiry 3B: Import dependent states with a high GDP per capita that are major oil or natural gas exporters will experience higher levels of corruption than import dependent states with major oil or natural gas exports but low GDP per capita, on average.

Table 5.2 illustrates the differences between these inquiries and shows that the *combination* of wealth and resources correlates with higher corruption.

Table 5.2 – Inquiries 3A and 3B

Inquiry	Import Dependent	Wealthy	Major Oil or Natural Gas Exporter	More Corrupt?
3A	✓	✓	✓	✓
	✓	✓	X	X
3B	✓	✓	✓	✓
	✓	X	✓	X

A preliminary comparison of each type of import dependent state confirms my predictions. Import dependent states that are wealthy and are major oil or natural gas exporters (CIA, 2014d; CIA, 2014e) have a higher average corruption rating than wealthy import dependent states that do not have strong oil or natural gas sectors (Inquiry 3A). The average corruption score of countries in the former category is 3.7 out of 6, while the latter category scores 2.15 out of 6. This difference is statistically significant based on a two-group independent t-test. Inquiry 3B is also supported, as the average corruption score of import dependent states with oil or natural gas exports that are not wealthy is lower than their more wealthy counterparts. Poorer countries with these characteristics have an average corruption score of 3.5 versus 3.7 in richer countries. Again, this difference is statistically significant, although it is much smaller than the difference between rich import dependent states with and without natural resources. This indicates again that the source of corruption may lie in the presence of

these lucrative industries, and not necessarily with high national incomes alone.

These tests show that import dependent states with oil wealth are more likely to be corrupt than import dependent states without wealth and/or without natural resource exports. In other words, import dependent states that have existing industries that foster corruption and have the national wealth to offset the costs of inefficient trade deals may be more likely to be corrupt.

Assuming that GCC states engage in more corrupt trade deals because of their oil and natural gas industries and national wealth, it is important to test whether that corruption leads to higher cereal import prices. Inquiry 1 found that more corrupt states (of all kinds) pay higher import prices on average, and I re-test this relationship looking specifically at oil and natural gas-rich, wealthy, import dependent states. In other words, do these more corrupt countries – examined in Inquiry 3A – pay statistically different import prices compared to their counterparts? Preliminary tests show that they do. Among import dependent states, those that are wealthy *and* are major oil or natural gas exporters pay about \$13 more per ton than the average price paid by non-import dependent states. In comparison, import dependent states that are wealthy but are *not* major oil or natural gas exporters (and therefore, according to Inquiry 3A, less corrupt) pay only \$1.94 less than the average paid by non-import dependent states. This category of states pays virtually the same prices as non-import dependent states, which suggests that they are trading efficiently and at market prices. In contrast, the wealthy, resource-rich states (that are more likely to be corrupt) pay

about \$15.6 million more per year for the same amount of imports. Again, this difference is statistically significant.

5.4 Conclusion

These inquiries are intended to shed some light on why the GCC states – both wealthy and with oil and natural gas exports – experience prevalent corruption in their business dealings, and perhaps why they pay significantly higher cereal import prices than their regional neighbors. Further statistical tests using longer time periods and less biased corruption measures could reinforce these results in the future. Corruption, by nature, is difficult to observe and measure, and it is particularly difficult to draw cross-country comparisons using a single scale. Future work could focus entirely on corruption in agricultural trade and how it affects prices, especially in these GCC states. As natural resources begin to dwindle and these states look to other sources of income, it will be even more important to secure efficient agricultural import prices as subsidies will become more costly. The GCC states will have to grapple with this reality in the future, and dealing with corruption in all sectors may aid in those efforts.

Chapter 6: Conclusions, Policy Recommendations, and Future Research

This dissertation found that strong political relationships between states can foster efficient food trade between them. These results are important because they challenge the idea that economic theories alone can predict food trade outcomes. Instead, it encourages states to engage in diplomatic cooperation with one another in order to reduce the perceived risk of trade coercion in the future. By increasing international cooperation, import dependent states can rely on efficient economic practices to ensure that they are importing staple foods at the lowest possible costs, improving food security for their populations.

In this chapter, I review the findings of this dissertation before linking it to the existing work on food security. Lastly, I present some suggestions for future research based on these findings.

