

Economic Sanctions

International Policy and
Political Economy at Work

Robert Eyster



ECONOMIC SANCTIONS

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Political Economy at Work

Robert Eyster

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To Louis and Rena Albini

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Preface

When I was eight years old, I began to read military history. As I progressed intellectually, I expanded my reading of different conflicts and began to understand warfare in its historical context more completely. In sixth grade, my social science text suggested an Arabian philosopher once wrote that the study of history is simply the study of war. In high school, I had a dynamic history teacher that set up his U.S. history curriculum as lessons on one international conflict to the next, where the interbellum periods were simply movements in a catastrophic symphony that had no end in the foreseeable future.

As an undergraduate at Chico State University in California, my fascination with economics began mainly because it is a way of understanding human thought at its core. I felt to understand economics meant to understand people. When I entered graduate school at the University of California, Davis, I had a dissertation topic already in mind. I wanted to write about the economics of warfare. At that point, there was no doubt in my mind that the study of war was an obvious blend of economics, history, physical sciences, and sociology such that all the subjects that mattered to me were in one place. I was advised against such a thesis due to its perceived lack of salability in the job market, and was directed instead (and happily so) to a dissertation on economic sanctions. This text began there, over ten years ago, as did my interest in using economic statecraft as a substitute for military conflict.

I presented a smaller version of the new open economy macro model in chapter five of this book at the American Economic Association meetings in 2005. I am indebted to the Middle East Economic Association (MEEA) for allowing me to co-organize a session on sanctions there. However, I am truly indebted to my professors at UC Davis, especially Peter Lindert who helped me to see a better way to think and understand economics and writing in general. I also want to thank my colleagues at Sonoma State University in

California, who I was able to use as information centers to make sure I was not going too far down the wrong road. I also want to thank my friends and family who allowed me to write this text, sacrificing time with them to do so; this is especially true for Chèrie, whose patience was incalculable and whose support was necessary. I also need to thank an anonymous referee for outstanding comments. Anthony Wahl, the editor I worked with directly at Palgrave/Macmillan, must also receive special thanks, as his help was invaluable. Finally, I want to thank Stanford University's Economics Department, Clark Reynolds and Tim Bresnahan in specific, which hosted me for six months while I completed this text.

This text, in my mind, can be used by political scientists and economists alike to understand the way an economist thinks about policy. It is also meant to provide a broader view of these policies in the hope they can continue their use in more efficient ways. This marriage of politics and economics may not work in the end, but it is truly the only substitute for war available.

Chapter 1

To Sanction or Not to Sanction?

On June 25, 2006, an Israeli soldier was kidnapped by militants, known as “*Hamas*,” after a raid into Israel from positions in the Gaza Strip. The soldier was held hostage and his captors’ demands included the freeing of over one thousand jailed Palestinians. As a reaction to this kidnapping, where one soldier’s life was in question, the Israeli government ordered troops over the border into Gaza to destroy bridges and electric transformers and to shut off all utilities to the suspected location of the *Hamas* kidnappers. The limited invasion sought to constrain the kidnappers’ activity and find the soldier in question, not to initiate full-scale conflict against *Hamas* in Gaza. On July 5, however, as negotiations closed in on a stalemate, the Israeli army began to mass on the Gaza border for a full strike.¹

On July 12, 2006, an extremist arm of *Hamas*, called “*Hezbollah*,” captured two more Israeli soldiers after crossing the southern Lebanese border. Lebanon as a nation, accused of providing a home to *Hezbollah* and acting as an armory for *Hamas*, was in the middle of this conflict. An Israeli naval and air blockade of Beirut, Lebanon’s capital and largest port, was an act of economic coercion. The damage to Lebanon and her people was front and center in the international community’s eyes concerning the human cost of this sanction and parallel military action. U.N. Security Council Resolution 1701 effectively ended the conflict in August 2006 (Sharp 2006, 4).

On July 4, 2006, North Korea conducted missile tests for a long-range weapon system claimed to be capable of reaching U.S. shores. Before July, after months of diplomacy, North Korea began to come around and discuss the delay of such tests and also not pursuing atomic weapon manufacture. The missile test provoked reactions worldwide, especially from the United States; the United Nations immediately began deliberations on imposing economic sanctions against North

Korea. The United States urged immediate action and found many allies. Other countries, such as Russia and China, were initially against sanctions and wanted more diplomacy. The U.N. Security Council passed Resolution 1695 as a weak reaction on July 15, 2006.²

In the Israeli case, military force made the threat credible that actions against Israel were going to be met swiftly and violently. By closing off the border into Israel and Beirut's port, the Israeli government ostensibly embargoed both the Gaza Strip and Lebanon for the actions of a relatively small number of people. In the North Korean case, the entire international community saw the missile tests as objectionable. A North Korean underground nuclear test in October 2006 showed further defiance. On October 14, 2006, the U.N. Security Council initiated arms sanctions in full with Resolution 1718.

Economic sanctions, wherein economies use trade and financial ties with other nations as diplomatic instruments, are not always used as proactive moves or reactions to international deviance and are relatively new as devices of international conflict resolution. When should sanctions be used? Why should they be used? Will they be effective, and what role do they play in international relations? American foreign policy since 1945 has been a strange mix of both economic coercion and military engagement as second or third steps in diplomacy. Many countries have used sanctions as diplomatic instruments; however, the United States has been by far the leader on these policies' use. Figure 1.1 breaks down the sanction cases to date and American involvement.

This text aims to achieve the following goals. First, this study attempts to survey not only where the sanctions literature is to date but also how economists describe various aspects of a sanction episode. Basic economics is essential to understanding these policy choices and their rationale. Cartel theory helps understand why institutional, multilateral, and universal sanctions may succeed or fail. Public choice theory tells us that policies aimed at specific interest groups within the deviant economy, those focused on decision makers, may sway another country's politics. For this reason, the literature review is scattered throughout the text, connecting the most appropriate works to specific topic areas, rather than all lumped into one chapter. Appendix 1 provides more literature sources and brief synopses of sanction episodes.

This book's central theme is to examine sanctions as macroeconomic policies that seek marginal movements toward diplomatic goals. The second goal is building an open-economy macroeconomic model describing welfare redistributions from economic coercion. The

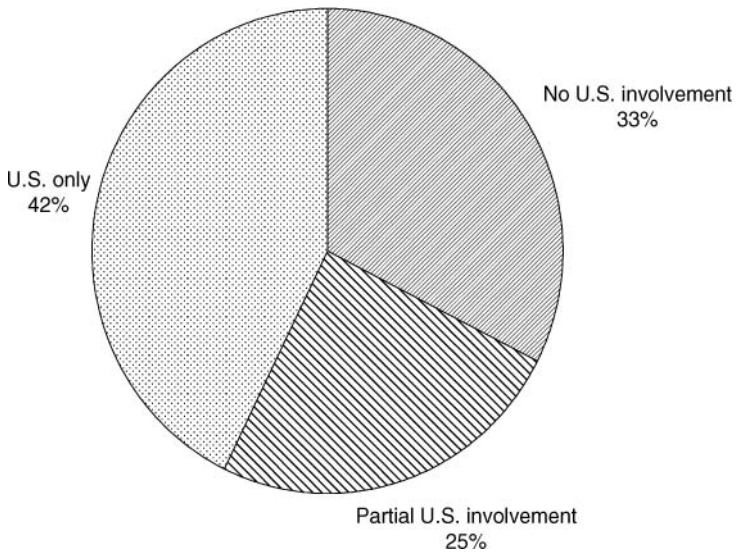


Figure 1.1 Sanction cases involving the United States.

Sources: Hufbauer, Schott, and Elliott (1990) and Drury (1998, 2005).

model in chapter five is the major contribution of this study. This model of exchange rate movements from policy is described in detail, derived in such a way that economists and other social scientists can follow how sanctions act like other macroeconomic policies. Finally, this text expands the literature's empirical studies by using econometrics to not only estimate exchange rate movements due to sanctions but also to connect these changes to both humanitarian and political effectiveness. Because data can be parsimonious and non-credible in many sanction cases, any empirical studies have their caveats and pitfalls. However, the empirical analyses in this text provide alternative ways to measure sanction effectiveness, where economic effects build marginally toward political goal achievement. The empirical models of chapter six corroborate other studies' results and add new conclusions and dimensions to the literature.

Sanctions and their Political Economy

The study of wealth redistributions from policy decisions and their economic effects is generally how political economy is defined. Sanctions have become immediate diplomacy reactions, with the

United States leading the charge.³ Whether the sanctions are unilateral or universal, potential profits attract sanction busting, taking advantage of another country's higher prices and lost markets. Even with sanctions being more focused and new legislation to economically punish countries that aid and abet sanctioned nations, U.S. sanctions still struggle to achieve their stated goals. Scholars must agree on a model or set of models to predict and analyze sanction effects. Such a consensus helps recommend policy choices to sender governments that balance economic, humanitarian, and political effectiveness simultaneously.

Sanctions are ultimately macroeconomic phenomena, and their effects should be analyzed and forecasted as such. Scholars have become more concerned about the economic harm caused by these policies, especially the target socioeconomic groups upon whom potential damage is borne. Sanction effectiveness is a large issue in the academic literature and popular media, where many claim sanctions are ineffective. Why continue to impose sanctions? The simple answer lies in the parsimony of other options: more negotiations, placation, or war, regardless of whether the military option is initially debated or not. Sanction use is likely to increase over time; this text attempts to expand our understanding of these policies' political economy.

The Sanction Cast and This Text's Thesis

First is the sanction itself. Many studies define sanctions using an economic interpretation. An economic sanction is a country's discriminatory economic restriction of either trade or credit flows with another country in an attempt to affect or reverse current policy in the sanctioned nation. The target is the sanctioned country pursuing political policies deemed deviant by other countries. Senders choose themselves by initiating economic restrictions against this target nation. Sanctions involve economic weapons to wage a nonmilitary campaign, extending the diplomatic process beyond verbal negotiations. Third parties also exist, as the final cast members, and their involvement level depends on how they react to the sender's initial policy. Some help the sender and others help the target, all depending on the potential profits of those choices. There is much debate about the importance of third parties and there is no consensus on whether multilateral sanctions or the existence of sanction busting, third-party nations make any difference in policy efficacy.

This text's thesis is as follows. *Economic sanctions are diplomatic acts used to change a foreign government's political policies, where sanctions*

act as if they are macroeconomic policies transmitting coercive economic effects from senders to targets. Whether we call a sender's policies embargos, sanctions, coercion, statecraft, or any other term, the rationale and intended effects have the same genesis ex ante policy. The economic rationale behind each is close enough that this study uses these terms interchangeably throughout this text.⁴

Brief Overview of the Text

Sanction policy is at an enigmatic crossroads. With their effectiveness in question and human suffering from them now a major concern, economists must understand and forecast sanction effects better than before. Economic statecraft aims to move along a policy effectiveness continuum toward stated political goals, where marginal movements toward a goal defines relative policy effectiveness. We must, as best we can, drop the term "success" from the sanction nomenclature.

Chapter two introduces basic economic theory in sanction analysis using models of international trade. Since sanctions are trade barriers at their core, models from international economics provide much needed insight to policy makers. Chapter two posits a basic model that acts as foundation for how economic coercion drives welfare losses for both countries from these policies. The importance of recognizing that sanctions imply costs for both senders and targets is realized in the macroeconomic model of chapter five. Some of the literature's major works are case study analyses that use fundamental economics to draw conclusions. Hufbauer, Schott, and Elliott (HSE) have produced two editions of over 100 cases studies (1985, 1990), with a third edition of over 170 cases on the way. HSE's second edition (1990) is this literature's encyclopedic foundation. Other seminal works are included in chapter two. Knorr (1975) and Baldwin (1985) are also seminal, and eloquently summarize all earlier writings on political economy and sanctions. Drury (2005) is the apex of the latest analyses, especially empirical work based on and since HSE (1990). Chapter two illustrates in simple terms how important the international relationships are to these policies' credibility and potency. Appendix 1 provides brief histories and sources on over 65 cases from 39 countries.

Chapter three focuses on understanding sanction initiation and continuation. Economists and political scientists alike use game theory as a tool to explore sanction initiation as diplomacy's first step. This chapter first outlines economic and political issues before sanctions begin. In some historic cases, sanctions are merely a prelude to war; in other cases, war as an option is never discussed or credible. Nations

pick strategic paths, based on perceived payoffs, given the other nations' choices. Nash Equilibrium is formed by conditional and strategic, not tactical, diplomacy choices in theory. The idea of cooperation transcends the theoretical issues and becomes a practical question when considering why other nations would join with senders. Cartel theory may help explain why there is a perceived lack of effectiveness in sanctions that have two or more senders. Chapter three also presents simple lessons from basic game theory and statecraft applications. Studies such as Eaton and Engers (1992, 1999), Martin (1992), Bonetti (1997b), and Drezner (1999) use game theory to explain how payoffs drive both the sender and target nations to choose policy strategies. In some cases, sanctions possess credible threats of major economic damage and an inability to continue a deviant action may force the target's policies to change. In other cases, sanctions may end because they lack credibility and have no expectation of success.

Chapter four expands on Chapter three's themes and integrates more specific political economy theory in examining sanction effects. Public choice models conceive of political markets in each country that perpetuate the target's deviant policies and the sender's sanctions. Interest groups in each country influence policy actions and reactions. Economic coercion leads to wealth redistributions that change political decision-making, as certain groups in each country pay decision makers to receive benefits from policy. Public choice models naturally lead to smart sanction analyses, where sanctions are focused on the target's political decision makers. Such sanctions reduce potential humanitarian crises from general embargoes, increasing the cost of interest groups paying for continued policy directly if possible. Examples include arms sanctions, travel restrictions, asset seizures, and reduced aid packages. Chapter four discusses seminal works in smart sanctions and their conclusions, such as Cortright and Lopez (1995, 2002). Sanctions maintaining this focus, while influencing political change, may begin to look like macroeconomic policies in their effects, creating a paradox for smart sanction pundits.

Sanctions are macroeconomic phenomena. Chapter five introduces a macroeconomic policy model where economic coercion acts like monetary and fiscal policies to transmit economic damage such that target political change follows. This model uses recent advances in open economy macroeconomics to derive exchange rate effects from sanctions. Few studies have examined how exchange rate fluctuations can measure and elucidate the ways that the sender's policy transmits economic costs to targets on purpose. The major contributions here

are as follows. First, the model illustrates how market imperfections can enhance sanction efficacy under different sanction mixes. Second, the model in chapter five predicts that financial sanctions, where the sender reduces its financial flows with the target and freezes asset payments, are the most economically effective sanctions; the effects of trade sanctions are ambiguous in this model. Chapter five provides a way to view sanction policy like any other macroeconomic policies, where damaging welfare effects are meant to be transmitted from senders to targets through exchange rate movements. While economists may find this chapter's technical material useful, the model's algebra is largely relegated to chapter five's appendix.

Chapter six draws conclusions about sanction effectiveness, from economic to humanitarian to political. First, the sanction could be completely ineffective. In this case, the sanction must be seen as pure political rhetoric. Second, there is economic success. To be effective, the sanction must cause economic damage to the target. Time series econometrics is used to estimate the direction and magnitude of exchange rate shocks from economic coercion, following Sobel (1998). If target currency values fall as a result of coercion impulses, policy is deemed economically successful. Next is humanitarian effectiveness, when economic effectiveness is not a harbinger of humanitarian problems. If economic damage results, the resultant harm may or may not be large in terms of human costs. Assessing the sanction's ability to circumvent an "innocent" populace in its detrimental effects measures coercion's human effectiveness.⁵ Finally, the political effects are measured. Economically effective sanctions that force marginal policy changes are deemed politically effective. Using discrete choice modeling for both the humanitarian and political estimations tests how economic coercion leads to these marginal movements, the essence of political economy. Exchange rate effects and control variables are used together to determine humanitarian and political effectiveness, following Drury (2005).

Chapters two through five discuss and theorize about sanctions, whereas chapter six empirically tests hypotheses concerning sanction effectiveness (or lack thereof) in sixty-five U.S. cases. Import sanctions are seen as the most effective coercion measure in terms of human and political effectiveness, whereas export and financial sanctions have ambiguous or small effects. Table 6.1 shows that import sanctions are by far the least used sanction historically, which may be why many perceive sanctions to be ineffective.

Chapter seven discusses conclusions and policy recommendations. The first conclusion is that sanctions must act like a cartel, where



Figure 1.2 Sanction effectiveness continuum.

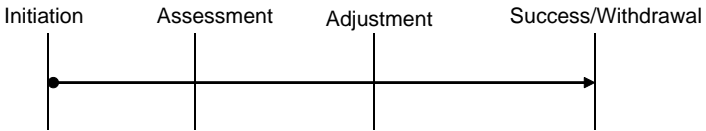


Figure 1.3 Sanction timeline.

senders monopolize the policy market and impose costs on targets that are enough to force marginal policy changes. Next, sanctions are macroeconomic phenomena allowing economic statecraft to be discussed as if it was monetary or fiscal policy. Also, smart sanctions struggle to be effective or remain focused in practice, especially if they are macroeconomic phenomena. Policy recommendations include forming sanction alliances to credibly impose coercive measures regionally rather than globally. Regional connections are likely to be more important to targets funding their policy decisions. Scholars and policy makers should build and agree upon macroeconomic models to measure economic statecraft effectiveness and marginal movements along the Sanction Effectiveness Continuum. Finally, senders must recognize that all sanctions must have an endpoint, as perpetual sanctions show little evidence of efficacy.

The Sanction Effectiveness Continuum (figure 1.2) focuses on how sanctions work and why marginal movements, from left to right, are important. The Sanction Timeline (figure 1.3) provides a parallel tool to compare and contrast cases as to how they progressed from initiation to policy termination.

Without using economic theory, analyzing sanction effects is pure conjecture. Chapter two begins our journey by discussing the basics.

Chapter 2

Basic Sanction Analysis

Introduction

To study economic statecraft is to study international economics. These policies of economic coercion, to affect political change, are case-specific in their characteristics, involving many nations and cultures. By changing the way a nation consumes, works, and saves, theory suggests economic sanctions can levy a tax on the target's regime and populace to engage its rulers directly for change. Policy choices transmitting welfare redistributions among the parties involved, and also creating externalities that affect other groups indirectly, are the essence of political economy. In this chapter, basic concepts from international economics are applied to sanctions and some seminal works in the literature are discussed vis-à-vis these basic ideas. This chapter's literature review is selective and not meant to be comprehensive. Relevant literature is mentioned and discussed throughout this text when topical.

Sender nations must have economic connections with the target to sanction effectively. Direct connections and more inelastic choices lead to target reactions in line with the sender's goals. Market economics shows that international trade free of market barriers begets economic gains from comparative advantage and specialization. Political economy is a simple tangent of international economics in this sense: using trade and financial barriers as a political weapon is meant to undermine target gains from trade to force political gains for the sanction sender.

Sanctions are used to exploit one specific similarity between sovereign nations, regardless of any differences: citizens need to eat. Exploiting the target's necessity for certain goods is economic warfare, where trade restrictions are used in lieu of military weapons. Spindler (1995)

provides an outstanding study of how similar sanctions are to trade barriers. “Economic sanctions can be regarded as instruments of foreign policy that lie somewhere on a continuum between completely unrestricted international exchange and absolute war at the other” (205). Sanctions are not direct substitutes for war but for other diplomatic tools, whereas war is the end of diplomacy. Fundamentally, a sanction is nothing more than a quota or a quantity restriction on the amount of goods, services, or financing flowing between two nations.

A typical sanction places restrictions (ranging from 0 to 100 percent) on exchange between the sanction-sender and the sanction-target nations. A typical protection policy places quantity restrictions, quotas, restrictive taxes—tariffs, or both tariffs and quotas, on exchange between the protective nation and other nations. Other protective policies, such as national preferences laws, may be regarded as having some tariff or quota analogue. (206)

Looking beyond basic international economic theory to determine sanction effects is dangerous given what sanctions are at their core. Foundationally, sanctions are nontariff barriers to trade, import, and voluntary export restraints (VERs), used for changing another country’s political choices rather than domestic protectionist purposes. The politics surrounding a sanction’s imposition immediately puts a duration and mix onto these policies, which differentiates economic statecraft from protectionism.¹ A seminal study that outlined the hypothesized effects of sanctions is that by Galtung (1967). This work focused on sanctions against Rhodesia in the late 1960s, imposed by the United Nations and the United Kingdom.² Galtung outlined seven “dimensions” for classifying sanctions, which have been a driving force in this literature and are paraphrased here:

1. Sanctions either reward (are positive) or punish (are negative);
2. Sanctions are aimed at individuals or the collective;
3. Sanctions are imposed due to internal or external actions by the target;
4. Sanctions are unilateral, multilateral or universal;
5. Sanctions are general or selective;
6. Sanctions are total or partial; and
7. Sanctions restrict a mix of the target’s trade, financing, communications, and diplomatic relations. (381)

Galtung suggested that certain ideal conditions exist for damaging the target’s economic system without causing much harm to the

sender nation (384). But while it may be theoretically possible to achieve an optimum, this second-best optimum comes with societal losses, as do all international trade and financial restrictions.³ Because embargoes are quantity restrictions, deadweight losses result from a sanction's imposition. This is a classic problem of trade barriers, tariff or nontariff, in economic theory.⁴

Galtung's case study of Rhodesia was seminal, the framework for cases in Baldwin (1985) and Hufbauer, Schott, and Elliott (1990), two leading texts discussed later. Appendix 1 in this text provides case histories for episodes used in the empirical analyses in chapter six. A standout case is South Africa and sanctions against apartheid. Sanctions against South Africa were reactions to apartheid, and the consensus view is that they contributed highly to apartheid's end (Levy 1999). Apartheid was a system of segregation and discrimination in South Africa against black South Africans, based on race. The first sanctions against South Africa were in 1962, and were on and off at various times throughout the next thirty years. This case was a mix of multilateral policies, with the measures strengthening and weakening over time. South Africa became more and more economically isolated as time passed, and apartheid broke down through international pressure.⁵ Case studies show international policy at work, and help us understand the basic theory, especially when these measures failed to produce the political result we expected.

This chapter has four parts. First, it provides basic economic theory to explore how sanctions work to reduce the target nation's wealth, at some cost of sender wealth. This section combines many ideas from the literature and textbook on international trade and finance. Next, this chapter provides a selective literature review of seminal works that tie together the basic theory and sanction cases. Two texts stand out: whereas Baldwin (1985), using Galtung (1967) and Knorr (1975), summarized and expanded the existing literature, the work by Hufbauer, Schott, and Elliott (1990) has become the literature's foundation, building from Galtung (1967) and Baldwin (1985). The cases in Appendix 1 are a subset of the total cases provided by Hufbauer, Schott, and Elliott (1990), a sanction case encyclopedia.⁶ The third section of this chapter concludes by positing stylized facts about economic sanctions to be discussed through the book, both in theory and empirically (in chapters five and six). Do alternative markets and sender hegemony play a role in sanction effectiveness? Is policy duration a factor in effective sanctions? How do we measure effectiveness? This chapter begins building toward the general equilibrium model of chapter five, concluding with thoughts about

economic theory's limits in both explaining sanction effects and the literature to date.

Basic Sanction Theory

Economic sanctions are just that: economic. Profit pursuit and subsequent market movements drive economic activity in all countries involved, regardless of political regime. In less capitalist and democratic societies, that profit may be absorbed by an autocratic amoeba of bureaucracy and market frictions. Thus, sanction effects may be superficial to governments, harsh on its population, but must ultimately change the target's politics to be both credible and effective.

We view these policies from the sender's perspective generally, rather than the target economy. Because of the economic connections between the two nations, and the fact that the sender is initiating the policies, using this vantage point should minimize confusion. For example, the target's *export* market with the sender (the sender's import market with the target) reacts to the sender's *import* sanctions. Analogously, the target's *import* market with the sender reacts to the sender's *export* sanctions. We begin with import sanctions, which are akin to classic trade barriers, restricting sender goods and services inflows from the target.

Import Sanctions

Theoretically, the target's export market reflects the worldwide supply and demand for its goods. We assume that if the target's exports are sanctioned, it reduces worldwide demand from the current quantity demanded at the current world price. If we assume markets are in equilibrium before sanctions were imposed, basic economics illustrates the welfare effects of a change in price and quantity on each market. Figure 2.1 compares the pre-sanction equilibrium in the target's export (EX) market to the sender's import (IM) market.