6.1 Overall Findings of Dissertation

Hypothesis 1 predicted that increased resource rents in import dependent states would give them the economic leverage to trade efficiently. Models 1 through 6 showed the effects of both total and disaggregated resource rents on import prices. I found that overall increases in resource rents led to more efficient trade, as did increases in coal, mineral, and forest rents. Surprisingly, I found that oil and natural gas rents were not statistically correlated with import prices, but hypothesized that this relationship may be affected by corruption in oil and natural gas-rich countries. I explored this concept

in Chapter 5 with a closer look at corruption and trade, particularly in the oil and natural gas-rich Gulf Cooperation Council states.

Hypothesis 2 predicted that strong diplomatic relations (a proxy for political linkages) with major food exporters would lead to more efficient trade. The statistical models confirmed this hypothesis, with the exception of diplomatic relations with Russia. I suggested that this could indicate a democratic bias in the effect of political linkages on trade. I explored this particular hypothesis further in Chapter 4 with the case study of Jordan. I found that Jordan's political linkages with the United States, a major cereal exporter, was closely correlated with its cereal imports from the U.S. This case study provided some illustration and validation of the statistical analysis conducted in Chapter 3.

Hypothesis 3 predicted a relationship between increased bilateral trade with major food exporters and an increase in efficient food trade. The results of these models did not show a statistically significant relationship between the two, with the exception of Canadian trade. It is unclear why Canadian trade has a different effect than trade with the other major cereal exporters, and this may be a topic for further exploration in future research.

Hypothesis 4 looks at the relationship between foreign aid and efficient trade. I predicted that increase levels of foreign aid from major cereal exporters would indicate a strong political and economic relationship, thereby encouraging efficient

food trade. I found support for this hypothesis in models looking at overall foreign aid received as well as US aid received in particular. As data on foreign aid becomes more available, it would be useful to reanalyze this hypothesis excluding tied aid.

Lastly, Hypothesis 5 examined the link between diaspora communities from import dependent states in major exporting states and their potential impact on trade. The results of Models 21-25 had mixed results, with some of the models indicating statistical significance in the opposite direction as what was hypothesized. These models suggested that an increase in social linkages actually led to less efficient trade. Upon closer examination, I suggested that the effects of social diasporas may not always be correlated with their size – for example, the small but powerful Israeli diaspora in the United States. In future research, I can continue to elaborate on the relationships between social linkages and trade behavior.

6.2 Food Security Policy and Recommendations

Food security has been a common policy priority across most states in the world. While there are numerous factors that cause both chronic and transitory food insecurity, the literature on the subject has often overlooked the role of politics in food trade and the effects it can have on food insecurity in a country.

As previously mentioned, poverty is one of the most agreed upon causes of food insecurity (Saad, 2013; Smith, Obeid, Jensen, 2000; Foster, 1992; Von Braun et al, 1992; Alexandratos, 1995; Serageldin, 1995; Maxwell, 1996). Those with limited

purchasing power will find it more difficult to maintain constant access to food. In particular, poverty may prevent individuals from being able to access nutritious food sources and can contribute to an increase in obesity and malnutrition as nutritious food is substituted for cheaper, less healthy alternatives. Households with limited purchasing power are also more sensitive to fluctuations in the price of food, which contributes to both chronic and transitory food insecurity (Saad, 2013).

Because of the importance of poverty in predicting food insecurity, I believe the contributions of this dissertation in addressing the price of food imports is particularly significant. The price of food at the port of arrival acts as the starting point for domestic food prices, as it is marked up or down depending on government subsidies, tariffs, or quotas. For this reason, import prices are a key predictor for how expensive or inexpensive food will be domestically. This is particularly important in poor countries – where the vast majority of the world’s food insecure live – as people may spend up to 50-75% of their incomes on food expenditure (Millstone & Lang, 2003).

However, outside of the literature on world financial markets, there is little discussion on what shapes food import prices. Outside of the concept of food power, where states use food exports as a foreign policy tool, much of the research on this topic comes from the economics field, which focuses on the market forces that shape food prices while largely ignoring the role of politics in this issue. Market forces that can influence the price of food can include the total global production of crops, depreciation of the US dollar, or speculation and futures markets (Gilbert & Morgan,

2010; Abbot et al., 2009; Cooke & Robles, 2009). While these factors are important in determining import prices, they do not explain how states' political motivations may account for some of the variation in their import prices.