The original world equilibrium takes place at a world price (P_W), where the line S is the supply curve and line D is the demand curve in each market. Variables with asterisks are domestic equilibrium values. The quantities supplied (Q_S) and demanded (Q_D) determine the market surplus ($Q_S > Q_D$) or shortage ($Q_S < Q_D$) at the current world price vis-à-vis the equilibrium price without trade (P^*). Since the world price is above equilibrium in the target's export market (P_T^*) the target is a net exporter of these goods, where a market surplus is sold to foreign buyers. The sender faces the

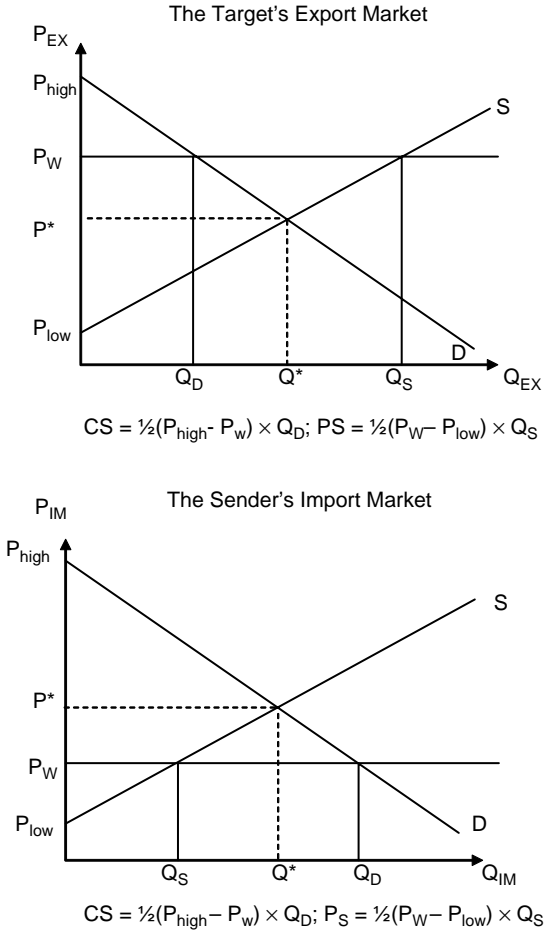


Figure 2.1 The target's export market/sender's import market.

opposite conditions as the world price is below its closed-economy equilibrium. This basic model assumes the target does not dictate its own export prices, the world market does instead. A trade sanction is assumed to have a “ceteris paribus” effect, where all other economic variables are held constant. In the model in chapter five, import sanctions reduce the target's wealth through reduced export revenues. This lost revenue acts like an indirect payment, a “tax” for pursuing deviant policies.

In this simple supply-and-demand analysis, “welfare” is the sum of consumer and producer surplus derived from market actions. Consumer surplus is the gain for buyers who purchase a good at an equilibrium price below what they otherwise would have been willing to pay. Producer surplus is the gain experienced by producers from selling their goods at prices greater than the market’s equilibrium price. The sum of these two surpluses is equal to societal welfare derived from the market. The triangles CS and PS represent these surpluses in figure 2.1.

Sanctions reduce welfare by creating market frictions, much like any trade barrier.⁷ Import sanctions act like import quotas in theory. Quotas are generally imposed as protectionist measures on a specific good.⁸ One major difference is that sanctions do not generate revenue from selling licenses to foreign producers to sell their goods, as they would under a quota. The sanction is meant to restrict specific imports (oil from Iraq, Libya, Syria, and Iran, e.g.) or all imports from a country (Cuban goods, services, tourism travel, etc.) to decrease the target’s ability to fund its policies.

The embargo’s resultant welfare effects are shown in figure 2.2, where the shock represented by the dark, vertical lines has two effects. First, target export sales fall, reducing target revenues. Instead of exports equaling $Q_S - Q_D$, they now equal $Q_{S2} - Q_{D2}$, while price falls to P_2 . The next effect is from the sender’s import price rising to P_2 , where its market shortage is now $Q_{D2} - Q_{S2}$. In figure 2.2, the sender economy experiences wealth redistributions in the following ways from the policy. Area **a** is a gain to the sender’s producer, the revenue generated by new production of import-competing products. Areas **b**, **c**, and **d** are the net welfare reduction from sanctions in the sender economy; area **a** is a welfare wash because it also represents a loss to domestic consumers who now pay higher prices.

In basic trade theory, area **c** should represent the government’s revenue from selling licenses under a quota. Since this is a sanction, we assume no licenses are sold, thus area **c** is additional welfare lost and not monopoly rents for the government imposing the barrier. The target producers experience lost sales in their export market, and prices fall toward the closed-economy equilibrium, with the producer losing more than the consumer gains from lower prices. The target economy also loses wealth in net, where areas **e**, **f**, **g**, and **h** in figure 2.2 are the consumer gains (area **e**) and the producer losses (areas **e**, **f**, **g**, and **h** in sum). The new market conditions are illustrated graphically in this figure.

The resultant shift’s magnitude (from D to D') and the domestic supply and demand elasticities dictate the welfare effects’ magnitudes.

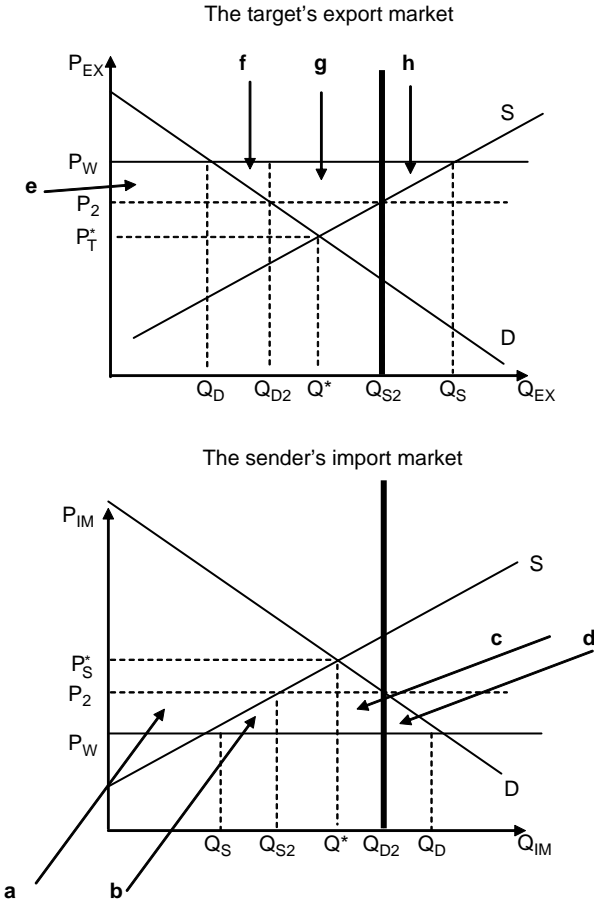


Figure 2.2 Import sanction effects.

Sanctions are partial in certain cases, focused on specific target goods rather than on all goods (see *Travel Sanctions* later), a relatively small shift of sender demand; in other cases, embargoes are comprehensive causing larger losses. The sender's welfare loss in figure 2.2 is increased as its domestic supply curve becomes flatter (more elastic); this implies the domestic supplier cannot fulfill domestic demand easily and take advantage of higher prices. In the target market, the flatter its domestic demand curve (more elastic), the larger are the welfare losses. Target producers lose even more revenue because domestic consumers can easily find substitutes for the good. Relatively lower prices do not

increase consumer surplus as much as producers lose revenue. Both economies experience welfare losses in net, as does the world. Restricting travel to the target nation is an example of import sanctions.

Travel Sanctions

The theory behind using travel sanctions, especially if the deviant government derives tax revenue from expenditures, such as hotel stays and casino gambling, is tantamount to focal or “smart” sanctions as discussed in chapter four. Many developing countries, especially Latin America and Caribbean nations, gear themselves toward tourism business where gambling and nightlife draw hundreds of thousands of people annually to their shores. Cuba is a classic example of current U.S. sanctions on travel. Given Cuba’s proximity to the United States, traveling to Cuba would otherwise be extremely easy. Flights from Miami, Houston, and New Orleans would likely leave multiple times per day, especially during the American winter, feeding the Cuban economy with foreign reserves of U.S. dollars. While the rest of the world travels to Cuba, Americans must find circumspect ways to make that journey, and even then must be careful when returning from Cuba with souvenirs (especially cigars, of course). These sanctions cost both countries because trade no longer flows freely.

Travel sanctions are import sanctions. The inability to export travel and recreation to sender travelers, who import these services while traveling in the target nation, has three effects. First, it reduces the target’s income from domestic travel and related industries, ranging from hotels to transportation to casinos to local food markets. Also, there are reduced amounts of foreign currency in the target economy. The lack of foreign reserves may restrict the target’s ability to trade generally, as foreign currency (specifically U.S. dollars) acts as a vehicle for foreign transactions.

The analyses presented earlier are simple but illuminating. The sender manipulates the target market quantities, forcing a reduction in the target’s welfare. Import sanctions are classic sanctions and have effects like trade barriers, specifically quotas. The earlier figures show how a sender may affect a target’s wealth, transmitting effects to lower overall welfare and funding for the target government’s actions. The other trade sanction is on a sender’s sales to the target.

Export Sanctions

Export sanctions are analogous to a sender economy imposing a voluntary export restraint (VER). The target’s import market mirrors

the sender's export market; as earlier, we assume that the worldwide supply and demand for the sender's goods dictate the market price to the target. In export sanctions, the target's supply of imports is affected. Export sanctions increase the world price, forcing higher prices and lower quantities in the target economy for the sender's goods. Firms in the target country gain from export sanctions, as sales of the domestically produced goods rise when sender firms abandon this market. The sender's producers face lower revenues for their goods, a cost of domestic governments initiating export sanctions (see Losman 1998).

This shift's magnitude and effects depend on the trade and economic integration between the sender and target. The sender good's elasticity of demand in the target economy dictates how much target welfare is ultimately lost. Similar to figure 2.2, figure 2.3 shows the post-sanction markets for the sender and target. The reader can infer the pre-sanction situation by reversing the graphs in figure 2.1. In this case, the sender is the exporter and the target the importer.

The net effect on both economies' welfare is negative, as in import sanctions. Area **a** represents target producers gaining revenue while consumers lose due to reduced sender imports, where areas **b**, **c**, and **d** represent the additional consumer loss of welfare. The export sanction mocks the sender imposing an export quota on itself. For the sender, the areas **e**, **f**, **g**, and **h** represent the gains (area **e** to the consumer) and losses (areas **f**, **g**, and **h** to the producer) from this sanction's imposition. Specific goods of strategic importance have been historically curtailed by senders. These goods include arms sales, developmental aid, and technology.

Arms Sanctions

These export sanctions are specific to military hardware and weapons systems, seen as examples of smart sanctions.⁹ These embargoes reduce the target government's ability to make war and force its citizens into nondemocratic political systems. Arms sanctions have evolved with geopolitics, ultimately as a way to constrain belligerent governments from igniting regional conflicts, holding volatile nations on the brink of military obsolescence. Bondi (2002) discusses reasons why arms embargoes have recently increased after the end of the Cold War. "The end of a bipolar world permitted the emergence of a non-ideological debate over crisis management and conflict prevention and resolution" (109). Arms embargoes have focused on reducing terrorist activities since September 11, 2001, especially in countries that either allegedly house terrorists or sell arms to anyone, where Syria and Iran are prime examples.

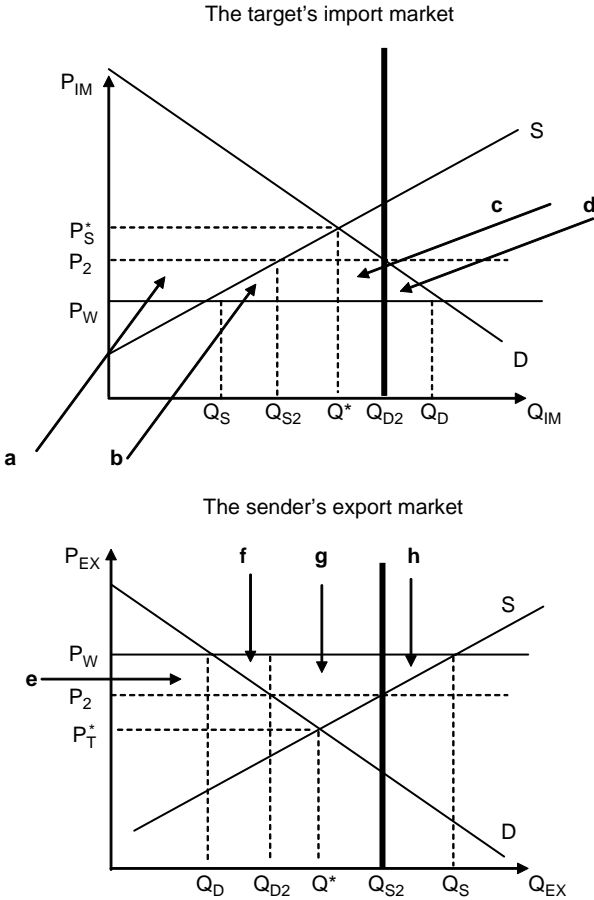


Figure 2.3 Export sanction effects.

Small arms sales dominate weapons sales worldwide, as weapons systems and larger ordinance have fewer sources. Peru (1968), Turkey (1974), Nicaragua (1977, 1981), and El Salvador (1977, 1987) are case studies where arms sales curtailment is aimed at reducing threats of regional conflict, civil war, or human rights abuses. Bondi (2002) suggests that international monitoring of the arms trade is poor. “[The small arms dealer’s] increasing and recognized prominence has not yet been accompanied by more stringent controls over their operations, which remain largely unregulated and consequently almost invariably go unpunished, even when in breach of international

sanctions” (113). Weapon system embargoes are specific examples of capital and technology sanctions, restrictions that may also come in the form of developmental aid embargoes.

*Developmental Aid, Physical Capital,
and Technology Sanctions*

One economic weapon the United States had wielded over many developing countries is aid reductions. The form of aid restriction is country-specific. Countries such as India (1965), Zimbabwe (1983), and Liberia (1992) are examples of American aid embargoes. Unilateral transfers of food are the least likely to be cut, due to humanitarian considerations. The 1989 case of the Sudan is one where all but food aid was cut by the United States (see O’Sullivan 2003).

Export sanctions may also curtail sales of physical goods used in production. These goods range from tractors to intellectual capital, computer software to new pharmaceutical factories. The loss of physical capital from foreign sources reduces net investment in the target’s macroeconomy. Theoretically, these sanctions threaten to slow the target’s economic growth, leading to slower savings rates, reduced GDP, and decreased consumption. Given advances in telecommunications and computer technology, trade barriers to these improvements may drive target infrastructure and capital quickly toward obsolescence.

Reducing these inflows also reduces the target’s ability to export goods. As a result, foreign asset holders may sell their ownership to domestic citizens and firms, potentially causing asset price bubbles without economic growth as support. Some authors believe such actions helped sanctions against South Africa to defeat apartheid (see Porter 1979). South African sanctions focused on reducing foreign direct investment (FDI). The ultimate effect of “disinvestment” in South Africa, the parallel sale of assets by foreigners along with a ban on new investment, was to force asset prices down.

Forced disinvestment by foreigners of ownership claims to output produced in South Africa has the effect of driving down the market prices of these assets, and thus increasing their expected rates of return. The effect on market prices will be a function of the size of the disinvestment [itself] and the sensitivity of international asset substitutability relationships. (Kaempfer and Lowenberg 1986, 385)

Alternative markets mitigate welfare damage from these policies. Sanctions on physical capital act like export sanctions because their

focus is on restricting the availability of goods or services from outside the target. For arms, aid, or capital sanctions, embargoes are on specific industries or funding. Policy-imposed scarcity in these markets aims to reduce productive capacity, lower funding available to deviant governments and decrease returns on capital. Through the balance of payments, as the model in chapter five makes explicit, trade embargoes are tied to capital account balances, as financial sanctions are tied to current account balances.

Financial Sanctions

Curtailing financing is different than an embargo on capital goods, as these are sanctions on financial entitlements to income.¹⁰ International trade and finance are intrinsically linked through the balance of payments. Trade sanctions indirectly affect target financial markets; financial sanctions also indirectly affect the target's goods markets. Mechanically, financial sanctions are similar to trade sanctions. When senders sanction their "imports" of target lending (capital inflows), the sender reduces expected interest payments and income for target investors. When curtailing its domestic sources of financing for the target economy, the sender reduces funds supply, causing the target's financing costs to increase. The target is assumed to not determine its own interest rates, the outside world does instead.¹¹

Another type of financial sanction reduces or eliminates income flows from target assets currently held in the sender economy, essentially "freezing" the assets. If the target has used the sender's financial markets as a proxy for its own, these sanctions can be quite detrimental. To restrict asset income flows to foreigners, the sender must have a certain precondition. A sender cannot credibly curtail target asset income if it is a net creditor of the target. It is likely that targets, once cut off from their own asset income flows, would retaliate in kind. The threat to curtail these flows is only credible if the sender holds more target assets than the target holds of the sender's. To use credit sanctions, where the sender neither provides nor demands financing, the only precondition is that a financial market exists between the two countries. A basic model of financial sanctions is shown in figures 2.4 and 2.5, analogous to the export embargo example (figure 2.3).

Figure 2.4 shows the market equilibrium for the target's loanable funds, or available credit. Assume that the target has a shortage of available credit at the current world interest rate. In figure 2.5, the target's available credit from abroad is reduced from $Q_D - Q_S$ to $Q_{D2} - Q_{S2}$. This demand contraction forces asset prices down in the

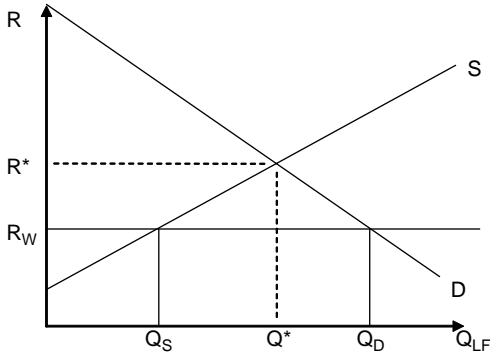


Figure 2.4 The target's market for loanable funds.

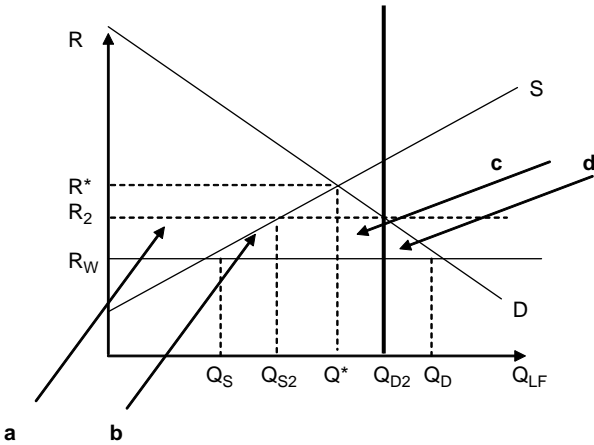


Figure 2.5 Financial sanction effects on the target.

target economy, while increasing interest rates. As earlier, the elasticity of demand and supply in each country's market dictate the final welfare effects' magnitudes. The target's net welfare losses are defined by the trapezoid formed by areas **b**, **c**, and **d**.

Elliott (2002) suggests that financial sanctions have market forces behind them that reinforce their effects: banks outside the sender-target dyad may perceive the target to be more risky due to financial sanctions. This risk augmentation is stronger when the target is a country with few alternative sources of financial markets. Market

forces are dictated by the elasticity of demand and supply, by the number of substitute markets available.

If the target government uses asset income and foreign borrowing derived from outside to fill its treasury with foreign currency, these sanctions can be very focal. Steil and Litan (2006) discuss these sanctions at length, making two points that underscore the current view of these policies. First, capital flows affect trade flows in such a way to shock exchange rates and basic economic conditions in the target country; also, the mere threat of financial sanctions, especially from the United States, cause objections from target governments and beyond who view these measures as extreme and extraterritorial to the target economy (5). If sanctions cause a currency crisis, directly or indirectly, such a crisis must affect the average citizen, and may spill over regionally. Sanctions are structured as if macroeconomic policies.

Sanction Theory and Political Economy

Reducing a nation's wealth by policy driving higher prices and interest rates, lower income levels, and reduced productivity are all part of a sanction's political economy. However, measuring sanction effects is difficult. Using historic case studies helps understand different contexts and sanction characteristics, especially the multiple ways sanctions are influenced to begin, continue, and end. Sender nations initiate sanctions because they perceive the benefits of target political change exceed the costs sanctions guarantee to all parties. A policy's efficacy, credibility, and forecasted damage should be tracked by senders to decide when policy should change or end. The political economy of economic statecraft is tracked by marginal movements toward the sanction's goals. The following studies are examples of seminal sanction investigations concerned with political economy and linking basic theory to sanction effectiveness.

Sanctions as Diplomatic Tools

Statecraft is a word used to describe how nations engage in diplomacy. Using negotiations to settle international disputes is an evolving legacy for the United Nations. Chapter 7 of the U.N. Charter, Article 41 in particular, calls for a specific approach to any threat to international peace.¹² Article 41 suggests that the United Nations must first curtail economic connections with rogue nations or a group of belligerents. Article 42 suggests that after economic sanctions are determined not

to work, the need and magnitude of military action will then be discussed and potentially initiated. One can easily see the subtlety that ties Articles 41 and 42 together. The economic weapon is to be used before military force, if military force is debated at all. This makes a precise and deep examination of sanction effects necessary before initiating any additional actions. Ultimately, the United Nations should assess every sanction, as should all senders. The driving force in the literature, beginning with Galtung (1967), has been identifying the characteristics and signs of sanction effectiveness qualitatively and empirically.

The 1966 Rhodesian case, in many ways, sparked this literature. The UN statecraft policies reacted to human rights violations, international concerns over a deteriorating and nonrepresentative political structure, and possible regional conflict. Questions of multilateral measures and their efficacy, potential leakages from a sanction coalition, and the target political system's ability to be changed or completely turned over, all were questioned in this case. One text not only expanded on the political economy theory and definitions of economic coercion, it also examined case studies where the Rhodesian case was front and center.¹³

David Baldwin's study *Economic Statecraft* (1985) is a pillar in this literature. Baldwin did not attempt to measure sanction success or failure empirically. He explained how sanctions worked as political economy instruments to succeed, defined economic statecraft in alternative ways, gave caveats for how trade and aid sanctions are defined and employed, and presented case studies. His text focused on cases such as South Africa, Cuba, and Rhodesia, employing conflict resolution theory, and also discussed sanctions in power relationships, as in Knorr (1975).

Knorr (1975), in *The Power of Nations*, examines economic warfare and the use of national power through international policy. He defined how power relationships and hegemony can be used in economic sanctions, a theme continued by Baldwin (1985), a much-debated issue since. "Like all power, material economic power can be used for coercion, that is, for influencing the behavior of the weaker actor, or for directly achieving a desired effect, whether harmful in an adversary relationship or supportive between friendly or allied countries" (Knorr 1975, 138). Knorr's assessment of collective sanctions greatly extended Galtung (1967) and connects to sanction cartel possibilities as discussed in chapter three of this text. "In principle, collective trade sanctions should be more effective than economic reprisals by one state or a few, because they would be based on an

international *cumulative* degree of monopolist or monopsonist control over the world market” (Knorr 1975, 160). Knorr further suggested military blockade throughout history, taught us that it was possible to embargo efficiently, and that trade sanctions were the new type of blockade if used correctly.

Knorr’s thoughts and ideas provided further foundations for Baldwin. Baldwin expanded on economic sanctions in specific, whereas Knorr was more general in examining trade policy, aid provision, and international relations. Baldwin’s case study of 1966 Rhodesian sanctions provides key ideas for this text. The sanction’s main goal was for Rhodesia to allow majority rule, while secondary goals included avoiding force, isolating Rhodesia economically and politically, encouraging regime opponents, and imposing costs if majority rule was not instituted (Baldwin 1985, 191). This case explains sanction effects from many angles; the Rhodesian human rights situation typified the reasons to use sanctions rather than military intervention. Baldwin also made the point that the average citizen was affected by sanctions; as the conditions of black Rhodesians, especially in terms of unemployment versus their white leadership post-sanctions, were seen as worse and disproportionate in the sanction’s influence (195–96). Baldwin’s look at Rhodesia provides two general questions for further analysis: (i) do sanctions cause change or support political evolution already underway?; and (ii) in what ways does the populace suffer from sanctions?

Putting the world on notice that economic coercion may cause collateral damage is also a seminal insight in Baldwin’s text. Chapter four of this text discusses smart sanctions, where the policy focus is minimizing general harm by focusing on target decision makers. Like other texts, Baldwin’s analysis is at a principles level and provides background for viewing these policies using conflict resolution techniques. In his conclusions, Baldwin suggests that success is a matter of degree (371). The concept of marginal effectiveness was born here, which is in stark contrast to Hufbauer, Schott, and Elliott (1990) and their contribution and success scores. The theme of marginal movements toward goals continues throughout this text in the open economy macroeconomic model in chapter five and the empirical work in chapter six. Baldwin drew from the work of Doxey (1971) and Renwick (1981) for the Rhodesian case study and questions of sanction legality (Baldwin 1985, 336–69).

Doxey (1971, 1987) looked at international law and whether nations had the “right” to impose economic statecraft measures. Doxey (1971) suggested that sanctions are methods of coercive

diplomacy, statements against deviant policies that crossed international boundaries as well as jurisdictions. Her work laid the foundation for debates over the importance of cooperative efforts, special interest group influence, and sanction legality. Doxey (1987) extended the original study using specific cases in detail, discussing conditions under which countries should be allowed to sanction. Her socioeconomic approach was seminal in stating why sanctions may fail: they are viewed by the target populace as an act of war, and would be resisted.¹⁴

Doxey (1987) made two major points that prevail in the literature today. First, sanction success must be linked with its stated or unstated purpose. The Sanction Effectiveness Continuum illustrates the possible outcomes a sanction can achieve. Economic damage is itself a “success” of sorts, as reducing target welfare is an implicit statecraft goal. How that damage exacerbates or creates problems determines if it is a humanitarian success; if the stated political goal is achieved, it is a political success. Doxey’s study provided seminal reasoning for multiple thresholds and for measuring third-party effects.

Robin Renwick (1981) examined specific sanctions in great detail and identified historic patterns in economic statecraft; Renwick also concentrated on the Rhodesian case, focusing on decision-making, where these sanctions were flawed, and why sanctions worked or not. Using the Rhodesian example, Renwick makes generalizations that provide foundation for understanding in what circumstances the UN’s economic muscle should be flexed. In the Rhodesian case, the military option was threatened but not used. Embargo effectiveness may be enhanced when military threats act complementary to sanctions, the very action the sanctions are attempting to avoid if following Chapter 7 of the UN Charter. Renwick’s work also emphasized the need for universality in sanction imposition. “Sanctions frequently—one might also say, generally—are decided in large measure as a consequence of the lack of feasible alternatives” (85).

Sanctions, as international diplomacy tools, must be prudent and self-aware, used only if there is international consensus on its size and scope. Third parties must prepare themselves for sanction effects. Senders and targets must expect outside parties to react in the pursuit of profit. In sum, international diplomacy starts with negotiations. Embargoes should substitute for military options, the first choice once verbal diplomacy breaks down for any sender. Baldwin (1985) was the peak of the literature that it followed, as it was comprehensive in its literature review and provided illustrative cases. We now review the contributions of this literature’s current foundation.

Hufbauer, Schott, and Elliott (1990)

Hufbauer, Schott, and Elliott (HSE; 1990) compiled over 110 cases of economic sanctions since World War I, analyzing each case by assigning points. This extended their 1985 study such that the 1990 study is heralded as encyclopedic and comprehensive.¹⁵ Each case is broken down into similar parts for comparison. Their thesis is that each case, while different, can be assessed as to its success in goal achievement. After providing a detailed chronology of each episode, HSE assigned case-specific “scores” for both political and economic success, each ranging from one to four (one being the least effective and four being the most). The integer assigned for political success is based on the level of target capitulation to the sender’s demands. The way HSE present and assign economic success is through welfare loss and gain, measured by shocks to GNP attributable to the embargo. If the target economy experienced a severe drop in GNP, or if the sender used very little of its GNP relative to the target’s loss, in percentage terms, the “contribution score” is three or four (success). The economic contribution score is multiplied by the political success score to calculate an overall success score.¹⁶ If the sanction episode receives an overall success score of nine or greater, it is termed a relative success; if the sanction scored eight or lower, the episode is a relative failure.

Scholars have identified two potential sources of empirical problems in HSE. First, endogeneity bias may exist in the data for economic success. The economic contribution score and the political success score are treated as mutually exclusive, but logic suggests they are dependent on one another. This endogeneity problem becomes an empirical problem because economic policy and its goals are rarely exogenous of each other (see Sims 1980). Second, a selection bias problem exists because many sanction cases were excluded by HSE as mere threats not involving explicit sanctions. Drezner (2003) focuses on this problem in specific, and echoed the concerns of Lam (1990), Drury (2002), and others. The success rate stated by almost every news article or scholarly work that cites HSE says there is an approximated 33 percent success rate of sanctions since 1945. Drezner (2003) suggests that if the threats were also included, the success rate would be over 50 percent, depending on the threat’s genesis (653–54).

HSE’s analysis compares and contrasts the economic environment before and after sanction imposition in cases that had ended by 1990. Their data categories (cost to sender, loss of trade for target, etc.) provide information and logic for the subjective, economic contribution

score. As target GNP falls, the economic pressure on the populace increases, placing the target's current policies at risk because the current government is at risk. How well the target's rulers can govern their people and coercion's effects simultaneously helps measure political success. Hence the endogeneity problem.

HSE states the sanction goal and then looks for evidence of how close the target came to acquiescence. For example, the 1970 sanctions against Chile were to combat human rights abuses and the Allende government. These sanctions are seen as a success, as Allende was assassinated in 1973. HSE gives this case a political success score of "four," as the stated goal was achieved. This is in sharp contrast to Cuban (HSE case 62-3), North Korean (case 50-1), Libyan (case 78-4), and Iraqi (case 90-1) sanction episodes, where the ousting of each country's leader was the stated goal, and none of these sanctions succeeded. Because actual versus stated policy goals can be deceptively dissimilar, HSE attempted to focus on just stated goals. Regardless of the caveats, both the economic contribution and political success scores in HSE provide a strong foundation for further research of each individual case, but must be seen as ad hoc, subjective assessments.¹⁷

Three major characteristics of successful cases empower HSE's results. Each characteristic's importance is debatable, subjects of many scholarly works. Derived from Galtung (1967), Knorr (1975), and Baldwin (1985), each characteristic was investigated in depth and breadth through the case analyses in HSE. The reader should think of these characteristics as independent variables in regressions, where the dependent variable is the measure of a sanction's economic effects.

Trade and Financial Dependence

The more dependent the target economy is on sender trade, the more powerful the sanction should be ex ante. This seems obvious: if targets are sufficiently dependent on senders for key goods and financing, leakages should be few and costly. Sanction effects depend on trade routes, trade partners, and international availability of credit. Trade dependence is a function of a target's ability to reallocate resources not only from sources outside its borders, but within its domestic production as well. Financial dependence may be more likely, especially in countries where financial markets are not domestically or internationally integrated or available. Given the potential profits in sanction busting, trade dependence on a solitary country seems more unlikely as globalization continues. The more universal sanctions can become, the more likely economic effectiveness would result. "The more

difficult it is for the target to find alternative foreign sources of supply, alternative foreign markets or substitutes [domestic or foreign] for the goods covered by the sanctions, the more effective the sanctions will be” (Miyagawa 1992, 25).

Financial dependence is a parallel factor to the sender’s trade controls. The integration of capital markets requires communications infrastructure, a central clearinghouse for transactions, and international recognition of the target’s domestic stock exchange. Even China, whose star has risen hard and fast since 2000, struggles to have integrative, domestic capital market transactions. China National Petroleum Company’s initial public offering is an example of raising financial capital in the United States without a thought of using a Chinese source of equity; Hong Kong’s exchange was not discussed as a place to raise the money (Steil and Litan 2006, 58). Many countries depend on American stock markets for financial stability, fast transactions, and lower costs. This characteristic facilitates the U.S. ability to engage in financial sanctions. Countries that depend on foreign financial markets to attract and produce wealth open themselves to the use of financial statecraft. The sender’s relative economic size may also make the target vulnerable.

Relative Economic Size

Political and economic hegemony may be determining factors in sanction effectiveness. However, does relative economic size mean international political potency through embargoes? GNP ratios act as a measure of relative size in HSE; while a good measure of an economy, GNP is somewhat archaic. In some historic cases, however, GNP is the only measure of national income readily available in the data.¹⁸ Gross Domestic Product (GDP), as an alternative, focuses on each country’s domestic ability to generate income. Percentage changes in GDP or GNP measure how well the respective economies absorb trade or financial shocks. Variables, such as total trade between the nations, exports plus imports alone or as a percentage of GDP (openness), may provide better information for both trade dependence and size. The assumption is that the economically larger the target, the more likely it has many trading partners and potential alternative markets. However, if a small country has a key product used worldwide (e.g., oil), its risk exposure may be small versus its relative size. A country like Venezuela can use its oil resources as a buffer against a hegemonic sender; in 2003, Venezuela had a GDP ratio of approximately 1.29 percent of U.S. GDP (IMF 2006).

Alternative Trade Routes and Partners

Every sender economy contends with an inability to perfectly restrict goods and capital flows to the target. Sender nations must identify and form compacts with target trading partners to minimize leakages. Trade and financial dependence is likely to be a function of a nation's economic activity, driving international market availability and trade integration. The number and type of alternative trading partners is a classic, obvious aspect of economic sanction effectiveness.¹⁹ The elasticity of target demand for the sender's goods is a reflection of how substitutable the sender's goods are; the elasticity of the target's supply of goods purchased by the sender reflects how many markets still exist if the sender embargoed the target's exports. Perhaps multi-lateral and universal sanctions are automatic winners for sanction efficacy; however, the evidence is not conclusive to date and the debate is likely to continue as more and more sanctions are used.²⁰

HSE (1990) is the most cited work in this literature. Their study provided comprehensive case details and made conclusions about each case, well-grounded in political economy. Their data, while subjective in many areas, make sense once the case details are synthesized. Their conclusions and methods have created another strand in this literature with scholars trying to either refine or argue against their conclusions. HSE is this literature's backbone to date, regardless of its shortcomings. Cooper Drury's work on the HSE data serves as a final look at seminal studies. Drury's work has become the new foundation of political economy in this literature.

Cooper Drury

Drury (1998) confronted the literature's results head-on with an insightful critique, acting as a grand addendum to the HSE (1990) study. Using their data set and adding political dummy variables and data regarding trade flows and sender size, Drury estimated the correlation between a sanction's effectiveness and the basic data that HSE provides. He developed a model, derived regression coefficients, and made conclusions from them. Drury's conclusions add to our knowledge of sanctions.²¹ He suggests that the presence of a prior, friendly relationship between the sender and target had no effect on sanction effectiveness. This was in contrast to the conventional wisdom that when targets have large economic friends they do not want to jeopardize that relationship and acquiesce under sanctions. Also, alternative markets do not always negatively affect sanction efficacy.

This result provides evidence that eliminating all markets may not be necessary. Also, pre-sanction trade flow do not affect the sanction's outcome. "When explaining sanction effectiveness, the actual pre-sanction trade level is relatively unimportant when compared with the damage done to the target" (Drury 1998: 507).

Drury also suggests that of HSE's nine policy recommendations, only two hold up to further analysis.²² These include: the higher the cost of sanctions, the more successful the episode; and the more distressed the target, the more successful the sanctions (ibid.). These are important conclusions as the first is counterintuitive and the second leads to an empirical challenge not easily solved. Logically, if costs mount higher and higher, senders are more likely to end the measures. Also, measuring economic distress prior to sanction imposition has many possibilities, and debate could rage over any such as inflation, unemployment, political instability, and so on.

Drury (2005) updates and expands on these issues and the U.S. president's role in sanction cases. Drury's work provides three insights moving forward. First, he identifies serious flaws in the HSE conclusions and data. Second, his work incorporates many new independent variables into the literature, as well as a continued use of discrete choice modeling. Finally, his work shows this literature has a long way to go in explaining the economic effects of sanctions. Chapter six in this text examines new ways to empirically investigate economic statecraft, expanding directly on empirical methods in Drury (2005) that provide these three insights.

Stylized Facts from Basic Sanction Analyses

There are four stylized facts drawn from the studies previously mentioned concerning political economy and sanctions. Chapter six examines these questions empirically, while Appendix 1's histories of the empirical cases provide a context per these stylized facts. This text's remaining chapters discuss these facts theoretically as mentioned in each section that follows.

Marginal Improvements are Successful Sanctions

Recent developments in North Korea remind us that the brinkmanship antics of a dictator continue because the target's people allow it. Can sanctions easily change such polity? Case histories illustrate the difficulty in doing so, as few sanctions have led to target government turnover. It is

important that scholars and policy makers begin to move away from measuring success in absolute terms and begin to focus on relative measurements. North Korea recently coming back to the negotiation table shows the policies are effective. The simple model of sanction effects described earlier suggests that forcing economic welfare losses on a target is not difficult. The case studies tell us that lower welfare acting as a conduit to political change is where sanction efficacy as a whole breaks down. The analysis of public choice models in chapter four discusses how policy applies pressure through imposing costs on target interest groups. If a certain political system exists such that the only organized interest group is the regime in power, then focal sanctions may reduce a sanction's bluntness and force marginal change. Chapter four also looks at these smart sanctions in both theory and reality.

Both the Sender's and Target's Diplomatic Partners May Act as Sanction Busters

In many cases, interested third parties show their face on either side. In some cases, there is international consensus and support for sanctions. During the 1990s, as the United States expanded its embargo policies widely, there was somewhat inconsistent international cooperation. Martin (1992) points out that economic theory dictates that as targets become more economically isolated, the sender's policy potential strengthens. Alternative markets relieve economic pressure and lead to spillover effects from policies onto otherwise uninvolved nations and their populace; thus sanctions create both positive and negative externalities. Measurement of these spillovers may be very difficult, especially where data is parsimonious or non-credible, or where the external market's economic ties to either the sender or target logically exist but are difficult to assess. Cooperative and competitive efforts over the target's polity are discussed in more detail in chapter three, and also empirically tested in chapter six.

Sender Financial and Trade Hegemony is Not a Sanction Necessity

Another stylized fact concerning sanction effectiveness is the role of the sender's economic strength and a perceived inability to use that strength to force political change. The point of multilateral, cooperative efforts is to act as a policy cartel to sway countries morally to reverse their deviant policies through either positive or negative incentives. Knorr (1975) and Baldwin (1985) are seminal works in how

power relationships are used in policy such as economic coercion. Their work on positive incentives versus punishment as different structures of policy influences much of chapter six's empirical work in this text. Martin (1992) made a great case concerning the connection between hegemony and multilateral sanctions, concluding that hegemony was immaterial. Drury (1998) corroborated this conclusion empirically. If sanctions act as cartels, they are subject to cheating and leakages as any collusive economic arrangements. Reducing profit incentives to either cheat on or exist outside the policy cartel's collusive boundaries is the major challenge of diplomacy among potential sender economies. Chapters three and four look at how game, price, and public choice theories in economics may help policy makers and scholars further understand the incentives of nations to act as sanction busters. Chapter six also looks empirically at institutional sanctions, as did Drury (2005).

Time is Not a Factor in Sanctions and Statecraft

Bolks and Al-Sowayel (2000) suggest that the target's characteristics, specifically its institutions and current regime's vulnerability to opposition, determine the length of sanction episodes. "Internal or external pressures may cause [target] leaders to change the structure of decision making in the regime. In turn, the development of countermeasures may be altered as well. Consequently, the target's reaction to sanctions is a function of these confluent factors" (245). Sanction analyses and debate would not exist if policy effects were straightforward to measure and track over time. Policy makers must imagine resources wasted in using sanctions where the target's political economy insulates its decision makers from sanction effects for decades. Cases such as Cuba, North Korea, Iraq, Iran, and Libya all show how long-term sanctions may devastate an economy and not change its political regime. Empirically, the challenge is gaining access to time series data, tracking economic coercion over time, and testing for changes using econometrics. The model in chapter five provides a theoretical framework to watch exchange rate volatility as a measure of economic effectiveness, while chapter six employs time series analysis to identify the direction and magnitude of exchange rate shocks from sanctions.

Sanctions are aimed at affecting decision-making in another country. Senders may enjoy a time when philosophical agreements about problematic target policy leads to multilateral sanctions, economic

incentives generally rule the strength of that policy cartel in the long term. For example, concerns with communism and authoritative governments in the Western world eroded over time due to cheap sugar and coffee sources in Central America and the world's affinity for Cuban cigars. It is important that policy makers see sanctions as aggressive diplomacy using economics as the weapon.

Conclusions

Sanctions are nontariff barriers to trade at their core. The sender's sanctions curtail economic connections between itself and the target in an attempt to change the target's political decisions. Sanctions, regardless of their breadth, are either trade or financial sanctions. There are three economic aims of sanctions, all to reduce the target's wealth. Sanctions aim to increase the target's price of imported goods and financing, decrease the target's income from its sales of exports or current assets, or reduce unilateral transfers and financing availability. In sum, the sender's policy actions are meant to unambiguously bring about target welfare losses, at some accepted, parallel cost. Basic models come from seminal studies in sanction analysis, beginning with Galtung (1967) and expanded upon by Knorr (1975) and Baldwin (1985).

HSE (1990), the literature's current foundation, is comprehensive in breadth and applies basic international economics and empirical techniques to estimate a sanction's economic and political effects. It does so by investigating case studies in depth and applying economic logic. Baldwin (1985), derived from Knorr (1975), was the early literature's peak, expanding the nomenclature and political economy theory of sanctions. Doxey (1987) provides different perspectives on economic statecraft, specifically its international legality. Drury (1998) added a much-needed empirical expansion to HSE (1990), and has since expanded on those themes in his work in 2005. The critical feature of all these studies is their use of basic economics and political science to provide a framework in which to look at any sanction policies. The four stylized facts provided earlier link the lessons of earlier works to the remainder of this text. Chapter three discusses why sanctions begin, continue, and end by reviewing game theory models of economic statecraft.

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Chapter 3

Sanction Initiation and Continuance: Enter Game Theory

The Games Nations Play

The War of Attrition game was originally posed as a model of conflict between two animals over prey. Each animal chooses the time at which it intends to give up. When an animal gives up, its opponent obtains all the prey. If both animals give up at the same time, then each has an equal chance of obtaining the prey. Fighting is costly: each animal prefers as short a fight as possible.

—Osbourne 2004, 77

Sanctions act like wars of attrition. The sender attempts to manipulate the target's wealth and income such that the target acquiesces and give up its prey. Instead of lions fighting over a gazelle in the sub-Saharan plains, the prey is the ability to engage in human rights abuses, aboveground nuclear testing, invasion of a neighbor, technology piracy, and so on. As embargoes continue to be acts of diplomacy, costs mount on both sides and reduce the benefits of respective actions: the deviant behavior of the target and the sender's economic statecraft. The imposition of sanctions represents a deadweight loss of utility for both nations, providing an incentive to reach an agreement before imposition (Drezner 2003, 644).

Why do sanctions begin, continue, and end? Chapter two provided a simple model of sanction effects, like those in Carbaugh and Wassink (1988) or in Carbaugh and Olienyk (1998). In such models, the world is worse off concerning overall welfare, but wealth is redistributed among the nations and entities involved. Game theory, models describing strategic choices by parties involved in economic and political transactions, provides multiple avenues of insight for sanction

analysis. First, conflict resolution models easily apply to economic statecraft, helping explain why sanctions begin, continue, and end through their political economy. The expected net benefits or payoffs are changing to both parties constantly during the sanction game. Decision-making on both sides may also shift before and during the embargo. Game theory models provide an exploration of cooperative versus competitive outcomes under uncertainty. The cooperative outcome where each side forms a strategy conditional on the other side's strategic choices, so-called Nash Equilibrium, may explain strategic economic statecraft decisions. This theme of cooperation transcends the sender's decisions and involves other nations in either support or circumvention of the sender's coercive measures.

It is a mistake to think that sanctions do not imply strategic outcomes. Policy may not be formulated in a strategic way initially. As sanctions continue, strategic goals become apparent, and each party adjusts accordingly. Game theory tells us that sanction initiation and continuance lies in the sender believing and proselytizing that the embargo's expected net benefits exceed those derived from doing nothing; as a corollary, the target's costs exceed the benefits of continuing the political action for which the sanction is imposed. While this may sound like rational decision-making, as economics is based on rational agents allocating resources to maximize individual benefits in the midst of scarcity, these decisions are conditional on the other party's decisions. Because the sender and target lack information about each other, the parties interact given each other's best strategies.

When a sender initiates an embargo, it must simultaneously monitor all economic, human, and political costs to gauge continuing the embargo, based on this new information. Since sanctions come in many different forms and are case-specific, game theory models easily adapt to explain why and how sanctions change or end. From basic examples, where a mere threat is used, to the most complex measures using comprehensive trade and financial restrictions with a military option in the wings, game theory can explain the strategic choices of economic diplomacy from beginning to end. Sanctions end when continuance no longer provides a net positive benefit to the sender due to the target's acquiescence or policy impotency.

This chapter is split into six sections. The first section provides a game theory primer and basic models of game structures, including the rationale for Nash Equilibrium. The second section discussed threats and blockades, the beginning of economic coercion, and the brink of the military option. Do threats provide enough information

to force a quick settlement? If the threat does not work, then the sanction begins. Next, a discussion of applied game theory models discusses some seminal works on sanctions. Eaton and Engers (1992) provide a highly theoretical model of sanctions, with some practical applications when considering the toughness and resolve of each party to continue an embargo. The fourth section looks at models of cooperation and whether senders can act as a policy cartel. Economic isolation is a key ingredient in sanction policy; cartelizing the target's sources and markets facilitates this isolation task. The following section discusses why sanctions end, and ties together the idea of strategic decision-making, which may either keep sanctions from happening, make sanctions rhetorical, or reduce the potency of future sanctions due to the sender's reputation eroding through policy impotency. This chapter concludes by connecting these ideas to the basic models in chapter two, the public choice models in chapter four, and chapter five's analysis. The mathematics of game theory will be held to a minimum, as most ideas can be discussed in a nontechnical way. This section also discusses measurements of efficacy and integrates the movement along the Sanction Effectiveness Continuum from chapter one with theory.

As an introduction to the chess match of international diplomacy using economics, a primer on game theory sets the stage for the literature and analyses that follow. It is important that the reader does not look at this primer as a substitute for a full lesson on game theory, or to be as technical as studies such as Garoupa and Gata (2002). This first section is meant to simply illustrate how game theory works in the sanction context.

A Game Theory Primer

Game theory applied to sanctions may explain why diplomatic decisions are made and why the actions of each country continue, especially when uncertainty reigns constantly over statecraft.¹ The game's players are assumed to be rational and seek individual benefit maximization through their actions. Strategic games are defined by the players, actions, and preferences over possible actions. In the sanction's context, players are nations or international coalitions. The rules are that targets engage in deviant actions, where sender reactions by initiating sanctions are a constant threat. From there, the sender reacts, then the target reacts, and so on, where other nations may join the game as they see fit as either "white knights" in cooperation with the sender or "black knights" to help the target, at each decision

stage. Game theory predicts national behavior by following the net benefits derived at every decision stage. Each country's strategic path is set initially, the choices to continue or cease these actions, assuming full information.²

Each new stage provides a new set of potential decisions based on uncertain net benefits. Players initiate and continue sanctions because they stand to benefit from these decisions more than the decisions' cost. For example, to initiate sanctions the sender must feel the benefits exceed the costs, given how those benefits and costs are defined. This holds true for sanction continuation, as each new decision stage allows both the sender and target to consider acquiescing or not. Explaining threat credibility based on the anticipated detriment to the sender or target for initiating or continuing sanctions, the resolve of the sender and target, and the formation of cooperative strategies are major additions to this literature from game theory models. Ultimately, conflict resolution models have been adapted to sanctions and originate from both political scientists and economists. These models also act as complementary models to public choice theory discussed in chapter four.

Basic Concepts

Sanction games explain why targets concede or why senders terminate sanctions. However, there are many different games and rules. Three concepts that help to understand game theory applications are: extension versus normal form; sequential games; and Nash Equilibrium. The game's form is simply how the net payoffs from decisions are conceptualized. The normal form is generally a table of net benefits for each nation, outlining the possible outcomes. A game's extension form uses a diagrammatic approach, or a game tree. Table 3.1 illustrates a simple sanction game in normal form, where the numbers in parentheses represent the action's net payoffs: (sender, target).