The findings of this dissertation can contribute to filling this gap in the food security literature. Too often, this literature has focused on the ways to address food insecurity domestically, on a case by case basis. This dissertation examines the issue more broadly and makes the case that food security can be achieved through international relations and by using existing world markets more efficiently. It is imperative to utilize the world's current ability to grow enough food to feed its population. States – especially import dependent ones that rely on the international food growing community – must find ways to trade with one another in the most efficient way possible. Thus the future of food security lies not only in alleviating poverty or combating climate change, but also in fostering political relationships between states that can lead to more reliable food trade between them. If import dependent states increase their political linkages with major exporters, they can feel confident in their ability to deter trade-related coercion in the future – allowing them to import more efficiently and provide the lowest priced staple foods for domestic consumption.

6.3 Future Research

The findings of this dissertation lend themselves to several other avenues of potential future research. The results of Hypothesis 1 and the corresponding look into corruption and agricultural trade in Chapter 5 shed light on an under-researched area.

While the effects of corruption on international trade – and vice versa – have been well documented, there has been remarkably little work done on agricultural trade in particular. This is surprising given the oligarchic nature of commodities trading and the overall agreement among experts that commodities trade is a sector that is rife with corruption. The opacity of corruption makes data collection difficult, and cross-country comparisons are often inaccurate given the different types of corruption and their frequent links with local culture. However, it would be useful to examine a subset of countries, perhaps in one particular region, to measure the impact of corruption on food security concerns.

In addition, I would like to investigate the results of Hypothesis 5 in more depth. What is the true impact of diaspora communities on international food trade, and how can these communities work to improve the food security situations in their home countries? In addition to their size, I would also explore the impact of other characteristics of diasporas, like their political involvement, political organization and mobilization, and historical presence in the host country. The nuanced ways in which social linkages between states can impact their trade policy could serve as a detailed project in and of itself.

Ultimately, the research on food security and how to best improve it for the world's population is an important task, but a still under-researched one. Perhaps as environmental issues like climate change come into the forefront, more attention will be paid to food security concerns and their potential impact on political relationships

– and vice versa. It is important to realize that trade relationships in the international community have never existed in a purely economic bubble, and food trade is no exception. If import dependent states can utilize their political relationships to mitigate trade threats from food exporters, they can work to import food in the most efficient way possible. This will prove to be a key factor in lessening food insecurity in the future, by helping to keep domestic prices down and cement reliable trade relationships between the states that produce food and the ones that need it most.

Appendices

Appendix 3.1 – Diplomatic Representation and Cereal Import Prices, 1961-2005

	Major Exporter Representation	USA Representation	Russian Representation	Australian Representation	Canadian Representation
Price difference (lagged 2 years)	0.832*** (0.0197)	0.844*** (0.0217)	0.844*** (0.0217)	0.829*** (0.0213)	0.842*** (0.0188)
Major Exporter Diplomatic Representation	-0.855*** (0.155)				
USA Diplomatic Representation		-1.697*** (0.549)			
Russian Diplomatic Representation			-0.712 (0.458)		
Australian Diplomatic Representation				-1.965*** (0.475)	
Canadian Diplomatic Representation					-1.504*** (0.491)
Import Dependency Ratio (lagged 1 year)	-13.70*** (4.395)	-13.40*** (4.463)	-13.51*** (4.589)	-13.43*** (4.329)	-14.43*** (4.583)
GDP per capita (logged)	7.334** (3.080)	5.407* (3.086)	5.029* (2.980)	6.248* (3.215)	5.647* (2.987)
Population (logged)	3.555 (6.419)	1.190 (6.486)	1.524 (6.256)	2.404 (6.168)	1.165 (6.108)
Civil Conflict	1.101 (2.742)	0.622 (2.700)	0.597 (2.691)	0.555 (2.719)	0.482 (2.753)
Food Trade Openness (logged)	1.392 (2.083)	-1.124 (1.845)	-1.801 (1.948)	0.0660 (1.926)	-0.278 (2.138)
Polity IV	0.0645 (0.140)	0.0695 (0.143)	0.113 (0.149)	0.0463 (0.148)	0.0529 (0.140)
Year	-0.0421 (0.163)	0.0407 (0.168)	0.0117 (0.164)	-0.0776 (0.166)	-0.0315 (0.165)
Constant	-19.45 (231.4)	-142.4 (240.7)	-92.95 (235.3)	67.90 (238.5)	0.882 (239.6)
Observations	1,951	1,951	1,951	1,951	1,951
R-squared	0.747	0.743	0.741	0.746	0.745
Number of cowcode	97	97	97	97	97