Table 3.1 A sanction game in normal form

		Target	
		Continue	Acquiesce
Sender	No sanctions	(1,2)	(2,0)
	Sanctions	(2,1)	(3,3)

This normal form describes a game where the sanction ends if the target capitulates. Most historic cases are sequential games. Sequential games are those where Player 1 moves, then Player 2 moves, then Player 1 moves again; in this case, there would be a new game in each decision period, with a new payoff matrix depending on how the previous period's game was resolved. Sanctions can be initially investigated as examples of perfect information, sequential games because both senders and targets react to each other with knowledge about what the other player has done, reactions based on changing payoffs. In table 3.1, the sender reacts to the target by sanctioning or not sanctioning. If the sender imposes an embargo, the target knows the embargo is on and reacts. The strategic behavior of each nation, if based on the assumption of individual benefit maximization, leads to a decision path that optimizes the net payoffs for each party. In contrast to the normal form, figure 3.1 shows the extensive form of a sanction game, where each node on this game tree is a new decision stage.

The extensive form shows the succession of decisions, which sum to strategic decision-making. Some games are competitive, where the payoffs reflect what each player can take from the other players. Some games are cooperative, where each player shares in the decisions' benefits. A cooperative outcome may take place because forcing

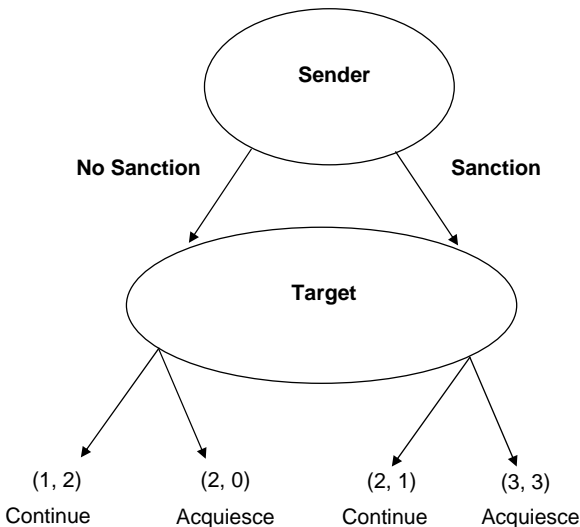


Figure 3.1 A sanction game in extensive form.

self-interested outcomes is not optimal if each player stands to lose more by competing rather than cooperating. This illustrates the concept of Nash Equilibrium, differentiating between cooperative versus competitive games.

Economic Statecraft and Nash Equilibrium

Sanctions have both competitive and cooperative elements, and national decision-making may depend on prior relationships and alliances that exist *ex ante* the target's malfeasance. Some models, both theoretical and empirical, suggest that the level of belligerency in the relationship between target and sender prior to sanctions may be an explanatory variable in sanction effectiveness.³ There is also competition and cooperation among the potential senders. Alliance-building and forming consortia are acts to reduce the uncertainty of rogue nations coming to the target's assistance. Once an alliance is struck, the sender consortium may have many possible strategic paths. Individual members of a consortium can act in many ways, which makes the game theory aspects of multilateral coercion extremely complex.

The first game is competition and is simple; table 3.1 and figure 3.1 illustrate such a game. Each side is competing over the target's ability to make specific policy choices. The target engages in a specific policy that the sender believes is imprudent. The sender tries to change incentives for both the international community and the target populace by directly reducing target decision makers' resource availability to continue their actions. The sender and target are competing in these ways over control of resources.⁴ A competitive game is a zero-sum game in its optimum: the gains of one party equal the losses of the other. Because spillover effects are obvious in sanctions, however, the pure competition game is unlikely. When looking at the world split into three pieces, sender, target, and third parties, sanctions are zero-sum games by definition. However, because the sender pursues more benefits and nations to support sanctions, forcing the target and its potential allies to bear increasing costs of the target continuing deviant policies, the competition model is a strong foundation.

In the competition game, each player's strategic behavior pursues individual benefit maximization. When viewing the payoffs, the assignment of numbers makes for better illustration than reality. How the payoffs relate to one another concerning the choices of each nation is more important. For example, in table 3.1, it is not extremely important that the sender's sanctions lead to either two or

three payoff units, but that they exceed the payoffs of the sender not sanctioning. Given its information set, the sender forms her strategy.

The next game is one of commitment. Credible threats collateralize sanctions. The sender, once committed to a sanction strategy, is assumed to continue until the target reverses its original policy stance. A lack of commitment makes other sanctions somewhat incredible and ineffectual. Commitment game choices must be irreversible and provide future target economies with historic knowledge of the sender's intentions and resolve in economic coercion.⁵ This game is similar to a cooperation game, where commitment acts as signal to potential sanction partners that the sanction leader has resolve that is unshakable. The target's commitment may also be in question and act as the crux of the sanction's strength.⁶ If commitment is credible, then the game has a cooperative solution.⁷

The final game is a cooperative game.⁸ One way to visualize differences between cooperative and competitive games is the dichotomy between oligopoly and perfect competition from microeconomics. Each nation reacts to the other dictating the game's play, as each nation uses the other's reaction as new information. A classic game, the prisoner's dilemma, suggests that because players are unsure about the other's reaction, each player makes strategic decisions based on what they believe the reaction of other players will be and how net benefits are affected. For example, if two criminals are caught, one may believe the other will confess to reduce her sentence. It is assumed that each prisoner has an incentive to confess, given their knowledge that the other prisoner also has a larger payoff from confessing versus not confessing. However, if they both chose not to confess, they would both be better off. Neither prisoner can trust the other to follow the no confession strategy. Thus, there are two strategies the prisoners could follow for individual maximization, *given* the other's action, but only one social optimum available.

The dilemma solves itself by the prisoners choosing the strategy that leaves them at a second-best result, even though they are considered "rational": they both confess. Moreover, the prisoners choose the noncooperative strategy, rather than the cooperative one. In this "prisoner's dilemma," there is no dominant strategy. In game theory, a dominant strategy is a path of choices where any other strategy leaves the player worse off. In table 3.1 and figure 3.1, the sender's dominant strategy is to impose sanctions. The sender has a credible threat to do so.

This outcome illustrates Nash Equilibrium, a cooperative solution to the sanction game that is not socially optimal because deadweight

losses exist. There are many sources for a definition of Nash Equilibrium; here is yet another specific to economic statecraft:

Nash Equilibrium: A nation chooses a policy strategy, such that no other nation, as either an additional sender or target, can increase their own nation's welfare with a different action, given that every other nation's reaction strategy is formulated in the same way.⁹

There can be multiple Nash Equilibria in a game. This latter characteristic typifies examples of the prisoner's dilemma and many sanction cases. For example, suppose the United States sanctioned China's ability to use American equity markets because it was unsure where the funding was going, a classic financial sanction against international terrorism. There was a question of this money potentially funding genocide in an African nation or terrorism in the Middle East because the equity ultimately would be used for investments in these countries.¹⁰ Assume the sanctions would be positive in net for the United States, and China would experience a net reduction in benefits. China could retaliate and reduce American benefits if it so chooses. The United States, knowing this may happen, chooses a strategic path that does not maximize its own benefits, but avoids trade losses due to Chinese retaliation, and a compromise is formed.

The existence of an information asymmetry between China and the United States about each other's intents is the essence of Nash Equilibrium, a mix of uncertainty and cooperative outcomes because information is not perfect. In the sanction context, Nash Equilibria are a simple outcome of diplomacy, where each side gives up something to gain new policy directions. In the following sections, game theoretical components are explained as extensions of the basics given earlier, where two overriding principles hold:

1. Game theory suggests that nations may seek cooperative outcomes because they lack perfect knowledge of other nations' reactions; and
2. The political economy of national decisions may not be well-known at the sanction's outset.

From a political economy perspective, policy shocks to wealth are assumed to define payoffs in the sanction game. There are three basic game structures for most case studies, all based on a sequential game structure. Each decision stage in a sequential game is itself a subgame. Each subgame is itself a type of new sanction episode. The sender and

target are choosing their “best-response” strategies, repeating the decision process as a reaction to the other nation’s move.¹¹

The Repeated Sanction Game

In this game, the target moves first, which is a slight deviation from the way the sanction literature views game models. The target’s political deviation causes potential sender economies to react, where they may choose to sanction or do nothing. After the sender’s reaction, the target may change their political actions or not acquiesce to the sender’s political demands. If the target continues their policy, it leads to a new game, based on the same rules and structure. The sender has the choice of stiffening or relaxing sanctions, the target reacts by continuing or acquiescing, and so on. This game is repeated until either side ends their respective actions. The sanctions and political deviations can go on forever.

The repeated game is a game of attrition. The sender repeats the sanction, year after year, in an attempt to slowly unravel the fabric that allows the target to continue its actions, hoping the target will say uncle. Unilateral sanctions of the United States against a dictator have this characteristic.¹² Every year, as new aid packages are debated in the U.S. Congress, America approaches yet another game node on aid and arms sanctions, for example. The target knows this, as it knows the budget process of the United States, and waits to see if the aid restrictions will continue. The net payoffs to each nation are functions of how long the sender and target intend to continue their policies.

The Two-Stage Game

The two-stage game is a repeated game with only two stages. Suppose the target engages in deviant actions, the sender reacts and the target may then have to make a choice to continue or not continue because their decision will end the game. A real-world example is brinkmanship. If the sanctions are a precursor to war, and a blockade is enforced by the sender’s military, the target must either yield or react violently. In stage one, the target’s actions are sanctioned; in stage two, the target moves to end the sender’s statecraft one way or the other.

All sanctions can be compressed into a two-stage game; however, the dynamics of changing payoffs and choice and players are lost in such a truncation. The credible threat of target losses dictates the payoffs, but this threat is not credible in every sanction case. This two-stage game depends on how the target’s decisions end the game. The uncertainty over the reactions of each player leads to mixed strategy games. The military option need not be involved to have a two-stage

game. Suppose that the Gambia experiences a governmental overthrow, and the new government restricts antigovernment speeches, elections, and freedom of its press. The United Nations may react in such a way that does not change until the Gambian government allows more freedoms. The Gambia reacts to this and faces sanctions until their reaction is an acceptable compromise—stage one is the target's action and sender's reaction. Stage two is the target's final action and sender's final reaction, which ends the game.

The Mixed Strategies Game

The most realistic and difficult game analytically is a mixed strategy game, where an action creates an array of possible reactions with specific probabilities. Few target nations know how potential senders will react, how many of them there will be, and the sanction's comprehensiveness. These conditions may also change after a certain number of stages depending on the information set at that stage. For target countries, information should be close to perfect based on history and current international relationships; for example, any terrorist act is likely to bring the United States in as the leading sender nation. Mixed strategy games involve defining the probabilities of actions and reactions as a function of history, politics, and economics. Few countries are deterred by policies that are openly rhetorical. Each nation's pursuit of specific goals, in terms of payoffs, dictates strategic decision-making. The sender, target, and third parties define themselves through their actions at different stages of the sanction game.

Current sanctions against Iran act like a mixed strategy game. Both Iran and the United States share uncertainty over the other's actions and reactions. Each country releases press statements berating the other's policy choices, engaging in a new type of cold war. Diplomacy is a gamble, a speculation based on current knowledge of each player, where sanctions act as a trump card. New events can shift these probabilities, as Israeli action may trigger a new set of possible reactions from both Iran and the United States. The more volatile and strong Iran becomes, the more uncertain their policy decisions. While most sanctions can be simplified into the games discussed earlier, mixed strategy games are more realistic as decision models when the players' moves are highly uncertain.

The underlying concept is that sender policy makers can predict the target's reactions, as targets can predict sender actions, because both sides are pursuing the best response strategy. If both players move such that they play their best response every move, the game ends in Nash Equilibrium. The scholarly difficulty is not in defining the players

or rules, but in defining the payoffs. The reader should think about the way game models are set up, and what small but interesting twists scholars put on the rules, strategies, and payoffs of the two sides. The next section describes possible initial reactions to target political deviance, threats, and blockades.

Threats and Blockades

Initially, all sanctions are threats.¹³ Whether the threats are credible is another matter. In an economic coercion game model, sanction effectiveness is typically measured by reaction functions and the sender's ability to force the target into new decisions based on manipulating the target economy. Can the sanction affect the target economy at all and can the sanction effects transmit to a political outcome deemed effective in the sender's eyes?

If the sender cannot credibly threaten the target with sanctions or military action, the target is unlikely to react "correctly" from the sender's viewpoint. One way to collateralize sanction threats or actions is to engage in a physical, military blockade. If any military action is used to enforce sanctions, the sender is *de facto* using a blockade. However, because blood generally follows blood, physical blockades spell the end of economic coercion and slip into military action. Also, sanctions may be seen as pure rhetoric from initiation forward by targets if economic relationships with the sender economy are relatively small compared to third parties or the sender has no credible use of force.

A blockade is the oldest sanction weapon. In a typical case, a large sender used naval resources to cut sea routes to and from other economies. To truly restrict trade, senders must also blockade land and communication connections otherwise. Britain and France certainly fit this description in the nineteenth century, as the blockades of the Napoleonic era are testaments to the tenuous nature of a general blockade. The possibility of military force being used may be a good thing, especially if threats are themselves sanction tools. "The foundation of modern international law on blockades was laid during the series of naval wars between 1776 and 1815, and the tendency of international discussion after 1815 had been to further legal definition on the more innocuous practices of the earlier wars" (Medlicott 1952, 4). Theoretically, multilateral cooperation is meant to mock such a physical embargo.

Economic coercion has as its extreme act a military blockade. Some studies have used the phrase "military coercion" to illustrate the fine

line walked by an aggressive sender (see Askari et al. 2003, 14). Blockades represent sanctions as a parallel act of aggression, and thus fall under the umbrella of economic warfare. Renwick suggests the use of economic warfare began in earnest with World War I. "There was nothing new about siege warfare, a naval blockade, or the attempt to deprive an adversary of supplies of food and ammunition. The new element in the industrial age was the effort to interrupt supplies of essential raw materials" (1981, 70). In 2006, Israel resorted to a naval blockade of Beirut as a reaction to its short skirmish with a Muslim extremist group, Hezbollah. This episode is packed with the reasons why blockades are difficult to assess, from brinkmanship to third-party effects to the use of military force, as if the blockade was an economic sanction.¹⁴

Blockades are dangerous choices. If military conflict is to be avoided, one problem the sender contends with is the brinkmanship issue. Doxey (1971) argued that using military blockades may not only be dangerous if war is to be avoided, but the historic evidence provides no insight as to how powerful a force a blockade may be in changing outcomes. "Economic warfare, even in its most unrestrictive and inhumane application, is not thought to have been a decisive factor in either world war" (21).

However, this logic is somewhat counterintuitive. First, it is difficult to surmise embargo effects from military conflict, especially in the context of the World Wars. Having naval or air superiority over an enemy simply provides more hegemony to the superior forces. In the Third Reich's eyes, they were the sender; and the Allies thought the same. Strategic bombing and unrestricted submarine warfare are also possible ways to view blockades as extensions of economic warfare.¹⁵ The recent Israeli use of naval and air forces showcases this decision-making, but this force was ultimately not decisive. Force was used by the United Kingdom parallel to sanctions after the Argentine invasion of the Malvinas in 1982, reinforcing the threats and economic measures. Can threats of military force be made at all times?

Drezner (2003) examined strategic interactions between senders and targets and suggested that most sanctions should end before they begin to eliminate the deadweight losses experienced by both countries. In fact, Drezner suggested that threats are the strongest sanction tool when used correctly, and the perceived lack of success in historic episodes is a result of not giving threats their due credit. "These [threat] cases are far more likely to generate successful outcomes than

when sanctions are [actually] imposed. Underestimating the utility of economic coercion calls into serious doubt the argument that economic inducements are a more useful tool of statecraft than economic coercion" (655).

Are threats effective sanction episodes in economic terms? The answer is yes if the sender believes that the maximum benefit parallels political capitulation at little or no economic cost. If physical blockades and military complements to sanctions both bias and cloud sanction effectiveness for the scholar, it is difficult to include such sanctions in historic analysis.¹⁶ In game theory, the military option should linger throughout a sanction's duration as a game tree node because it is a natural next option depending on the target's reaction.

North Korean brinkmanship during 2006 shows that certain countries are not afraid to bring themselves, as current or potential targets, to the brink of war as an act of diplomacy. Once threats become actions, the sender moves on the game tree and waits for the target's reaction. The target does the same if it, for example, engages in human right abuses.¹⁷ The following two sections discuss how the literature sees game theory applications and why sanctions begin and continue in pursuit of elusive payoffs.

Initiating and Continuing Sanctions

Eaton and Engers (1992) studied why sanctions are initiated and continue by focusing on each country's "toughness" concerning sanction costs in an alternating move game, where sequential moves overlap each other. "The more patient a party and the lower its cost of sanctions, the tougher [the target] is and the better [the target] does. At the extremes, if the target is much tougher, then it can attain its most preferred feasible outcome" (902). Commitment is also a major factor in this model. The model itself represents a sequence of overlapping commitments on each side, where this sequence is the basis for assuming a sequential game.¹⁸ "Each time it chooses [a move], each party takes the entire sequence of future choices into account in deciding its best current choice" (905). While heavy on technique, Eaton and Engers concluded qualitatively that the relatively tougher the target, the less effective sanctions are, where toughness is a function of a sanction's costs to each party.

This conclusion is obvious and logical—analyzing payoffs under different commitment levels provides policy makers with *ex ante* information about whether to impose sanction or not. Eaton and Engers (1992) suggest that the target acts in a reversible or nonreversible way that itself

shows commitment. Further, their modeling of decision timing makes a larger case for sanctions as sequential games, as each party learns the other's choice with delay and then reacts with delay, and so on (918).

The "preferred feasible outcome" for the target is assumed to be its deviant action, and the sender wants to end that action. Sanctions only continue if a subgame equilibrium can be reached by their continuance, where each subgame is defined once one nation learns of the other's actions.¹⁹ Subgames are decision nodes where the information is completely known. For example, once Iraq had invaded Kuwait in 1990, it showed the world a level of commitment to occupying Kuwait. As the United Nations debated its reaction, it did so in the form of a proper subgame. A new subgame would be Iraq's reaction. The UN reaction likely tested the commitment level of Iraq to remain in occupation; Iraq's reaction tested the UN commitment to liberate Kuwait. In the end, of course, military action was taken instead of continued comprehensive sanctions by the United Nations, which did continue once Iraq was forced from Kuwait.²⁰

Can sanctions be perpetual and still have Nash Equilibria? Looking at perpetual cases such as Cuba and North Korea, the lack of a Nash Equilibrium may explain their lack of information about each other's toughness level. However, the guaranteed finite life of each country's current leader suggests that the game's finiteness depends largely on the sanctions' stated goals: the demise of the target's leader. Eaton and Engers (1992) assume strategies are renegotiation-proof: once the target knows their action's continuance is dominated by the strategy of ceasing the action, the sanction ends. The same holds for the sender in continuing sanctions. The challenge is in knowing which side will acquiesce, if either side does. Hence, commitment can lead to perpetual sanctions.

Do countries wait for each other to react or are they proactive and move simultaneously? Theoretically, sender economies should only initiate policy once targets act and continue only if there are positive net benefits given the target's anticipated reaction. The target continues its deviant action under conditions that the action is part of a strategy leading to Nash Equilibrium. The simultaneous move seems more likely as a result of finding new information and acting immediately. For example, Malawi experiences a bloodless coup, which then installs a military government. The United States is likely to cut military and maybe development aid until it can assess the overall effects of the new Malawi government on human rights, southern African stability, and so on. However, if new information comes to light, perhaps this new government has ties to terrorist organizations, for example, the U.S.

sanctions may stiffen without any new actions by Malawi. If toughness is a function of the net benefits derived from commitment, then a sender nation being proactive showcases its resolve to the world.

Eaton and Engers (1999), a refinement of Eaton and Engers (1992), focuses instead on the target's tenacity as a function of the sender's resolve. The players are assumed to engage in an infinitely repeated game. The sender controls sanction costs, where the target and sender suffer costs as sanctions are imposed. The probability that the target will be stubborn and not concede is equal to θ . Since sanctions are perpetual, the sender assumes its threshold to continue sanctions is the discount factor's weighted average, the payment that defines the sender payoffs from pursuing sanctions in net. The target is assumed to know the sender's goal; the target's punishment costs must exceed its payoffs from being stubborn. The target also faces a probability that the sender is engaging in rhetoric, equal to π . This probability is a function of the sender's past actions, and decreases toward $\frac{1}{2}$ as the sanction continues.

The game's outcome is decided by the interplay between the target's experience with the sender and the sender's ability to keep up the pressure year after year. Each player lacks specific knowledge of the other's payoffs and actions, but learns with each new period. The sender's resolve increases the probability that the target will experience costs. The model also suggests that the sender can, under these conditions, suppress the target by strong action. "Commitment eliminates the complaisant target's incentive to balk simply to raise the chances that the sanctions will be lifted subsequently" (Eaton and Engers 1999: 413). The bond between the lead sender and other potential coalition members may depend on the spillover effects caused by statecraft.

How do we model spillover effects, or treat sanctions as public goods? Multilateral commitment is a major asset for organizational senders such as the United Nations or European Union. The potency of universal sanctions, if such coverage is attainable, has been debated since Galtung (1967). One way sanctions may be modeled is a sender cartel, acting like a trade barrier monopoly or monopsony. This cooperative strategy is parallel to Lisa Martin's model (1992) on how nations choose to cooperate with one another.

Cooperation among Nations: Of Collusion and Cartels

Pape (1997), Drezner (2003), and Drury (2005) suggest that the literature is still somewhat uncertain concerning multinational

cooperative efforts and their efficacy. On the surface, the logic behind multilateral sanction success seems obvious. If a monopolistic group of trading partners suddenly eliminated their ties with the target economy, would this not naturally lead to major economic pressure on targets to cease deviant policies? Is this not what the United Nations meant in Articles 41 and 42 in Chapter 7 of its charter? One way economic theory may help understand why cooperative arrangements, such as multilateral sanctions, do not work is cartel theory. A cartel forms a monopoly where price is held at a specific, profit-optimizing level, through restricting quantities in a market.²¹ What if a multilateral sanction was modeled like a cartel in game theory?

Sanction Cartels

Cartels are organizations that explicitly collude price and quantity among member firms, insulating the group from outside competition. The agreement between the member firms is simple: do not compete with other cartel members on price or quantity. This ultimate style of cooperation leads to the Cournot–Nash Equilibrium in game theory. The Cournot game focuses on two firms, a duopoly, controlling quantity supplied in a market to reduce competition and increase each firm's returns by acting as a monopoly. The Cournot–Nash Equilibrium results from the firms choosing to cooperate.²² The Stackelberg game is very similar, assuming perfect information through a sequential game, rather than the Cournot simultaneous game. The Stackelberg game assumes perfect information and the existence of a price leader that controls and dictates market conditions onto other firms. In the sanctions example, the firms are simply nations, where the United States has become the dominant “firm” in the sanction market.²³

Countries involved in sanctions “compete” over the target's markets. A sanction cartel must deter countries from rescuing the sanctioned nation and competing, showing resolve along with other economies that certain acts will not be tolerated. If a strong economy, say the United States, were to embargo Iran, its abandonment of Iran's markets would begin a natural competition over supply left unfulfilled. The United Nations was built, in certain ways, to be such a policy cartel, where international diplomacy and peacekeeping flowed from a “market” controlled by UN member nations.²⁴ Senders colluding on sanction policy should realize the same basic benefits. Few substitute markets exist when the cartel is made up of a market's largest players.

A cartel's characteristics are simple and are similar to those for any monopolist. First, the good must be homogenous, and not subject to

reduced demand based on product differentiation. If the target's imports, exports, and financial flows are bundles made up of similar goods, regardless of trading partner, the homogeneity characteristic holds. Second, the cartel's demand must be inelastic. A price reduction by a cartel member, in an attempt to steal market share, provides less total revenue when demand is inelastic. International cartels exist primarily for this reason. In export sanctions, forming a sender cartel works best if the target is dependent on trade and financing from potential senders and if the target's demand for imports is inelastic.²⁵ In 1974, Turkey invaded Cyprus. The United States cut off military aid from Turkey, increasing the "price" of continued action. The sanction cartel, the United Nations, broke down very quickly as European countries were quick to sell Turkey weapons, thus lowering the price of Turkey's policy. To Turkey, military hardware was interchangeable with elastic demand. With willing sanction busters, Turkey circumvented the U.S. arms embargo.