DV: Price difference from NID states' average

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix 3.2 – Hypotheses 1-5, Non-Import Dependent States Only

	Hypothesis 1	Hypothesis 2	Hypothesis 3	Hypothesis 4	Hypothesis 5
Price difference (lagged 2 years)	0.985*** (0.177)	0.760*** (0.0420)	0.899*** (0.165)	0.980*** (0.203)	0.996*** (0.161)
Resource rents (logged)	0.369 (2.418)				
Diplomatic ties		-0.0609 (0.627)			
Bilateral trade (logged)			-1.406 (1.690)		
Foreign aid (logged)				-3.356 (1.742)	
Diaspora community (logged)					-0.763 (1.814)
Import Dependency Ratio (lagged 1 year)					-78.83***
GDP per capita (logged)	-83.12*** (27.65)	-61.09*** (17.17)	-78.11*** (25.71)	-43.67 (26.81)	(23.90)
Population (logged)	11.09 (7.235)	-0.695 (7.388)	7.072 (6.168)	11.92 (8.925)	8.445 (5.584)
Civil conflict	34.68 (33.07)	-5.214 (14.11)	15.63 (26.51)	30.73 (22.68)	25.64 (21.29)
Food Trade Openness (logged)	6.650 (4.954)	1.306 (5.008)	3.911 (4.797)	2.168 (4.494)	5.503 (4.354)
Polity IV	12.61** (6.122)	9.699*** (3.325)	12.73** (5.908)	18.97* (10.64)	9.902** (4.762)
Year	1.184 (0.759)	0.976 (0.725)	1.165* (0.687)	0.709 (0.518)	1.093* (0.615)
Constant	-1.372** (0.621)	-0.276 (0.305)	-0.772 (0.591)	-1.238* (0.625)	-1.005* (0.515)
Observations	2,118*** (730.6)	685.2 (525.0)	1,302* (731.4)	2,012* (1,013)	1,559** (681.5)
R-squared	2.686	2.731	2.971	1.830	3.291
Number of States	0.699	0.568	0.622	0.674	0.713
	109	109	111	92	113

DV: Price difference from NID average
 Robust standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Appendix 3.3 – Models 1 and 2 Including Corruption Control Variable

	Oil Rents	Natural Gas Rents
Price difference (lagged 2 years)	0.504*** (0.0706)	0.505*** (0.0565)
Oil Rents (% of GDP, logged)	-2.674 (2.087)	
Natural Gas Rents (% of GDP, logged)		1.732 (1.592)
Corruption	3.944** (1.868)	1.122 (1.592)
Import Dependency Ratio (lagged 1 year)	7.272 (11.49)	2.977 (9.908)
GDP per capita (logged)	6.930 (6.734)	14.50 (9.793)
Population (logged)	-25.38 (36.04)	-6.784 (28.31)
Civil Conflict	0.996 (3.144)	1.294 (3.572)
Food Trade Openness (logged)	9.884 (6.190)	4.715 (4.286)
Year	-0.441 (0.881)	-0.610 (0.847)
Constant	1,233 (1,299)	1,198 (1,278)
Observations	314	269
R-squared	0.329	0.280
Number of States	35	29