Third, there must be little competition elsewhere. New markets erode a cartel's power very quickly. This erosion is the source of much frustration in sanction episodes. Profits soar for countries that sell lost resources to targets due to sanctions. Arms sales are classic examples. In 2006, Russia brokered a deal with Venezuela to sell them arms. Venezuela recently experienced civil strife and purchased weapons from Russia as an act of international defiance in response to other nations using arms embargoes (*The Economist*, September 2, 2006). Russia was simply taking advantage of a situation where arms embargo left an oil-rich country with a resource need.

In international diplomacy, the benefits of cheating on sanction policy can be reduced in net by the remaining sender nations penalizing the cheater. The United States put into law such a measure with the 1996 Iran–Libya Sanctions Act (ILSA).²⁶ The difficulty, however, lies in knowing which coalition partners are more likely to cheat or if new countries will appear as black knights. Suppose the United States sanctions Iran and asks other countries to join the sanction because Iran is a nuclear threat; the United States does so knowing the incentives are high for countries to remain trading partners of Iran. Because saying no to the United States may carry with it a cost under the ILSA, certain countries join. On the margin, these additional senders have reaction functions that suggest the cost of becoming a black knight and trading with Iran, or not acting at all, are higher than the costs of joining the coalition. Others do not.

Policy cartel leaders may provide incentives not to cheat, punishing those that do cheat. "While the leading sender attempts to organize

sanctions, other states often appear willing to free ride on its efforts and need extensive persuasion before they will agree to cooperate” (Martin 1993, 408). This extensive persuasion may be in the form of most favored nation status, lower trade barriers otherwise, or financial aid.²⁷ Nations choose to cooperate or compete on sanctions much like firms choose the same acts on price and quantity in cartelized markets. The benefits of cooperation must exceed the costs of noncooperative choices, but these choices are made in an uncertain environment. It is important to understand the possible ways multiple senders may or may not interact, and Martin (1992) began to use politics and game theory to explain these agreements.

Multilateral Sanctions

The game theory models of Eaton and Engers (1992, 1999) and Drezner (1999) are about sender and target interactions. Martin (1992) began the latest discussion of how senders engage with other senders in economic statecraft, following the tradition of Baldwin (1985) and Doxey (1987). The gains from acting as a monopoly policy maker, especially when using instruments of economic coercion, are too large to ignore; the profits to be made from cheating on this policy cartel, especially if the punishment is weak and somewhat incredible, may also be too large to bypass. Such costs are referred to as “audience” costs. These costs face senders who have partners not willing to commit to the sanction completely. Multilateral sanctions must encompass a large percentage of the target’s trade and financing to be successful (Galtung 1967). However, we know from history that economic and political hegemony does not guarantee sanction success.

Martin (1992) focused on the effects of multinational cooperation in sanction episodes, concluding that cooperative efforts are not guarantees of sanction success and third-party leakages are not necessarily the reason why sanctions fail.²⁸ In sanction games, a strong leader generally exists. This strong leader may act alone or lead a multilateral action. A strong leader may only influence others to cooperate in cases where there is either a dominant strategy for others to join in sanctions or a credible threat from the strong leader to impose costs on other countries in cases where they do not act parallel. Do the benefits of joining the sanction outweigh the costs? Is joining a sanction coalition a Nash equilibrium decision? These are difficult questions to answer. The three examples of Martin (1992) tie the ideas of a cartel and basic game theory well.

The first game is *coincidence*, where two or more countries act simultaneously to affect a target nation. In this game, two nations choose to impose sanctions in equilibrium (Martin 1992, 25). Countries cooperate toward a common goal (coincidental), the restoration or keeping of peace, supporting and enforcing human rights, and reactions to other violations. The United States and United Kingdom, outside of UN sanctions, have acted in this way toward Afghanistan and Iraq in 2001 and 2003, respectively. The coincidence game takes place when multiple senders move as a unit. Martin (1992) makes the case that whether there is a strong leader or not in the coincidence game, the other countries must have sanctions as dominant strategies to join. In the presence of a weak leader, countries may still join a sanction coalition due to coincidental goals.

Can a strong leader impose its will on others in the international community and is this a good strategy? Because of the uncertainty in the coincidence game mentioned earlier, senders may try and impose their will on other countries to join the coalition. This game is called *coercion*, as one sender emerges as a leader trying to force other countries to join. Martin (1993) suggests that in the coercion case, a credible threat must exist to provide other countries with incentives to act multilaterally with commitment. The leading sender's strength is a function of threat credibility and commitment. The strong leader uses both positive and negative economic incentives toward other senders dictating their audience and, ultimately, coercion costs.

The final game is a *coadjustment* game. In this situation, no sender country has a dominant strategy involving sanctions; the dominant strategy is then to not impose them. Suppose a country like the United States wants to sanction a large trading partner, say China, and wants Japan to join in that sanction. Japan may have no incentive to sanction China, nor feel the United States has a credible threat against them; thus sanctions are not a dominant strategy for Japan. As a result, the United States may not initiate sanctions as a dominant strategy, and sanctions are imposed as either rhetoric or as short-term measures.

Unilateral sanctions may force the target to bear some transition costs as it finds new trading partners; it may have to pay higher prices for imports or accept lower prices for exports. Unless [sender] states achieve a significant level of international cooperation, however, market forces tend to make these effects transient and small in size. (Martin 1993, 408)

Without a credible threat, sanction imposition may hurt the sender's commitment in future sanctions, as new target nations may view the sender as inherently weak but reactive to international political trauma. This lack of credibility may also reduce incentives for other nations to join the leading sender in these actions, reducing the possibility of forming a sanction cartel and an economic blockade around the target. The three games mentioned earlier show there are many possibilities in cooperative sanctions. Even if a dominant strategy exists to use economic statecraft, the benefits may be difficult for a coalition member to derive.

Logic dictates that cartelizing the sanction market, where the cartel is made up of the target's large trading and financial partners, should be relatively more effective versus unilateral measures. These cooperative efforts may not work, however, because most sanctions are either coercive efforts or coadjustment situations (Martin 1992). Cuba is a classic case of coadjustment sanctions, as the European Union had little sanction activity against Cuba, while the United States continues sanctions on Cuba virtually alone. The United States seemingly intends to continue sanctions nominally until Fidel Castro dies. No longer are demands made on other nations to join in, as the threat of retaliation for not joining is now incredible. Current sanctions against North Korea and Iran have similar characteristics, where the United States is more focused on black knights.²⁹ The logic of multilateral and universal sanctions was envisioned in Galtung (1967) and Doxey (1971) when UN sanctions were in their infancy. The future of economic sanctions may be in jeopardy if the United Nations cannot sanction effectively.

Cartel theory provides a basic economic framework to understand what a cooperative sanction tries to achieve. The sanction cartel seeks to provide its members with enough benefits to keep them from cheating (increasing trade with the target or leaving the coalition) or constructs negative incentives to punish a coalition member that strays from current policy. The economy that initiated the sanctions must possess the credible threat to impose these costs, or possess international market power that provides disincentives to countries cheating or acting as substitute markets. Of course, all this harkens back to basic sanction theory discussed in chapter two. The more restrictive the sanctions, the more possible economic damage.³⁰

It is important to remember that damage and success are not synonymous. Coincident, coercive, or coadjustment games provide frameworks to realize why cooperative sanctions work or not; these games also provide insight as to why sanctions continue or end.

To Continue or End Sanctions: Strategy at Work

Game theory suggests that a sanction will end because to continue sanctions is not a Nash Equilibrium strategy within each subgame. Sanctions end because the target succumbs to the embargoes or the sender terminates the measures due to her lack of willingness to continue. History teaches us that most sanctions end because the target's political conditions change enough for the sender to accept the new state of affairs, or another policy option (diplomatic or military, e.g.) is taken by the sender. Credible threats must also be addressed when discussing sanction continuation and termination, as sender credibility will fall if sanctions end without some goal achievement. Perpetual sanctions bring into question how long a sanction should last, regardless of a sender saving face.

Do sanction effects erode over time? If they do, then the decision to continue sanctions should face a finite timeline. Two examples of long-term sanctions are North Korea and Cuba.³¹ Common ground exists between these cases in that the sanctions are comprehensive, have no end in sight, and have a common goal: the death or ousting of the current dictator.³² How is this possible through economic coercion alone? Policy makers must forecast what the target economy views as payoffs and try to perceive the target's reactions.³³ This is also true in monitoring third-party nations, which act as impartial bystanders, sender coalition members, or as sanction busters.

For multilateral sanctions, some senders may experience this before the dominant sender, thus eroding the sanction's power while the leading sender remains stoic. If the net benefits derived by the sender are less than the maximum achievable, the sender has an economic incentive to reduce the sanctions. Some senders continue to embargo over long periods of time, where it is obvious sanctions are either not achieving the statecraft's overt objectives or have become unnecessarily punitive to the target populace. The sender's reaction function has three general variables.

Political benefits derived by enforcing international law, rules, or treaties. A sender economy may also play the role of world diplomatic leader, where political deviance leads to automatic policy reactions. Because international laws and agreements are difficult to enforce without military intervention, benefits may be derived, both now and in the future, by a sender that acts as in international law enforcer. For example, the United States may initiate sanctions, reacting immediately

to its own interpretation of international law contraventions. This reaction shows commitment to using economic statecraft as a diplomatic tool rather than defaulting to the military option; such is the vision of Article 41 of the UN Charter. The sender's allies and enemies know the sender is willing to act consistently and coalition membership may rise and facilitate even more cooperation.

Economic benefits from increased trade and financial flows after political change. The sender's goal with sanctions may be political turnover, as well as an implicit economic goal. A sender that influences political change may open up new markets or at least increase its exposure to the target's markets versus the ex ante situation. Many sanction studies concentrate on trade flows as a variable driving and describing sanction effects on both nations.³⁴ If the sender perceives that political deviance leads to reduced trade, the sender must forecast that a policy reversal increases trade flows with the target.

Economic benefits from target's political certainty. In general, politically stable nations have stable and developed economies over time.³⁵ Larger, industrialized nations represent this characteristic, though we must be careful in generalizing. Suggesting that an embargo aimed at reducing political deviance necessarily stabilizes the target's politics is imprudent; the Haitian cases of 1987 and 1991 show that the best intentions may lead to terrible results in economic statecraft.³⁶ Does the sender face costs of ending sanctions before goal achievement? The decision to terminate sanctions, from a game theory standpoint, is when the dominant strategy to do so exists. If the sender ends sanctions, there are certainly costs of credibility in future sender statecraft. Retaining credibility with other senders and future targets shows international resolve in the face of target toughness. This brings our analysis full circle, back to Eaton and Engers (1992, 1999). Such is the repeated game.

Conclusions

Game theory provides insight as to why sanctions begin, continue, and end. Models are based on the target country's reaction to the sender's threat or actual imposition of sanctions. Each country involved seeks a Nash Equilibrium, an outcome that is a specific nation's best strategy given the other country's moves. In general, Nash Equilibria are not Pareto optima, which help further define sanctions as second-best policy outcomes. There may be multiple senders and targets, acting collectively or as independent, parallel players in sequential games based on reaction functions

dictating how each party continues or ends policy once the other nation has moved.

Eaton and Engers (1992) suggested that toughness was a key factor in sanction success. Eaton and Engers (1999) suggested that threats by themselves could and should be powerful enough to change policy, and sanctions that last long periods of time are simply wasting time. Bonetti (1994) argues the opposite, suggesting that sanctions do not last long enough in many cases, or sanctions should be imposed rather than just used as threats.³⁷ Drezner (2003) considers threats the best sanction tool available, whereas embargoes are simple acts of coercion, and feels that there is a serious problem in the Hufbauer, Schott, and Elliott (1990) data because it does not include many cases where threats alone were used and worked.

Using price theory as a foundation, sanctions may be most effective when an entity like a policy cartel is formed. This cartel dictates the trade and financing terms worldwide to the target economy, and does not deviate from its policy stance. The leading sender may be dominant and possess the ability to dictate policy to other senders and ultimately to the target. Unfortunately, as quantities are restricted, the profits derived from either acting as a cheater from within the cartel rises rapidly. While theory suggests that monopoly power over the target should lead to large policy effectiveness, few countries have this position internationally. Certain authors, especially Martin (1993) and Drury (1998), argue that sanctions have little to no effect on targets because senders lack the trade linkages, treaties, and economies of scale to control price and quantity; cooperative efforts do not guarantee the elimination of these deficiencies.

While sanctions are played as sequential games, the type of sequential game depends on how senders interact. Martin (1992) proposed three types of games to explain historical cases. Coincident games take place when two or more sending nations have similar goals and are willing to work together to change the target's politics. Coercive games involve a strong leader, where a policy cartel is enforced by the leader's credible ability to economically threaten nations that do not join the cartel, cheat on the cartel's policy focus, or openly act as black knights. This threat credibility typifies this game. Finally, coadjustment games take place when senders do not have sanction imposition or continuation as a dominant strategy. The coadjustment game is triggered by the lack of a credible threat to the target or potential coalition members because of a weak leader. Drezner (2003) sees threats and pre-sanction actions as some of the most powerful statecraft tools or economic coercion, many historical cases of which have been lost in major studies.

Game theory models of sanction effectiveness begin to move us from economic effectiveness to humanitarian and political effectiveness along the Sanction Effectiveness Continuum. The game theory models of Eaton and Engers (1992) and Martin (1992) described how senders force reactions from target countries; if sanctions begin to damage the innocent populace, how do senders react to those data? Humanitarian concerns in the reaction function of senders turn embargoes into smart sanctions. In chapter four, public choice models and smart sanction analyses provide connections between basic sanction effects, the strategic decision-making of both senders and targets, and the reactions of all parties as sanctions endure.

Chapter 4

Public Choice Theory and Smart Sanctions

The interest-group state, unlike its contractual or public interest counterpart, is an agent of a particular group or class . . . The state designs the system of property rights in such a way as to achieve a redistribution of wealth away from those groups with little or no influence and toward the ruling groups . . . Dissatisfied subjects (even if disenfranchised) can signal their unhappiness with the package of policies “produced” by the state through engaging acts of political resistance that raise the costs of enforcing and administering these policies.

—Kaempfer and Lowenberg 1986, 382

On the face of it, to “smarten” sanctions may be thought somewhat self-defeating. After all, if the purpose of sanctions is to coerce the target state, lessening the sharpness of that coercion may be thought to lessen the chances of their success. It might also be argued that targeting sanctions may actually increase the human cost by encouraging their deployment in cases where [the sanction’s] utility is only marginal.

—Craven 2002, 46–47

The Interest-Group State

Sanctions are seen throughout the world as blunt diplomatic instruments, potentially causing collateral damage to an innocent populace as a penalty for its government’s actions. This belief is exactly correct. Economic statecraft attempts to influence current or potential disenfranchisement, providing incentives for the target’s people to demand political change. Sanctions simultaneously attempt to influence interest groups within the target economy to rise up, either through a political process or more violently, against the target’s policies or rulers. How much are common citizens hurt by these

policies? Is the sender's populace harmed such that those groups that influence sender decisions pressure for sanction's end? Do the payoffs to sender interest groups exceed the cost to humanity?

Beginning with Kaempfer and Lowenberg (1986), a literature strand in the economic statecraft canon focuses on public choice theory, arguing that sender interest groups influence decisions to initiate, continue, and end sanctions, as if a "market" for sanctions existed. This market for sanctions may also exist in the target economy, as the target's rulers may "demand" policies that result in the sender "supplying" sanctions. Interest groups in each country act as the primary force behind economic statecraft, influencing policy makers to act. These studies focus on the sender's decisions, and are extensions of game theory. This chapter holds a review of these analyses, as well as their possibilities and pitfalls.

The Sanction Effectiveness Continuum is now expanded to include humanitarian effectiveness. Sanction episodes have been seen as generally unsuccessful in goal achievement, and continue to be questioned as policy choices because their success or failure remains greatly unresolved.¹ The human damage caused by sanctions has recently been the focus of studies by O'Sullivan (2003) and edited volumes by Cortright and Lopez (1995, 2002). These studies and others are in part a reaction to a perceived lack of efficacy, examining certain cases and suggesting that there must be a better way to engage in economic statecraft. O'Sullivan (2003) concentrates on embargoes to constrain terrorist activities, asking whether sanctions and targets are chosen correctly to achieve this goal; her expansive case studies on Iraq, Iran, and Libya are among the literature's best. The key insight is that the sanction, target, and goal choices must all be in alignment with reality and the sender's abilities. If the sanction's goal is to minimize collateral damage and damage the target's ruling class at its budget source, the sanction can be considered "smart" by the current definitions.

Cortright and Lopez (2002) provide an edited work that encompasses many different perspectives on smart sanctions, following Cortright and Lopez (1995). A smart sanction is a focal sanction method that ranges from arms embargoes to restricting financial aid packages to travel sanctions, and so on, all in an attempt to minimize collateral damage. Smart sanctions focus on specific entities, such as the target's ruling elite or its military machine. For example, freezing the assets of specific individuals deemed to be either target decisions makers, terrorists, or their funding sources, or other violators deemed sanction-worthy. The smart sanction idea suggests that by the correct

sanction mix, collateral damage is minimized because the target commoners' assets, income, and life are left mainly untouched by the sender's policies.

It is naïve to believe the target's rulers will not, in the least, impose a pass-through cost to make up losses if possible. These costs could be higher taxes, lower wages in nationalized industries, or fewer services provided by a more constrained government. It is also possible that the target's rulers will use such focal harm as propaganda, blaming the sender for the pass-through costs. There is no argument that if sanctions can focus on target rulers, the rulers choose to impose a cost on their own people. The two arguments are whether the sanctions can focus and to what extent will target rulers use sanctions as fuel for anti-sender slogans. In this way, there is an intrinsic connection between smart sanctions and public choice theory.

However, embargoes of trade and financing are difficult to focus on specific citizens or entities because that simply is not their intent. If smart sanctions are synonymous with focused embargoes, analysts are recommending an oxymoron in some ways. A sanction's generality flows from its fundamental property as macroeconomic policy. The collateral damage can be seen as the opportunity cost the target government is willing to impose on its citizens. In the 1985 UN sanctions against South Africa, this cost was referred to as the apartheid tax (Kaempfer and Lowenberg 1986). An embargo's intent is to undermine the economic engine that fuels the target's political actions. Smart sanctions are best examined case by case, as the case-specific parameters are unique; the same target country, decades after a previous sanction episode, may greatly change. As discussed later, a sanction's ability to truly focus is still debated, and is likely not to be easily resolved.²

When constructed correctly, smart sanctions are likely to be preferred to generalized embargoes. If a market for sanctions exists, and smart sanctions can center on interest groups, these groups or the target's citizens actually could change the government's decisions concerning statecraft through a political process. Public choice theory is a way of explaining the sanction process in all countries involved, and should help explain why smart sanctions would be sanctions of choice. Sanctions ultimately must be initiated and continued because their perceived benefits exceed their perceived costs. Certainly, there can be a public outcry in the sender economy if sanctions are taking too large a human toll on the target economy or at home, and policy

makers are not reacting. The Iraqi cases of both the 1990s and early this decade produced some criticism of UN policy.

Such [human] suffering [in Iraq] has become acceptable to the UN Security Council as “unavoidable” in the broader interest of global peace and security. Why is it that the sanctions against Iraq are not imposed in such a way that civilian suffering is limited to tolerable economic consequences? Instead they are extended to all aspects of life in violation of existing international legal instruments of protection. (Sponeck 2002, 83)

This chapter is broken into five sections. First is a discussion of public choice theory and sanctions. This includes seminal works in public choice, but mostly applications to economic statecraft. The next section looks into the theory of interest groups driving policy, from both the sender and target perspectives. The bridge between public choice and smart sanctions discusses why interest groups would demand economic statecraft tools that are more focused than other, generalized sanctions. The third section is an overview of smart sanctions, as compared to classic embargoes and their strengths and weaknesses. Next is a discussion as to the future of sanctions, given the arguments of smart sanction proponents, international law, and the United Nations’ increasing use of economic policy measures to enforce its charter. A conclusion follows and summarizes these ideas, reminding the reader that these policies are macroeconomic as a harbinger of the model in chapter five.

Markets for Sanctions: Public Choice Theory

In economics, markets are generally described by their participants: buyers and sellers. These participants, if allowed to do so by the governing laws and regulations (if they are enforceable or exist), negotiate freely over price and quantity until, as if by an invisible hand, the two sides are drawn toward equilibrium. Policy markets also exist, where the market “good” is policy. The policy’s magnitude is the quantity “purchased” by citizens and “sold” by the government. The price in such a policy market can be stated as the opportunity cost of pursuing certain policies versus other choices. This holds true in both the sender and target nations. Doxey recognized the importance of sanction effects on both the target and sender home fronts. “The imposition of economic sanctions will affect commerce and industry at home at the same time it affects the economy of the target. In democratic countries where governments must retain the support of

the electorate, it will be necessary to explain and justify the imposition of such burdens or risk being defeated at the polls” (1971, 107). Both the sender and target interest groups are affected, though the sender is likely to have a relatively smaller effect.

The policy market basics are as follows. Economic statecraft is supplied by the sender government at a level greater than zero because interest groups demand sanctions take place, bidding up what they are willing to pay. If the government chooses an action where the cost, price P , is too high, there will be little demand, thus reducing the equilibrium sanction quantity toward zero. The intuition here is to see the market “price” as the cost of engaging the government to act. The market “quantity” is the level of action the respective governments are willing to take. As a corollary, if the sender’s citizens demand that sanctions take place, the sender government’s cost of not supplying these measures rises, delivering sanction imposition. Figure 4.1 shows the sender’s market for sanctions.

Target economies face similar policy markets with one small twist. Targets indirectly demand sanctions when they engage in actions that lead to sender reactions to supply embargoes. In many ways, one can think of the sender and target policy markets as interlinked, much like exports in one country are linked to imports in the other. As the target nation supplies policies that it knows will draw economic statecraft in reaction, it engages in that policy with an expected cost. That imported policy cost is in addition to the domestically produced policy cost of pursuing the deviant action. The target’s citizens must demand the policy deviance, able and willing to pay the opportunity cost (demand), in the face of international economic reactions.

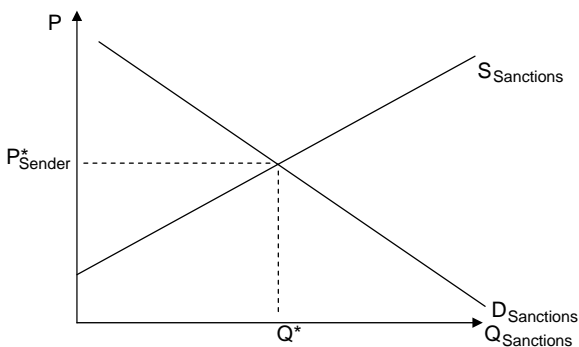


Figure 4.1 The sender’s policy market.

Sanctions continue, once initiated, if both countries' policy markets clear at a nonzero quantity of actions. Figure 4.2 illustrates the target's policy market, analogous to the sender's market in figure 4.1.

In chapter three, game theory models described why sanction begin, endure, and end. To continue "consuming" actions that lead to sanctions means the perceived benefit derived by target interest groups must exceed the action's perceived cost. This is a classic outcome of basic economics. When producing and selling a good at the market price, the firm is assumed to be profit (net benefits) maximizing by that choice. The target, by demanding the policy deviance, maximizes utility (net benefits) paying for a quantity of international reactions. The sender continues sanctions because the benefits from doing so exceed the costs, just like the target. How large the sanctions are is determined by the equilibrium outcome in the "policy" markets. The payoff functions for each nation in sanction theory using public choice must include measures for both the benefits and costs of pursuing sanctions.