DV: Price difference from NID states' average

Robust standard errors in parentheses

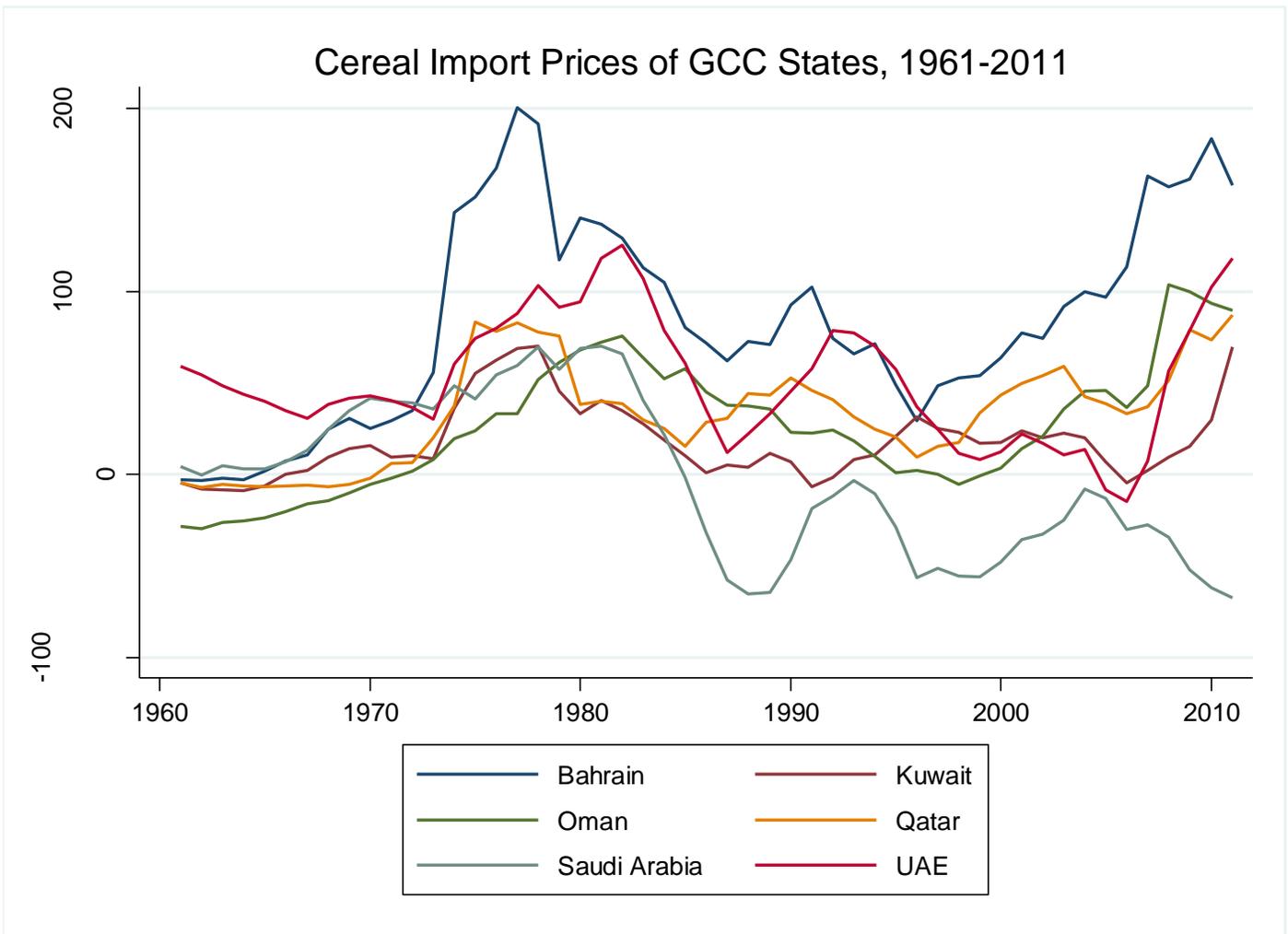
*** p<0.01, ** p<0.05, * p<0.1

Appendix 4.1 – States in MENA Region

States included in the Middle East and North Africa (MENA) Region

Algeria
Bahrain
Egypt
Iran
Iraq
Israel
Jordan
Kuwait
Lebanon
Libya
Morocco
Occupied Palestinian Territory
Oman
Qatar
Saudi Arabia
Syrian Arab Republic
Tunisia
Turkey
United Arab Emirates
Yemen

Appendix 4.2 – Cereal Import Prices of GCC States, 1961-2011



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