Public choice theory is also tied to the international trade literature. In textbook international economics, tariff and nontariff barriers to trade help specific subgroups of the domestic economy, but lead overall to a negative net change in societal benefits from trade. Politically, these subgroups lobby for the trade barrier if they gain by the barrier being imposed; producer groups may lobby the domestic government for import taxes, knowing that their actions reduce consumer's welfare by raising price. The government is, of course, willing to pursue the tariff as it stands to gain tax revenue. Though sanctions are not tariffs, this rent-seeking activity by domestic producers is analogous to special interest groups

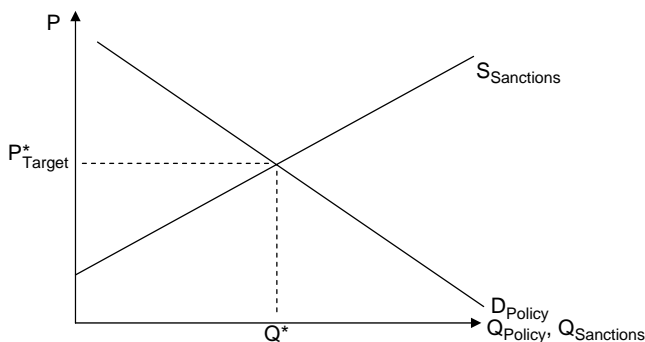


Figure 4.2 The target's policy market.

in the sender economy lobbying for sanctions. Each side is discussed here in the public choice context.

The Sender Economy and Interest Groups

Public choice theory begins with a simple idea of how policy decisions are made. National policy decisions are driven by interest group pressure on politicians. These interest groups act like citizens, pursuing maximum net benefits from policy. In contrast to the indirect relationship experienced by the random citizen, interest groups may gain or lose from policy directly. In sanction analysis, no one individual has the ability to influence policy. Interest groups determine why sanctions begin, continue, and end; these groups are where the wealth gained from policy directly flows.³

Kaempfer and Lowenberg (1988) built a model where utility is maximized with respect to sanctions by discussing sender agents with specific interests in applying sanctions.⁴ Utility is assumed to be maximized by agents of both economies, where it is based on an agent's income. Income in the sender economy is a function of the sanction's magnitude imposed against the target economy, and also provides the sender's ability to fund the "purchase" of policy. Interest groups perceive that income is generated (or income losses are avoided) by pressuring the sender's government to react to target actions, at a net gain given the policy influence payments.

The sender's interest groups pressure their government to send sanctions to the target, and collect the net benefits from that action. Much like other sanction models, how policy costs are measured is a major source of uncertainty and makes empirical studies of these models problematic.⁵ The citizenry of each country can influence the respective governmental actions. Kaempfer and Lowenberg (1992) built the current foundation of public choice theory as applied to economic statecraft, where agents earning marginal income greater than zero win the aggregate political battle for sanction imposition. These agents push the sender to continue the embargo because of income gains from these policies, and cease the pressure if net gains from the embargo disappear.⁶ Other authors suggest that interest groups pay for sanctions because these groups, in a similar way to trade barriers, stand to make the most from the policy's wealth gains.

The public choice interpretation of the sanctioning process implies that the incentive to devote resources to lobbying against trade sanctions will be greater the larger is the trade linkage.⁷ This in turn means the

larger the trade linkage the greater are the domestic political costs of imposing trade sanctions. Consequently, the public choice theory implies an inverse relationship between the pre-sanction trade linkage and the probability of imposing trade sanctions. (Bonetti 1997a, 729)

At too low a price, there is a shortage of sanction policies. Interest groups would like to take full advantage of cheap policy initiatives and fund the sender government, which is currently unwilling to initiate policy due to its low value. Sanctions against China concerning nuclear proliferation in the 1990s may constitute such sanctions, as the cost of imposing sanctions on nuclear material was low for the government but the American public outcry was high. In contrast, at too high a price, there is a surplus of sanctions. The government supplies too large a magnitude of sanctions for what domestic groups demand.

U.S. policy concerning Cuban sanctions is an example. It is likely that Americans no longer see the threat Cuba once posed to the United States, and American travelers would likely choose Cuba as a destination if the direct travel ban was lifted. If a country is pressured hard enough either endogenously or exogenously by interest groups, policy continues. According to public choice theorists, this is exactly why sanctions such as those on Cuba endure: political organizations, corporations, and individuals provide financial resources to lobby for their continuance.

The free rider problem is active in public choice models also, as these policies are public goods. When interest groups pursue sanction imposition in the sender nation, there are other interest groups that both oppose and want sanctions. Groups that want sanctions but do not want to pay may in fact reduce the special interest groups' demand for sanctions. The government becomes a group also, either for or against sanctions, and either willing or not willing to pay. Opposition groups are willing to pay to keep sanctions from happening; the more the pro-sanction forces within the sender economy pursue sanctions, the more expensive sanctions become. Thinking as an economist, the opposition group forces the supply curve of sanctions to the left, reducing supply at all prices, thus increasing price, *ceteris paribus*. The government imposes sanctions at the level where the groups maximize their respective welfare functions. It is possible that the opposition will be so strong, or the political will to impose sanctions will be so small, that the costs of sanctions far outweigh their benefits such that equilibrium is at zero quantity. It is also possible, as in sanctions against Iraq, North Korea, and other dictators throughout history, there will be a call for infinite sanctions, a complete close of all economic connections.⁸

In the United States, the difference between Congressional policy and presidential decisions is large when considering what groups within the government may be on the pro-sanction or opposition side. Kaempfer and Lowenberg (1992) argue that Congress is more likely to be influenced by special interest groups, where the president has historically responded to a foreign policy objective. The 1990 sanctions against Iraq, as a result of their invasion of Kuwait, illustrate this point.

[The 1990 Iraq] episode suggests that although there is a preference for export sanctions in certain departments of the executive branch, there can be special interest pressures against export sanctions coming from other executive departments. The establishment of a total embargo shows the president's tendency to act on national rather than special interest pressures. (57)

Drury (2005) examines U.S. sanctions from presidential decisions as a central focus. His empirical analysis suggests that U.S. president chooses targets that have an immediate economic impact from trade reductions, and that the president is not concerned with the domestic political environment. This confirms in some ways the hypothesis of Kaempfer and Lowenberg (1992) given earlier.⁹

In sum, interest groups seek to influence sanction policy, but the evidence counters the theoretical models concerning the importance of such groups. Targets face similar forces, where the fight is over whether to pursue and continue policies that attract sanctions. The following section discusses how public choice theory may be extended to the target.

The Target Economy and Interest Groups

Public choice studies of sanctions have focused on the sender economy. Two reasons exist for this focus. First, the sender is seen as commanding the sanction, imposing sanctions based on how sender interest groups pressure for action. Second, these interest groups exist in the major industrial nations of the UN Security Council. Thus, wealth redistribution from sanctions may imply hundreds of millions of dollars changing hands, and thus makes their analysis noteworthy. However, the market for sanctions in the target's economy may be more important than the sender's analogous market: the target both supplies and consumes each political action. Measuring the level of target political interest groups' influence is at the heart of empirical

public choice theory. The target's choices are shaped by sanctions as sanctions change the benefits and costs of political actions. A simple theory of how the target "demands" sanctions is somewhat straightforward from the earlier analysis.

Suppose the target government wants to supply an action that may lead to sanctions. These sanctions impose a cost onto the target citizens and specific interest groups.¹⁰ As the target government engages in its deviant policies, the opportunity cost of sanctions rise. In a sense, this is a demand shift to the right in the target's policy market, where the target government is demanding sanctions as a result of choosing certain policies. The supply of sanctions is exogenously determined by the sender economy. Interest groups in the target pressure for the policies, and must pay the cost imposed as the sender supplies sanctions. This "tax" is ultimately borne by citizens in higher prices and generalized scarcity. The "price" in the international policy market is a combination of costs and income reductions from the embargoes.

Sanctions seek to reduce target interest groups' marginal utility. Cuba again is a great example of this; the Soviet Union and Europe directly or indirectly funded the Cuban regime for years as if they were external interest groups. The Soviet Union wanted communism in the Western Hemisphere; Europe wanted a vacation destination, sugar, and cigars. In the United States, persistent fears of communism in the Western Hemisphere became sanctions and military actions against most nations in Central America since 1945. Concerning Cuba, the United States was like an opposition group, paying for sanctions to continue. Figure 4.3 shows how the sender and target policy markets are linked in terms of sanctions. Notice that as the target's supply curve shifts to the right, the price to impose sanctions falls in the sender economy. This makes it easier for sender interest groups to pressure for economic statecraft.¹¹

The sender's decisions signal to the target a sanction's magnitude, at quantity Q^* . The sender country resolves its policy market and transmits this information to the target through policy. The target country takes those sanctions as given and decides, through their interest groups, how much to demand. If the sender's interest groups demand more sanctions, from $D_{\text{Sanctions}}$ to D' , it is in reaction to new target policy: D_{Policy} to D'' . The target engages in policy, and the sender reacts with sanctions, constrained by the past and current economic and political relationships between the sender and target. If the target demands more deviance, the sender reacts by lobbying the

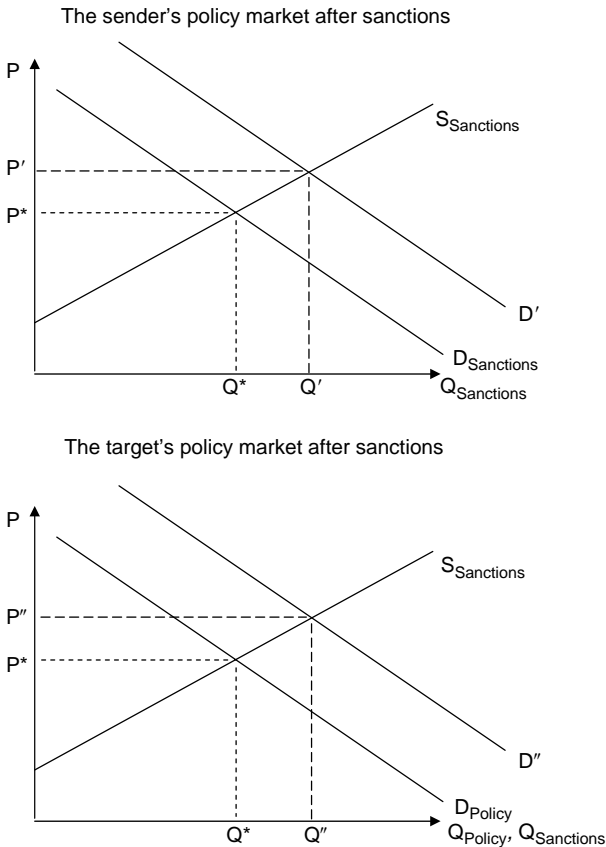


Figure 4.3 The policy markets' international connections.

government, shifting demand to a higher level, matching policy for policy. This move is shown by the $D_{Sanctions}$ curve shifting in the sender market to match the D_{Policy} shift in the target market. The slope of the supply curve reflects the sensitivity (elasticity) in sender interest groups' opposition level or to the target government, respectively. As the policy supply curve becomes steeper, new policy becomes more costly due to increased opposition.

This is intuitive because the target must pay a higher price to pursue more deviant policies, assuming the sender will react. Kaempfer and Lowenberg (1988) tell the tale a little differently. The target country pays a cost to avoid sanctions and thus avoid the disutility that

flows from economic coercion. Using two demand curves, where the demand of those that oppose sanction policy has an upward slope, the optimal sanction is found where the two demand curves cross. As demand increases for the deviant policy, the policy's price increases and the groups opposing the policy are only willing to accept the choice if they are compensated for living with sanctions.

This wealth transfer from one interest group to another is the point of public choice. If interest groups are willing to pay to continue policy, an equilibrium outcome occurs at a quantity where the government is compensated for administering the policy. Sanctions may also signal to the target's opposition group that there is help available, and external pressure on the current regime is just the beginning. Kaempfer and Lowenberg (1988) conclude that sanctions concentrating on reducing the wealth of groups demanding the deviant policy are most effective, especially if they simultaneously support target interest groups that oppose the policy being sanctioned.

The interest groups seek to redistribute income toward them through lobbying for specific government action. How the government comes into the picture, either opposed to or for the special interest groups, dictates much of the political effects. It is possible, for example, that regime opposition can be turned into regime support under the right conditions, the so-called rally-around-the-flag effect.

The Rally-Around-The-Flag Effect

A rally-around-the-flag effect is a dangerous problem in economic statecraft. This effect leads to target decision makers using economic statecraft and the damage they do as propaganda. For example, target countries that fund terror groups may use such a cry to rally citizens along religious lines. Galtung (1967) was the first to apply this idea to statecraft directly, and Baldwin (1985) expanded on the idea; both did so in their respective analyses of UN sanctions against Rhodesia. Haass (1997) suggests that this effect can upset the use of focal sanctions that are meant to minimize collateral damage. "Sanctions sometimes trigger a 'rally around the flag' nationalist reaction; by creating scarcity, they enable governments to better control the distribution of goods; and they create a general sense of siege that governments can exploit to maintain political control" (80). The sender wants a loss of political control, and this effect may block the embargo's effects.

As the rallying cry becomes larger, sanctions should lose effectiveness. The price the target populace is willing to pay rises; it is as if the demand curve for the target's original action shifts to the right

because of a positive change in tastes and preferences. Kaempfer and Mertens (2004) examine sanctions against dictators, where rallying around the flag is likely the autocrat's reaction to economic coercion. "Loyalty is viewed as a capital asset accrued to assist in the performance of political exchange between ruler and subjects; it is purchased by awarding rents, such as governmental contracts or other favors, to recipient groups" (32). Of course, a dictator walks a fine line concerning how to rally citizens, especially if the dictator uses draconian methods to maintain order.

It is also possible that the sender experiences a domestic rallying phenomenon in either direction. Where the human cost is large, the target economy would both want to rally its own citizens around the sender's attack, and transmit some of that pressure onto anti-sanction groups in the sender economy. This is one reason why repression and loyalty may be seen as co-dependent acts (*ibid.*). Haass (1997, 1998) suggested that in the 1990s the United States was engaged in seventy-five sanctions at one time.¹² While Haass (1998) states that the obvious benefit of using sanctions is the same as not using the military option, sanctions can be damaging to sender opinion. "Mass hardship can also weaken domestic and international support for sanctions, as with Iraq, despite the fact that those sanctions have included from the outset a provision allowing Iraq [in the 1990 case] to import humanitarian goods and services" (Haass 1997, 79). Public choice theory plays a vital role in understanding sanctions from debate to termination. Ultimately, market activity dictates sanction effects and duration. Smart sanctions are the latest attempt to minimize the damage sanctions put onto innocent target citizens and other nations.

How Much Are Interest Groups "Demanding" Sanctions?

The evidence that public interest groups are forcing the U.S. Congress or the UN Security Council into decisions of employing economic statecraft suggests no one group is constantly seeking sanctions. The evidence gathered has instead focused on how the sender and target economies have dealt with the populace in order to influence the respective government's ability to pursue policy. Kaempfer and Mertens (2004) applied public choice theory to sanctions where dictatorships looked to be displaced.¹³ They conclude that the level of domestic opposition influences the sanction's effectiveness, and that the level of sanctions must be monitored as to not put that opposition in jeopardy. A sanction's attempt to impoverish the populace may

weaken the domestic opposition's ability to exert influence (ibid.). Using a variant of Wintrobe's (1990) dictatorship model, Kaempfer and Mertens (2004) juxtaposes loyalty and repression as factors influencing a dictator's power. The relevance of investigating how sanctions influence specific regime types is obvious, and the public choice approach is one way of explaining how groups define and fight each other for the target's polity.

Are Specific Groups Defined in Both Countries?

In an attempt to provide public choice modeling with some empirics, Bonetti (1997a) applied a simple logit model using the HSE (1990) data and public choice variables. Bonetti (1997b) suggests that the main way sanctions have been viewed is as an instrument of coercion (339), where coercion is seen as slightly different from "embargo" or "sanction" because the intent is to force a change among specific groups within the target nations, as well as convince the sender government to act. Bonetti (1997b) concludes that sender interest groups must engage in multiple coercion measures. Further, these groups' demands may not be to damage the target, but to profit from the sanction directly and transfer wealth to the sender interest group. Bonetti further suggests that because confusion exists as to whether interest groups are individuals, political interest entities, or governments, finding evidence and empirically testing the public choice hypotheses can be difficult.

There has been a stronger preference for export sanctions because of interest group existence; this is not a prediction but a tautology (ibid., 341). Groups form if the political conditions are right for individuals to act collectively against government policy. Gathering data that reveals the propensity of the target populace to oppose its own government to cease current policies may be a link to how powerful public choice theory is in explaining how sanctions work. However, this data has not been found to date.

Does a Transmission Process Exist?

The other major factor in public choice theory is the assumption that a transmission mechanism exists between the sender's and target's interest groups that is economic. In international economics, a major link between two countries is trade, and the transmission mechanism, for acts such as trade barriers, is very specific. Exports in one country are imports to another, and vice versa. Public choice theory assumes that interest groups are self-motivated, seeking to augment current wealth from policy. The political economy aspects of such groups are accepted as fact, as the sender expects policy to redistribute wealth in

a specific way; the target groups engage their government for the same reasons. However, to build an empirical model to test for the existence of these conduits entails discovering data that either describe the transmission mechanism or make sense of the interest group linkages. Since countries differ in how wealth is distributed and the infrastructure for an interest group to engage its own government, it is difficult to generalize this characteristic and empirically test these public choice models.

Summary

The public choice approach to sanctions blends political economy with international economics. This approach suggests that interest groups within each nation involved seek out sanctions. In the target economy, sanctions are an accepted by-product of pursuing deviant actions: the pursuit of political actions that may lead to sanctions is considered rational because interest groups seek increased income as a result. In the sender economy, interest groups are assumed to lobby or pay directly for sanctions as a reaction to target malfeasance. Sender interest groups want their government to impose sanctions because their income rises with policy, dictating sanction demand. The combination of these two policy markets leads to an international policy connection based on the interest groups in action.

This combination also leads to a global market for sanctions. The target demands sanctions by its actions, and the sender supplies the reactions, where equilibrium is struck at a price and quantity such that each country maximizes individual welfare by pursuing their respective actions. These rent-seeking actions, according to public choice theorists, drive sanction outcomes. Bonetti (1994, 1997b) argues that while public choice theory is logical explanation of sanction effects, the ability to test the hypotheses and conclusions of the theory is non-existent. Chapter six expands somewhat on the role of interest groups and empirical studies. Another way to view public choice theory and sanctions is to test for the influence of groups calling for smart or focal sanctions. While this text suggests that sanctions are ultimately macro-economic, focal sanctions that try and circumvent widespread damage are gaining momentum as recommended policy.

Mitigating a Cruel Paradox: Smart Sanctions

The issue of collateral damage in sanction episodes has recently become a focus of policy makers and scholars alike. The United

Nations has debated the “legality” of sanctions in terms of how the policy restricts market access. Doxey (1971) was the first to discuss the international law complications for economic statecraft and in a sense began the discussion of how senders must consider both the target’s economic *and* human costs. Humanitarian concerns have followed because there are cases where sanctions are perceived to cause or exacerbate problems of disease, starvation, reduced water resources, and so on. However, damage to the target’s people outside of its rulers must be expected by all parties involved or observed during a sanction.

Smart sanctions claim to focus on decision makers while mitigating the cruel paradox of parallel punishment to the target’s citizens. Can statecraft focus on those who are most likely to change the deviant behavior, and cause a behavior change quickly and efficiently? Smart sanctions are an idea that at their core are as old as sanctions themselves: economic statecraft can indeed focus more on the ruling elite in sanctioned countries, rather than being broad measures, and by doing so be more effective.

Certain studies argue, however, that the efficiency of sanctions is a priori enhanced if the greatest costs fall on innocent bystander groups within the target, regardless of how antagonistic or friendly they are to the sender (Major and McGann 2005, 338). The public choice framework is important here, as the definition of which groups are “innocent” and which are not depends on how the groups influence target political behavior. One way to view collateral damage is to see them as punitive against a country allowing such actions to take place. One example is the 1985 UN sanction case against South Africa. These sanctions were designed to eliminate apartheid explicitly, reform the political structure in South Africa, and allow the black vote. Since those in power were mixed among the elite residents of South Africa, especially land and business owners, how could the effects not penetrate to the masses? By punishing these wealth holders, there must be some effects on workers, consumers, and non-black citizens. “Although these [factors of production curtailed by sanctions] could be had, the premium that South Africa had to pay to ‘bust’ the embargo on these items made them costly commodities to their domestic consumers” (349). However, to claim that South African business people and consumers had larger ties to groups in the United Nations beyond the philosophical or that there was a sense of philanthropy on the part of the Security Council is an overstatement of the international importance of South Africa during the lengthy sanctions.¹⁴

Can policies that originate in another economy, whose ultimate goal may be the foreign government's complete political turnover, not affect the foreign populace that keeps its current ruling party in power? Cortright and Lopez (2002) edited a volume that discussed smart sanctions in depth. In many of the included articles, smart sanctions were considered difficult to focus in practice and the success of such sanctions remains highly subjective. Another highly debated case is the 1990 UN sanctions against Iraq, which concluded by force when the Anglo-American invasion took place in 2003. These sanctions were comprehensive in scope from the United States and United Kingdom, but the United Nations had looked to remove some of its sanctions because of a carrot-stick approach taken concerning weapons of mass destruction.¹⁵

The sanction market can be bifurcated into a market where the interest groups and the government interact; the other market is where the remaining citizens interact in the face of a sanction's costs. What smart sanctions should do theoretically is impose costs directly on target interest groups lobbying or funding the government's policies deemed problematic by the sender, which then reduces the equilibrium quantity of the policy. The sanction should shift the target government supply curve to the left, reducing the supply and thus reducing the quantity demanded in this policy market. If the benefits derived from engaging in deviant actions are reduced, the supply of such actions falls.

Smart sanctions attempt to make economic statecraft more micro-economic. Forcing specific target agents to change their behavior implies the sanctions must affect individual policy makers directly, as if making policy was within the policy maker's utility function much like any other good, service, or policy. Smart sanctions act like policy barriers, trying to reduce the policy market's activity by forcing a tax levy because of domestic decision-making. Smart sanction measures as policy cannot be ignored, as the ideological ground upon which they stand is solid. However, smart sanctions suffer from three main problems that affect all such policies and put their use as more than rhetoric in danger.

Sanctions Are Meant To Be Blunt Instruments

While all sanctions should aim to minimize human costs, how can sanctions by any design not spillover onto an otherwise innocent populace? Interest groups in the target economy that pressure for the deviant action should always be the focus of sanctions. The ultimate

focus of sanctions is political, without an economic bull's eye. The unfortunate economic outcome is that sanctions flow to target decision makers by damaging the populace, which in part makes up the interest groups. In the best scenario, sanctions provide a credible threat of such collateral damage such that a reversal of target policy takes place. So much of a sanction's perceived power is through its larger effects.

Sanctions are macroeconomic phenomena that must credibly have breadth and depth in their effects. Threatening the populace must be to threaten those in power, and vice-versa. The United States currently sanctions Iran comprehensively. There are also financial and travel sanctions on Syria, where both packages are meant to reduce the threat of terrorism. Iran's ruling elite are likely hurt by sanctions because of their breadth, but less than the populace. The ruling elite may have an incentive to slowly pass a "sanction tax" onto its people, using higher prices and generalized scarcity as propaganda. Sanctions against Iran have become, over time, a classic sanction case involving black knights. The existence of external markets acts as an enforcement problem; the United States has reacted by passing legislation to expand sanction coverage to parties that act as sanction busters, both domestically and internationally.¹⁶ This leads to another layer of credibility on the sender's part that must display commitment, leading possibly to engaging some of the larger economies in separate embargoes, which generally have little credible threat of effectiveness.

Target Governments May Avoid Focus through Alliances and Diversification

As with any other economic measures, a sanction must act like a cartel and insulate itself against substitute policies or internal cheating. Financial sanctions involve a worldwide network of transactions and potential market participants to act in concert with an embargo to be effective. Reid et al. (2002) provided three differences between countries that generally lead to problems in forming long-lasting coalitions. First, there is a question of statutory authority. Some nations simply disagree with certain sanction policies, especially in the face of potential human damage. Second, the implementation mechanism is different from country to country. Drury (2005) focuses on how U.S. presidents have used unilateral authority in imposing sanctions. Some countries and institutions do not have such a trigger mechanism by which sanctions can be immediately unleashed in the event of an international crisis. In July 2006, the slow and heavily debated UN

reaction to North Korea's test launch of long-range missiles provided a lot of real-world evidence for the mechanics of multilateral sanction imposition. Diplomatic efforts take time and even then a resolution may be weak due to statecraft within statecraft.

Finally, authorized agencies that impose and monitor sanctions differ among nations. In the United States, the Office of Foreign Asset Control (OFAC) is meant to regulate sanctions such as freezing of assets and the seizing of foreign property.¹⁷ Reid et al. explain that asset seizures are difficult sanctions in practice because jurisdiction dictates that the country imposing the sanction describe the financial claims as criminal (2002, 81). Steil and Litan suggests that not only is it difficult for such agencies as OFAC to track sanction busters, but an international money laundering system is in place currently that cannot be fought by U.S. personnel alone (2006, 35). There are many profit incentives here as well, all of which undermine perceived and explicit alliance structures.

Initiating such financial measures also has its challenges due to the speed of financial transactions. The sender nation must act swiftly and almost completely under the international radar initially to keep the target country from making a few phone calls or sending a few e-mails to move assets from one country to the other. If alliances are in place, this secrecy is even more tenuous, and the major financial markets must all ban new trades and income flows simultaneously to work. Arbitrage is just a phone call away or those seeking to profit from new assessments of country risk initiating market signals.

This lack of control over foreign asset movements is just the beginning. Trade sanctions and rationing the target's available credit easily provide incentives for third-party nations, black knights rescuing the target from sanctions.¹⁸ The Iran–Libya Sanctions Act (ILSA) of 1996 was meant to punish countries, firms, and individuals that helped U.S.-targeted nations during sanctions. If the United States sanctions arms shipments to a belligerent, oil-producing nation, these seem like smart sanctions. They look like very dumb sanctions once another country sells weapons at a higher price and profits, because America cannot credibly sanction countries such as France and the former Soviet Union historically, or countries of the Russian Federation now. How can sanctions focus on the target's ruling class if other entities, at the public or private level, act on the target's behalf and provide new markets? With the profits available to third parties, smart sanctions as envisioned need some adjustments.

The proliferation of foreign currency from the larger, industrial nations all over the world has made financial sanctions less powerful,

and made targeting these sanctions even more difficult in practice; it also further sweetens the deal for economically weak third countries to help the target (Newcomb 2002). Alliance structures should avoid many of these problems if well-devised and enforced strongly, where certain studies suggest positive economic incentives are more efficient than negative incentives in enforcing alliances.¹⁹

Arms Embargoes are Also Subject to Black Knights

One sanction that seems very specific to reducing a target's deviant behavior is arms sales curtailments, the archetype smart sanctions (Brozka 2002). If political deviance is enforced by domestic military or paramilitary units, reducing arms trade with such a country hits at belligerency's heart. However, the world arms market is wide in breadth, and offers bellicose nations a large array of choices. These choices are somewhat restricted to small arms, especially for sub-Saharan African nations (Elliott 2002). The experience of the late 1980s and 1990s showed that if the price is high enough, markets will exist. The United States and United Kingdom have both brokered deals for domestic defense firms in cases where arms sanctions were in place through the last quarter century; Bondi (2002) recommends that tighter monitoring and an increase in penalties is the best way to reduce arms sanction busting. Brozka (2002) suggests that the black market structure of arms transactions makes enforcement almost impossible, and that the current monitoring is weak. "It is sometimes argued that the U.N. is not the best body for monitoring and verification [of arms embargo violations]. Because of its nature as a diplomatic institution, [the United Nations] is inclined to uphold very high standards of proof for allegations that imply misconduct by member states" (137). However, even if the United Nations found a violator, what court would hear the case that has jurisdiction?

Since 1990, it is reported that over ten arms embargoes have taken place where the United Nations acted as the sender.²⁰ However, triangular trade is used to circumvent direct evidence of an arms deal, typified by the Iran-Contra affair involving the United States trading arms for oil in the 1980s. Since then, arms deals to bust sanctions have been more overt, as in cases involving Angola and Nigeria, because their resources allowed certain countries to profit from sanction busting. "Realizing that [Angola's] UNITA rebels use diamond profits to finance their weapons purchases, the U.N. Security Council imposed an embargo on uncertified diamond exports from Angola. This episode suggests

that, as a stand-alone policy, arms embargoes are unlikely to curtail local conflicts” (Hufbauer and Oegg 2000, 2).

The profits available to a private arms manufacturer rise quickly during embargoes, and thus stiffer penalties must be assessed if such sanctions are to be effective. This problem may be worse in Africa than any other place on earth (Brozka 2002). The problem is in any country undermining these sanctions’ purpose.²¹ The target’s ruling elite is not hurt if second or third markets for these weapons exist. However, a higher arms price means a larger economic burden on the populace through inflation, higher interest rates, or more taxes to pay for the price change. Analogous to arms embargoes, there are some problems with financial statecraft as well.

Financial Embargoes and Currency Crises

Financial sanctions have been the sanction of choice of the United States and are quintessential smart sanctions: they are generally easy to enforce, difficult to evade, and market reactions are likely to reinforce the sanctions (Elliott 2002). Like arms embargoes, market reactions are the key problem as they are uncertain and must be monitored closely. Monitoring means more cost to the sender, which reduces sanction potency in the context of being smart; the cost increase likely leads to the sanction’s burden being shifted onto the populace.

In a financial sanction, the market reaction increases the cost of credit, reduces income flows to both the target’s government and citizens. The governmental cost may be simply passed on to the target’s people. Analysts should view these sanctions as restricting these markets that lack substitutes and are necessary to the target’s economic and political functions. The freezing of assets is highly focused on individual level, but individuals generally do not make policy choices. If individual investors happen to also be political decision makers, they are unlikely to expose themselves to an asset seizure if a fund transfer is done quickly through some communication medium. This debate over sanction bluntness rages throughout the smart sanction literature (Cortright and Lopez 2002). The creation of a currency crisis, where the target’s currency value is put into jeopardy, may come from strong, focused financial sanctions, delivering a macroeconomic problem.

A currency crisis could come from very harsh financial sanctions, especially if the target economy is already on the brink of economic collapse. Almost every major currency crisis over the last ten years has a “currency mismatch” at its root (Stein and Litan 2006, 99). A currency mismatch is when a country has a significant amount of its debt

in terms of another currency, which opens a country up to economic fluctuations based on another country's activities versus their own. There are many studies that claim a currency mismatch is a function of a flexible currency.²² A weak banking sector, as well as poor and mis-managed monetary policy may also be to blame. However, sanctions that impose currency-crisis conditions on a target will have widespread effects and no longer be smart per se.

Market reactions must be taken into account. As a currency falls in value, the balance of payments immediately shifts to adjust the target nation's wealth. "Financial markets also become disturbed and balance-of-payments problems, currency convertibility and a host of related difficulties appear or worsen. Transaction costs become disproportionate. [Pre-war] Iraq is a classic example of all these problems" (Losman 1998, 39). There may also be a large amount of target politicking as the currency spirals downward. "The political element of currency production and supply management is so powerful and pervasive that we must be extremely wary of policy conclusions that ascribe the obvious, and frequently calamitous, failures of the world of national currencies to those who must decide, in their own interests, whether to hold or jettison them" (Steil and Litan 2006, 113).

Does this mean, potentially, that public choice theory can be applied to currency crises and sanctions? The case could be made that countries with a history of currency problems, perhaps sovereign debt renegotiations or outright default, perceive credit sanctions as precursors to currency crises. The mere threat of such sanctions may be enough to force a policy change, especially in light of how generalized the effects of a currency debacle would be.

The market reactions to financial sanctions can also work against the sender economy, as both goods and financial market transactions slow down. As the target currency falls in value, the target builds international incentives to export more goods. When other countries buy the target's goods, they provide the target with desperately needed foreign currency. These purchases support the reduced value of the target currency and mitigate the original effects. The way sanctions should be mixed is discussed further in chapters five and six.

Regardless, financial sanctions are likely to be the smart sanction of choice into the future. They are relatively straightforward to both initiate and manage for the sender. They send worldwide signals concerning the target's creditworthiness and its potential currency conditions. The target populace, in the threat of both goods and credit market inflations, may immediately call for an end to the deviant policy rather than suffer the consequences. All these effects are

part and parcel of the smart sanction idea. Smart financial sanctions will be discussed further in chapter seven when humanitarian effectiveness is compared to economic and political efficacy. To conclude on smart sanctions and close the loop connecting focal embargoes and public choice theory, debates over sanction legality provide another dimension as to why smart sanctions may be the future of economic statecraft.

Smart Sanctions and Legal Issues

Smart sanctions seem the most “legal” of any embargo, but so much of that perceived legality depends on two definitions: that of a legal sanction and that of a smart sanction. First, a legal sanction describes an embargo that originates from an international agreement on using economic statecraft after or parallel to over-the-table diplomacy and before military action. Because these policies transcend borders, it is important to recognize that no one country’s jurisdiction controls this definition. However, the UN Security Council is the most likely place to define such measures for the international community, as should other international alliances and economic unions through their charters.

The legal debate has recently shifted to discuss humanitarian issues. A new phase is developing around proportionality, a principle developed to monitor sanctions for how much damage the populace endures versus its culpability (O’Connell 2002). Craven (2002) suggested that while it is powerful to define when sanctions are legal in terms of human cost, ultimately there is little to be done concerning enforcement. “The evident discretion available to the Security Council in this regard is further reinforced by the presumption that it is largely competent to determine its own jurisdiction, and by the absence of available mechanisms for judicial review” (50–51).

There simply is no legal forum to debate these cases. Even if such an international court existed with any authority, the data on cause and effect would likely be a central debate item. This debate is far from resolved. This is seemingly the current argument of the North Korean government that the lack of proportionality in U.S. sanctions against this regime has forced a humanitarian crisis. As a result, nuclear arms are produced to retaliate against an economic aggressor.

One way in which sanctions can be monitored or made “smarter” is to watch how businesses are reacting, both in the sender and target nations, during sanctions. The effects on target businesses are the foundation of economic statecraft, as business reactions are likely to

transmit themselves to a sanctioned populace and government. Losman (1998) discusses the effects and costs on U.S. businesses as a result of sending sanctions, which is a sanction literature topic discussed indirectly with a lot of work to come.

If costs are truly escalating for American businesses as a result of sanctions, there could be legal repercussions in the U.S. legal system. “[As a result of U.S. sanctions on Panama in 1989], a number of American-owned properties in Panama had to be sold at distress prices. If import restrictions are part of the sanctions package, it is likely that higher cost substitute suppliers, either domestic or foreign, will have to be utilized” (41). Can and should American businesses pursue financial recourse when able to prove the sanction has injured profits? Is this not a classic case of the rally-around-the-flag effect in reverse?

Thinking as a public choice theorist may help again. If both sender and target businesses have influences on political decision-making, then their realization of new costs drives new policy decisions. As a result, public choice theory suggests that as the sender government pursues sanctions, the effects transmit themselves to the target country but also influence the costs of pushing for such action domestically. Special interest groups may be influenced by business costs as a result of sanctions, as common sense suggests that businesses stand to gain from foreign policy more than individuals. While sanctions have their effects on targets, leading to public reactions, they are working against themselves in the sender economy by imposing a domestic tax on businesses. Of course, sending sanctions comes with costs. Losman (1998) called for U.S. sanctions to be completely dropped from the policy toolbox, suggesting they be made illegal because of domestic costs.

Ultimately, a sanction’s legality is not as important as defining smart sanctions. This chapter shows how difficult it is to see sanctions as having an ability to affect a specific subgroup of the target population, making focal sanctions less focused in a hurry. Sanctions such as travel, arms, and financial embargoes are defined immediately by scholars and policy makers as smart, but can certainly hurt the populace of both economies. The future of smart sanctions lies in goals of avoiding human costs and major redistributions of an embargo’s damage from the ruling elite to the poor. If these policies achieve these goals, then smart sanctions are truly economic statecraft’s future. However, as sanctions are imposed more and more to enforce what could be considered international law violations, a gray area may appear that makes smart sanction effects even trickier to analyze. “The

humanitarian law of armed conflict fits the law enforcement context more closely than the law of human rights. Humanitarian law regulates otherwise unlawful behavior resorted to in response to a prior wrong” (O’Connell 2002, 73). Are not all sanctions a reaction to a perceived violation of international law or standards in the first place? The interest group state ensures that international political deviance that reduces wealth domestically leads to a reaction, which is the essence of applying public choice theory to economic statecraft.

Conclusions

Public choice theory provides a foundation for the political economy of economic statecraft. Kaempfer and Lowenberg (1986) is the beginning of this literature strand and they have authored many subsequent studies. Bonetti (1997b) has been critical of this approach on empirical and theoretical grounds, also providing a great literature review. If special interest groups within each economy, the sender and target, influence political decision-making, then a market for economic sanctions may exist. These markets are much like the markets for goods and services traded between two countries, as a policy shock in one market is transmitted to the counterpart markets in other nations. However, public choice theory suggests that groups within the sender economy pay for sanctions to derive wealth-enhancing effects from them. Embargoes may protect the group’s interest and potentially redistribute statecraft costs to other industries or the populace as a whole. The target economy faces the same problem, as its interest groups are willing to pay to subsidize governmental actions in the first place. How each group receives income from the sanctions drives their decision-making and whether or not the respective governments continue to supply the demanded policies.

The more blunt the sanction instrument, the more widespread its effects. Many studies contend that collateral damage renders the sanction archaic and imposes more costs than benefits, especially as sanctions continue for years and decades. The imposition of focal sanctions, such as restrictions on arms, travel, financial flows, and other specific goods and services, is said to embargo the decision makers’ (or interest groups’) wealth directly. Cortright and Lopez (1995, 2000, and 2002) have contributed, through direct science and edited volumes, much to our knowledge of these measures.

Such measures are known as smart sanctions, because they focus on specific subtargets within the sanctioned economy. There are still debates raging over how focused these embargoes really are. Haass

points out that the opportunities to employ sanctions effectively yet with great precision are rare (1998, 202). It is likely, however, with the constant call to monitor the humanitarian damage caused by economic statecraft that smart sanctions are here to stay, providing ex ante protection to the masses. Policy makers and scholars alike must obviously devise strategies to limit damage and focus as much as possible, perhaps providing positive economic incentives to countries that help in a parallel way to relieve suffering, a major international policy challenge. One small item scholars cannot forget is that smart sanctions are just that: sanctions. It is hard to imagine any strategy that makes these instruments more microeconomic.

The first four chapters of this text provided background literature and theory for why sanctions take place and continue. In chapter five, a macroeconomic model is introduced to further this text's thesis that sanctions are macroeconomic phenomena and should be treated and analyzed as such.

Chapter 5

Open Economy Macroeconomics and Sanctions

One way to combine both the qualitative analyses that have been a constant throughout the sanction canon and quantitative tests of sanction effectiveness is to view sanctions as macroeconomic policy choices, analogous to monetary or fiscal policies. Recent advances in macroeconomics and international finance allow economists to potentially settle issues concerning sanction measurement and tracking sanction effects as for both the sender and target economies. This chapter extends the Obstfeld–Rogoff “Redux” (1995) model to provide a macroeconomic theory of sanctions.¹ Their model and the extensions that followed became the “New Open Economy Macroeconomics,” called NOEM models from here.

Using the dynamic behavior of optimizing agents to study policy transmission from one country to another allows analysts to model how contending nations interact through their trade and financial relationships. This interaction tracks how a larger country’s policies may become negative welfare shocks for a smaller country through policy transmission. Seminal research in international policy transmission began with Fleming (1962) and Mundell (1963), continuing with Dornbusch (1976). The original Mundell–Fleming model is one of static exchange rates, which led to fixed price, IS-LM model extensions.² The Dornbusch (1976) extension of Mundell–Fleming’s model used intertemporal ideas of household welfare maximization, a precursor of NOEM models, to describing exchange rate overshooting as a reaction to policy under a rational expectations framework and flexible exchange rates. The exchange rates overshooting result was based on sticky prices in goods markets and rational expectations in asset markets. The mix of goods market imperfections and asset

market perfection imply two possible exchange rate effects from policy: (1) post-policy exchange rate movements such that policy is domestically neutral; or (2) exchange rates movements that cause expenditure-switching behavior between domestic and foreign goods in such a way that initial welfare shocks were either augmented or reversed in each country.

The political economy of sanctions fits this idea well. Sanctions are meant to transmit, from the sender economy, welfare redistribution incentives to a target. In macroeconomic theory, transmissions that reduce welfare are reasons not to initiate policy. In the case of economic coercion, sender economies want to transmit policy to affect targets in deleterious ways, to “beggar thy neighbor” as a matter of statecraft while limiting “beggar thyself” effects (policy-driven, domestic reductions in welfare). These transmitted policy effects are the foci of the sanction extension given later, where the policy shock is an economic sanctions mix. Sanction-caused exchange rate fluctuations may not nullify welfare shocks on sanctioned countries, and thus sanctions may not be neutral in their effects on either country. The economic effectiveness of a sanction can now be based on differential welfare movements between sender and target, helping to bridge the literature’s gap in estimating a sanction’s relative costs between sender and target.

How prices are set in each country is of primary importance. The NOEM models allow for both asset and goods price stickiness as assumptions, where market frictions exist between the target and sender that lead to sanction policy transmitting non-neutral results. The pricing-to-market (PTM) models focus on goods price stickiness rather than asset markets working incorrectly (Betts and Devereaux 2000). The sanctions NOEM model here uses a PTM model as a foundation.

This chapter is split into four sections. The first further describes the literature and basic assumptions of NOEM models, especially the intuition and implications specific to sanctions. The second section describes a NOEM model, where sanctions cause welfare shocks and exchange rate fluctuations based on their mix and connections to both sender and target welfare. This set of models builds to a statement of the “steady state” or long-run equilibrium where households maximize their individual net benefits or utility over their lifetime. This steady state is shocked by economic coercion, and those effects are explained in the third section. The chapter concludes by suggesting future research directions in modeling sanction policies as macroeconomic phenomena. While this model is mathematically complex, the

intuition behind an embargo's political economy from basic models prevails here. We see that sanctions have predictable effects on exchange rates, some ambiguity on welfare overall, and that using financial sanctions may be the strongest coercion tool available. For the reader's convenience, a symbol list appears at the beginning of chapter five A, the mathematical appendix to this chapter.³

The NOEM Sanction Model: The Basics

The interesting idea behind the NOEM models is that a welfare analysis of both the sender and target describes how their interplay may affect economic statecraft's potency. The NOEM model's initial insight was that the overshooting and resultant welfare effects predicted by Dornbusch (1976) may not take place under a sticky price assumption, where prices are set in advance of policy being made. The baseline NOEM model suggests that macroeconomic policy will not force a deviation from purchasing power parity (PPP), driven by the law of one price (Mark 2001). The law of one price is crucial, as it leads to a non-neutral result concerning welfare: the country originating policy "beggars its neighbor" by reducing another country's welfare to augment its own. Since most domestic macroeconomic policies are meant to enhance domestic welfare by definition, the NOEM model provides a general equilibrium approach to policy's differential effects.

The price-setting assumption is important for the sanctions model. In the PTM extension, prices are set one period in advance in each market faced by each country (the domestic price differs from the foreign price of a good), disintegrating commodity markets between countries. This is due to the assumed existence of monopolistically competitive firms, which can price-discriminate, and may have more information about policy than households. The policy neutrality predicted by Dornbusch (1976) returns in this framework, and the differential effects fall away. In most NOEM models, households are assumed to optimize a utility function composed of consumption, money demand, and work effort; the households also own the firms that maximize profits from the domestic good's production and sales. In the sanction extension later, prices are set when policy is made.

Sanctions are macroeconomic policies, like their monetary and fiscal counterparts. Unlike other policies, the sanction's direct intent is to affect sovereign decision-making in another country by transmitting welfare-reducing, beggar-thy-neighbor effects. The NOEM conclusions are that long-run welfare losses depend on how responsive

domestic and foreign goods are to substitution incentives created by policy and transmitted through subsequent exchange rate fluctuations. The reason policy may be neutral in these models is that the resultant exchange rate fluctuations eliminate policy's initial effects.

Most target countries are smaller, more volatile economies than the sender nation or coalition. NOEM studies assume that policy in a larger economy transmits its effects to smaller countries generally. Because of the larger country's perceived economic hegemony, the smaller country faces price-taking behavior except in its domestic markets for its own good. As we will see later, the PTM model and these pricing assumptions may lead to policy neutrality in certain cases, which make the case for sanction ineffectiveness pervasive in the literature.

A related, seminal study is by Fender and Yip (2000), who investigate the welfare effects of tariffs in the NOEM model. They found that tariff effects are shared by both countries. The sender effects are ambiguous, analogous to those on the tariff-setting country in the Fender/Yip model. This ambiguity depends on the elasticity of substitution between the imported and import-substituting, domestic good. Fender and Yip's approach allows sticky prices in the short run and flexible prices in the long run, splitting the agent's life into two discrete periods. As in other NOEM models, the policy shock lasts one period (short run) and resolves itself in the next (long run) where the overall effects are the sum of each period's effects. Policy neutrality results if the long-run effects completely mitigate the short-run changes. If the tariff is anticipated, there are welfare costs in the target economy; if not, neutrality results for the target (Fender and Yip 2000). A sanction, however, should not be neutral in its effects. Economic statecraft relies on sanctions to be detrimental to target welfare. Sanctions should be modeled as quantity restrictions, like quotas, and analyzed as such as in chapter two.

In Betts and Devereaux (2000), prices are set by monopolistically competitive firms that charge one price domestically and another in the foreign sector rather than one world price. Prices are assumed to reflect a mark-up from the wage, such that the firm's profits are maximized. As firms set their prices in advance, the exchange rate changes from monetary policy are magnified versus the typical NOEM model. As a result, the exchange rate change moves to eliminate any consumption-switching behavior between the goods in each country, leaving domestic monetary policies neutral in their effects. The importance of the PTM extension to sanctions is that each economy involved has some pricing power over its own good. This seems more realistic, especially in terms of oil-exporting

nations that become sanction targets. The PTM conventions concerning pricing are employed here.

The pricing decision's timing is important. This model assumes that prices are set when sanctions are imposed. As such, prices and interest rates are known when policy is made, and thus trade embargoes are simply reductions in firm revenue in the short run, and may affect terms of trade in the long run. Financial sanctions affect the household budget and the consumption-saving decision by reducing available funds and asset income. This restriction affects the long run because the target has less flexibility to substitute consumption for savings through an embargoed credit market.

In the model given here, the policy variables become simple linear terms in the pre-sanction equilibrium, the steady state, similar to Fender and Yip (2000) but without the tariff. As the sanction is imposed, there are specific changes to the optimal choices of consumption, money demand, and work effort because the sanction reduces the target's income (import and debit sanctions), its ability to borrow or lend (credit sanctions), and its available goods markets (export sanctions). These changes affect target utility aiming to reduce it.

The effects on both the sender and target can be derived simultaneously in this general equilibrium framework. By imposing sanctions, the sender is choosing to reduce its own welfare explicitly, where the costs avoid larger political and subsequent economic costs in the future by not reacting to target malfeasance. The focus here is on the welfare reductions.⁴ The extent to which exchange rates fluctuate once policy takes place, and the specific channels leading to these changes, are still major questions in this literature (Vanhoose 2004). The model given here extends NOEM models to include sanction policy effects on both countries involved and provides more foundation for sanctions to be viewed as macroeconomic phenomena. The reader is asked here to refer to chapter five A for the model's mathematics, walking parallel to the mostly qualitative descriptions here.

The Model's Structure

The basic set-up of the NOEM sanction model is that there are three countries, two goods, and one financial asset traded between these countries to link their balance of payments. The third country acts as either a coalition member with the sender or a black knight for the target. The target is distinct from the third country, called ROW for "Rest of World" from here on. If there are no sanctions, this model

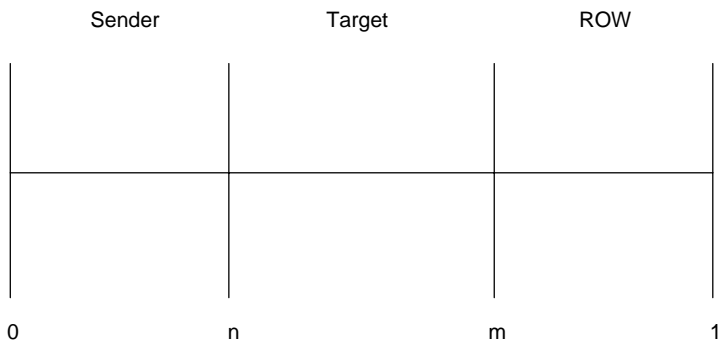


Figure 5.1 The world trichotomy.

collapses to the basic model of two countries, the sender and all foreign economies amalgamated.⁵ Figure 5.1 is a standard diagram of the world economic composition in these models, as in Mark (2001).

The concept here is that macroeconomic policy transmission originates in the sender's economy and moves through its international connections to the other economies. A unique basket of goods is produced and purchased in each country, where the target and ROW are seen as two markets that sum to an aggregate but face separate policy outcomes. It is in the goods markets where trade sanctions appear.

Goods Markets in the NOEM Model

Sanctions redistribute revenue to “pay” for the policy; the sender chooses to lose revenue or forces the target to do so through export and import sanctions respectively. The key difference between this idea and the Fender/Yip (2000) model is that a tariff provides revenue that must be accounted for in the household's budget. Sanctions do not generate revenue, such as the monopoly rents from selling quota licenses; the sanction is instead modeled as lost revenue, where this is the opportunity cost for the sender to force change in the target economy.⁶ However, there are many arguments in the international trade literature that quotas have “tariff-equivalent” effects.⁷ An export sanction reduces revenue specific to the sender's domestic good (z), and an import sanction reduces the supply of the foreign good (z^*) originating from the target only, based on the proportion of imports from the target. This import sanction reduces target revenue as a mirror to export sanctions.

Before we discuss the sanctions effects, we must build the basic model. Focusing on the sender as the domestic country,⁸ total production of good z , $h(z)$, is equal to the sum of the consumption and government spending on good z worldwide in equilibrium, equal to $y(z)$; aggregate supply (hours of work = h) equals aggregate demand ($y(z)$). Government spending is assumed to be exogenous of household consumption decisions, and funded by period-specific money supply (seigniorage profits) and taxes. In the steady state, government spending will be equivalent to taxes alone under the assumption all money held is spent in the long run.

Prices and consumption are based on a constant elasticity of substitution (CES) between the domestic and foreign good.⁹ In their natural logarithms, the prices take an intuitive form in the aggregate from their more complex forms in equations 5A.1 and 5A.2 in chapter five A. When sanctions are placed on another country, the target's proportion of the world economy, $m-n$, is greater than zero; when there are no sanctions, the sender's world collapses back to itself and the ROW, with the ROW equal to $(1-n)$. The aggregate price faced by the sender for the bundle of goods z and z^* is this weighted sum, with E as the price of sender currency in terms of the target and ROW (\$/baht, e.g.), the exchange rate:

$$P_t = [np_t(z)^{1-\theta} + (m-n)(E_t q_t^*(z^*))^{1-\theta} + (1-m)(E_t q_t^*(z^*))^{1-\theta}]^{1/(1-\theta)} \quad (5.1)$$

$$P_t^* = [n\left(\frac{q_t(z)}{E_t}\right)^{1-\theta} + (m-n)(p_t^*(z^*))^{1-\theta} + (1-m)(q_t(z^*))^{1-\theta}]^{1/(1-\theta)} \quad (5.2)$$

There are three prices for each good from equations 5.1 and 5.2, a la PTM models. Price p is the domestic price of good z , the good produced by the sender. Price p^* is the domestic price of the target good, z^* . The sender charges a foreign price of q^* , where sanctions force a difference in the relative price of q^* once policy is initiated between the target and ROW. The elasticity of substitution between the sender and foreign good within each country is θ . Notice that prices in each country are simply the weighted sum of individual goods prices in terms of the local currency, where variables with an asterisk (*) are target variables. The ROW walks parallel to the target, where two asterisks (**) are used for any initial differences. The

consumption of each good is a function of the specific good's price relative to the country's aggregate price.

Intuition: To this point we have simply described the pricing structure. We must now add both the asset markets that the household uses to borrow or save and the firms that employ the households and produce the goods they purchase. The sum of those parts provides the budget constraint for the household and shows where sanctions effects enter and flow through the economies. This model is building toward a general equilibrium where households, firms, and foreigners interact such that sanctions can impose welfare costs on citizens of both countries. Since the household can bridge between different periods in consumption by borrowing or saving money, the asset markets also need an explanation.

Asset Markets in the NOEM Model

Financial sanctions have two forms. Credit sanctions reduce the amount of borrowing or lending originating from the sender. Debit sanctions reduce income flows from the sender to the target for past borrowing. Financial sanctions affect household utility by changing its planned budget and the intertemporal choices of both households and firms. Households use asset markets to bridge between consumption today and consumption tomorrow by borrowing (more consumption today) or lending (saving today, consuming tomorrow). We assume a bond exists to be bought and sold, and is a nominal bond, denominated in the sender's currency; there are distinct markets for debt and goods such that borrowing is not repaid in goods directly.¹⁰

It is important to recognize the intertemporal aspects and requirements for these sanctions to be effective and more than rhetorical. To provide a credible threat of financial sanctions, a capital market must exist between the two countries. Further, if debit sanctions are used, the sender must have outstanding *net* borrowing owned by the target. If the sender owns more assets in the target economy than the target does in the sender economy, the threat of debit sanctions is not credible: the sender must expect retaliation if debit sanctions are used and the target can credibly retaliate.¹¹ However, for our purposes, debit sanctions affect the income flows from past borrowing and credit sanctions affect contemporaneous decisions concerning consumption because they restrict the current ability to borrow or lend. Following Mark (2001), the nominal interest rate (i_t) is simply the sum of the

real interest rate (r_t) and the inflation rate $\frac{P_{t+1}}{P_t}$, related in the following, Fisher equation:

$$(1 + i_t) = \frac{P_{t+1}}{P_t} (1 + r_t) \quad (5.3)$$

Interest rate parity connects the nominal interest rates between the two countries:

$$(1 + i_t) = \frac{E_{t+1}}{E_t} (1 + i_t^*) \quad (5.4)$$

There is a zero-net supply condition for bonds held worldwide. We will assume for tractability that the ROW has net zero borrowing with the sender and target, such that their balance of payments (BOP) adjusts depending on the sender and target interactions. Equation 5.5 reflects this zero net supply, where B represents the net borrowing or current account deficit of each country:

$$B_t = \left[\frac{m - n}{n} B^* + \frac{1 - m}{n} B^{**} \right] \quad (5.5)$$

Expected goods consumption drives the borrowing decision; the household first decides how much it wants to consume and borrows or lends as needed. Nominal interest rates are determined in each economy by assumption, where real interest rates adjust based on changing prices and exchange rates. Credit sanctions are envisioned where the sender is a net creditor to the target, placing the sender in a relatively hegemonic position. By reducing the amount of credit provided, the sender forces higher interest rates onto target borrowers. This should reduce current consumption and utility.

Intuition: Financial sanctions affect both economies, but there are preconditions that must be in place to credibly threaten and carry out these embargoes. First, certain sanctions are ineffectual unless both current and past decisions allow the sanctions chosen to take place. As described in chapter two, the ability to sanction an economy depends on the pre-sanction relationship between the sender and target. In the earlier-mentioned asset markets, the target and sender households buy bonds to bridge between the consumption of goods today and tomorrow, the sanction period, and the new steady state. If the correct prior financial relationships do not exist, financial sanctions are pure rhetoric.

The financial markets may realize asset price inflation through scarcity, coupled with goods market inflation. As credit is more difficult to find, interest rates rise. The goods and asset markets are tied to each other through the BOP. Theory suggests that negative overall welfare effects are potentially mitigated because of the exchange rate effects that flow from this connection reversing initial BOP imbalances. The following section describes the firms and introduces how trade sanctions enter this model due to lost firm revenue.

The Firm and Household Budgets

Firms sell their respective domestic product to both domestic and foreign citizens. The PTM idea begins with the firm, which prices differently to each market (Betts and Devereux 2000). In fact, the sender government is in effect asking its firms to reduce sales to the target under export sanctions. Wages are paid to households that supply hours of work, and the wage is assumed to be sticky or nominally rigid in the short run and flexible in the long run. The following equations describe the firm's profits assumed to transfer directly to households, which own the firms.

$$\pi_t = p_t(z_t) \cdot x_t(z_t) + E_t q_t^*(z_t) \cdot v_t(z_t) + E_t q_t^{**}(z_t) \cdot v_t^{**}(z_t) - W_t h_t \quad (5.6)$$

$$\begin{aligned} \pi_t^* = & \frac{q_t(z_t^*)}{E_t} \cdot x_t^*(z_t^*) + p_t^*(z_t^*) \cdot v_t^*(z_t^*) \\ & + q_t(z_t^*) \cdot x_t^{**}(z_t^*) - W_t^* h_t^* \end{aligned} \quad (5.7)$$

The first term in each equation is the revenue derived from selling the domestic product in its home market. The second and third terms are revenues from selling the domestic good in foreign markets. Foreign demand is represented by the symbol v . The final term is the cost of production, assuming the labor cost is the only expense.¹²

Sanctions affect these profit functions directly by reducing revenue to firms: export sanctions affect the sender's profits, while import sanctions affect the target economy's profits. By affecting these profits, sanctions affect household budgets that rely on the firm's dividend payment for income. Wages are set to maximize profit based on the hours hired by the firm.

The household budget constraint is a key equation in any economic model; in this model, the budget transmits the sanction shock to the

household. Equations 5.8 and 5.9 represent the sender's and target's consolidated budget constraints with the sanction parameters.

$$C_t = \Omega_t + B_{t-1} - \gamma B_t - G_t + \delta_{EX} + \delta_{FS} \quad (5.8)$$

$$C_t^* = \Omega_t^* + \frac{n}{1-n} \cdot \frac{B_t - \gamma B_{t-1}}{E_t} - G_t^* + \delta_{IM} + \delta_{FS} \quad (5.9)$$

Ω represents firm revenue. The sanction parameters show the reduction in firm revenue (δ_{EX} , δ_{IM}) and the credit market shock (δ_{FS}), where EX = export sanctions, IM = import sanctions, and FS = financial sanctions. Consumption and taxes are uses of funds, while firm profits and household wages plus government spending round out the funding sources. Notice borrowing exists in both equations, specific to the economy; the sender chooses the credit market shock that directly affects both economies. Economic coercion affects the optimal decision-making of sender and targets as follows:

$$\delta_{EX} = -m_{EX}[E_t q_t^*(z_t) \cdot v_t(z_t)] \quad (5.10)$$

$$\delta_{IM} = -n_{IM} \left[\frac{P_t^*(z_t^*)}{E_t} \cdot x_t^*(z_t^*) \right] \quad (5.11)$$

$$\delta_{FS} = - (m_{CR} \cdot B_t + m_{DB} \cdot (1+r)B_{t-1}) \quad (5.12)$$

where $\delta_{FS} = \delta_{CR} + \delta_{DB}$.

These shocks force deviations from the initial steady state equilibrium, where m_{EX} , m_{CR} , $m_{DB} \in (0, m-n)$ and $n_{IM} \in (0, n)$. The sanction's effects are discussed in more detail later as the steady state is derived explicitly. From there, this model concludes with solving for welfare deviations for each country in the long run, the post-embargo steady state.

Intuition: These budget constraints show that the target household's ability to consume is based on specific sources of income that sanctions aim to reduce. Sanctions are meant to affect these household budgets. The intertemporal structure of these models is necessary to understand how using economic statecraft can have effects on choices today and tomorrow through sanction effects on both goods and asset

markets. Financial sanctions are potentially the sender's most potent weapon, and may be one of the reasons why the historic trend in sanctions has shifted toward financial embargoes and fewer stand-alone trade sanctions. How the target can shift consumption between the two time periods is a function of how available worldwide credit is to the target's households. The mere threat of financial sanctions may persuade certain targets to acquiesce simply because they will lose relative stability in consumption and welfare. The consolidated budget constraint is where the labor, goods, and asset markets all merge.

The overall economic effects of sanctions are dependent on three major factors: (1) the connectivity between the sender and target (the size of parameter $m-n$); (2) the elasticity of substitution between the sender and target goods (θ); and (3) the way the sanctions either accommodate or mitigate each other through subsequent exchange rate fluctuations. The next section describes the sanction transmission process as the household optimizes its utility.

Steady State, Economic Statecraft, and Welfare Redistribution

The Household's Optimization Problem

Households consume, demand money, and supply work effort. Work effort is measured in work hours, where one hour is equal to one unit of output. The utility function of each household is the sum of present discounted value of utility derived from choosing consumption (C), nominal money demand (M), and work effort (h):

$$\max_{C_t, M_{t+j}, y_t} U_t = \beta^j \sum_{j=0}^{\infty} \left[\ln C_{t+j} + \frac{\gamma}{1 + \varepsilon} \left(\frac{M_{t+j}}{P_{t+j}} \right)^{1-\varepsilon} - \frac{\kappa}{2} h_{t+j}^2(z) \right] \quad (5.13)$$

As consumption grows, utility grows; we assume logarithmic preferences to simplify the analysis later.¹³ The more the money that is demanded, the more the utility derived by the household. This assumes the household gains satisfaction from holding money.¹⁴ Finally, the negative sign on work effort signifies that as the household increase its hours of work supplied to firms, its utility falls. Thus, for sanctions to be economically effective, these policies must affect the target's utility negatively in sum.¹⁵ NOEM models investigate macroeconomic shocks and their effects on the steady state, the long-run equilibrium of each nation. The adjustment from the

sanction period (the “short run”) to the long run depends on many factors.

For the sanction model, the sender does not want policy neutrality or a situation where the short-run effects are negated by long-run adjustments. How the original versus the post-policy steady states compare is the welfare shock from policy. In macroeconomic policy-making, policy neutrality is a good thing for a foreign country as a result of domestic monetary or fiscal shocks; neutrality is, in fact, the sought-after result to minimize differential effects on other countries. If policy neutrality from economic statecraft takes place, a lack of long-run potency builds negative reputation effects for the sender, as discussed in chapter three.

The steady state equations define the pre-sanction setting, the benchmark for comparison to the post-sanction economics of each country. The budget constraints, the labor supply conditions from the optimal solutions to the household’s problem, along with the demand for each good in terms of consumption and government spending, define the steady state. Once steady state solutions are found, we can then discuss sanctions and their predicted effects. The exchange rate fluctuations that result from sanctions may force welfare costs where the relative magnitude is based on country size, sanction mix, and sender economic hegemony over the target.

The next two issues are related and mathematically intensive, where the technical portion is relegated to chapter five A. First is solving for the sender’s first-order, optimal conditions to maximize household utility; for the sender, this is optimizing equation 5.13 subject to the budget constraint equation 5.8. The household chooses consumption (through optimal borrowing choices), money demand, and work effort to maximize utility over all time periods. Intertemporal consumption links the short run to the long run, and the choice of bond holdings by the sender economically links the belligerent nations. Equations 5.14–5.16 show the sender’s optimal, Euler conditions; the target’s equations are analogous and in chapter five A.

$$\text{Consumption:} \quad P_{t+1}C_{t+1} = \beta P_t C_t (1 + i_t) \quad (5.14)$$

$$\text{Money demand:} \quad \frac{M_t}{P_t} = \left[\frac{\gamma}{1 - \phi} C_t \right]^{\frac{1}{\varepsilon}} \quad (5.15)$$

$$\text{Work effort:} \quad h_t(z) = \frac{W_t}{\rho P_t C_t} \quad (5.16)$$

Simply put, these conditions equate the marginal benefit and marginal cost of choosing levels of consumption, money demand, and hours of work effort for the household. Sanctions aim to shock these choice variables through shocking the household budget. Equation 5.14 tells us that the present discounted value of consumption tomorrow is equal to consumption today, as we assume that the representative individual wants to smooth consumption over their lifetime. Equation 5.15 tells us that money demand today is equivalent to the nominal cost of goods given up by holding money rather than spending it. Equation 5.16 equates the amount of hours worked by the individuals to the value of goods lost if those hours were not worked.¹⁶

The Steady State with Sanctions

The steady state is when percentage changes in the endogenous variables are equal to zero simultaneously. The percentage changes are the time derivatives of the original variable's natural logarithms that linearized the original equations. This process and subsequent equilibrium provides a starting place for the embargo's policy shock. Equations 5A.29 through 5A.35 make up the initial steady state equations, including the potential sanction effects, defining the endogenous variables. Looking at the budget constraints in the steady state provides intuition as to how both trade and financial sanctions enter each economy in Equations 5A.33 and 5A.34.

Budget constraints: Sanctions reduce household budgets by reducing income derived from ownership of the firm during trade sanctions and reduced funds availability during financial sanctions.

In other versions of this model, two sources of ambiguity over the final model's effects are expectations and policy duration. One version of shocks is where policy is expected, both in timing and magnitude. There is another where the policy's timing or magnitude or both are not expected. Sanction policy is likely to be anticipated in the real world. Even U.S. decisions by its president to initiate sanctions take time to begin, and it is conceivable that most targets know the sanction will be the international reaction or have time to react to an embargo's announcement through the media. We focus here on just anticipated economic statecraft, where the target's uncertainty lies in magnitude and duration. In the general PTM version of Betts and Devereaux (2000), if policy is anticipated and the effects are temporary, then policy neutrality results from statecraft; neutrality comes from

adjustments to the anticipated policy, specifically through exchange rate adjustments in NOEM models.

In the sanctions model, policy is generally non-neutral as shown later. The effects on the steady state may be permanent regardless of the sanction's duration, as exchange rates may not react enough to nullify short-run shocks because of market frictions, thus welfare reductions result for both countries in the long run. The change in exchange rates and bond holdings help determine the welfare effects.

Intuition: Most papers and studies involving NOEM models claim there is little to no intuition in the steady state results' derivation. There is, in fact, some intuition here. This section, especially its mirror in chapter five A, outlines household decision-making, its links to the economy's general equilibrium, and the sender–target relationship when no shocks take place in the economy. The model assumes households decide on a level of consumption, which implies net savings through bond holdings or borrowing if net savings is negative, based on the household assessment of lifetime income. Money demand is driven by consumption in subsequent time periods, as is work effort. The major piece of intuition is when deriving the steady state is recognizing that the changes to consumption choice drive the resultant welfare effects.

There are three macroeconomic markets: goods, labor, and asset. Each of these markets is affected by sanctions, and their changes in combination affect welfare. This is the other piece of intuition: the steady state conditions define how each type of sanction enters each economy. If we assume the only shock in the current period is an economic sanction, then defining and solving for the steady state shows how an economist can watch economic coercion evolve from post-policy, macroeconomic effects on household utility. From the data presented earlier, we see that the marginal benefit of each choice variable equals its marginal cost when utility is optimized. The terms of trade, the ratio of the export to import prices, must be quickly mentioned here. The effect on the exchange rate helps determine the terms of trade shock.

$$\text{TOT}_{\text{Sender}} = \left(\frac{n}{(m - n)} \right)^{\frac{1}{1-\theta}} \frac{E_t q_t^*(z)}{q_t(z^*)} \quad (5.17)$$

When thinking about the damage caused by sanctions to the sender, it is convenient to think of relative export prices, as economic statecraft

may cause the sender to lose comparative advantage, reducing exports otherwise, and may lead to lower unemployment. Those are large intellectual jumps to make, but theory does suggest that a deterioration of the terms of trade may lead to more unemployment.¹⁷

The Welfare Effects of Economic Sanctions

In the NOEM literature, there is a split between models that have welfare effects and those that do not. Under certain conditions, welfare in each country remains intact after a policy shock, or is neutral, due exchange rate fluctuations that result naturally from market forces reacting to policy. In the PTM model, generally, welfare remains intact when new policy takes place because the exchange rate fluctuates to equate policy-driven changes in prices; in the short run, purchasing power parity (PPP) is violated and restored with a resultant exchange rate fluctuation.

The derivation of sanction effects on welfare in this model is shown in chapter five A. These derivations split the welfare effects into both long- and short-run effects. In the sanction version of this model, sanction effects may be neutral due to ambiguous effects on exchange rates. To understand the sanction effects, we must first look at the welfare components of this model and see how sanctions may change them. Both countries' utility functions are affected by sanctions, and the sanction effects are then affected by the parameter values. Tables 5.1, 5.2, and 5.3 show these effects from the model's derivation in chapter five A.

Table 5.1 provides a brief overview of changes in welfare under different sanction mixes, given the NOEM model of the target economy.

Table 5.1 Sanctions effects on utility functions

	EX	IM	CR	DB
ΔU_c	+	-	+	+
ΔU_h	+	+	-	-
ΔU	+	?	?	?
\hat{E}_t	+	-	0	0
$T\hat{O}T_{\text{Sender}}$	+	-	0	0
ΔU_c^*	+	-	-	-
ΔU_h^*	-	+	-	-
ΔU^*	?	?	-	-

Note: Assumes the following parameter values: $n = 0.3$, $\varepsilon = 4$, $\theta = 2$, $\beta = 0.95$.

Notice that full trade sanctions have ambiguous effects on target utility. This is expected, and is likely why trade sanctions have mixed results in practice. Basic trade theory suggests world welfare is unambiguously reduced by barriers such as quotas. While that still hold true here, the wealth and welfare redistributions may be ambiguous. Notice financial sanctions alone have unambiguous effects on the target and those effects are welfare-reducing changes; in practice, these measures have become the economic statecraft tool of choice.¹⁸

Welfare increases as a result of export sanctions through consumption, while falling under import sanctions. This makes intuitive sense, as lower domestic prices under export sanctions become larger consumer surplus in the long run, where welfare is redistributed toward the household; in the import sanction, which acts like a classic quota, the sender household loses because of relatively higher import prices.

The terms of trade and exchange rate effects follow this logic. The exchange rate rises from export sanctions, falls from import sanctions, and the terms of trade follow. The intuition here is simple. Export sanctions reduce the worldwide demand for the sender's goods by the sender's own hand, and thus reduce the sender's currency demand. This causes the target's currency to appreciate, the sender's to depreciate, and the exchange rate as defined overall to rise (sender per target currency). The terms of trade follow behind: as the sender restricts exports, the export price rises (not necessarily by the same magnitude as the domestic market's price because of the PTM assumptions) versus the import price. In this way, the sender pays for export sanctions through deteriorating terms of trade and currency values, while experiencing increased consumer surplus. The reduction in utility from reduced leisure is due to reduced budgets to spend on leisure activities, and may or may not be offset by the gains in consumption from the import sanctions, which have the opposite effects.

Financial sanctions are ambiguous in their effects on senders because policy restricts their own ability to borrow or lend as it restrains the target. This restriction affects consumption in a positive way, leisure in a negative way, leading in sum to ambiguity. For the target, the financial sanction is unambiguous, reducing welfare from both consumption and leisure. Fewer options and reduced income from savings is like a shift in the budget constraint toward the origin that reduces the target's ability to consume both goods and leisure. This lack of ambiguity makes financial sanctions theoretically attractive; we see in chapter six that the empirical results on financial sanction effects are less convincing.

One result that remains from the original PTM assumptions is that the financial sanctions have no effect on exchange rates and the terms of trade. Because financial sanctions are reductions in the current supply of financing, and must still follow the bond's zero-net supply condition in the long run, the exchange rate change simply restores interest rate parity. The terms of trade effects from financial sanctions follow suit. The magnitudes of any sanction mix are affected by the model's parameters changing, as table 5.1 reflects just one vector of parameter choices. Table 5.2 and 5.3 reflect sensitivities to changing parameters in both economies.

Tables 5.2 and 5.3 summarize changes in sanction magnitude as the parameters change. Notice in table 5.2 that as the sender's size increases ($n \uparrow$), the effects on all sanctions change but the exchange rate does not change. This may seem like a confounding result, as hegemony is logically a major factor in a sanction's effectiveness. One way to interpret this result is that the relatively larger the sender, the more exposure it has to the risks of voluntarily restricting economic flows with another economy. This is reflected in reverse for the target in table 5.3, outside of import sanctions.

An important result is the shock's magnitude being influenced by alternative market availability. At high values of θ (many substitutes), export sanctions strengthen while import sanctions weaken. The existence of willing and low-cost alternative markets is truly the bane of sanction policy for the sender, shown by the elasticity of substitution, θ . Alternative markets change the basic assumption upon which sanctions rely to provide credible threats to intransigent target nations: the more the substitutes available, the more the target can circumvent a sanction's effects.

The final parameter changes reflect that as the rate of discount and the elasticity of money demand rise, trade sanctions follow the elasticity

Table 5.2 Sanction effects sensitivity to parameter changes: sender

	EX	IM	CR	DB	\dot{E}_t
n	—	—	—	—	0
θ	+	—	+	+	—
β	+	—	+	+	—
$1/\varepsilon$	+	—	+	+	+

Note: These results reflect how the welfare shock is exacerbated (—), mitigated (+), or not affected by a change in the parameter, *ceteris paribus*.

Table 5.3 Sanction effects sensitivity to parameter changes: target

	EX	IM	CR	DB
n	+	-	+	+
θ	-	+	-	-
β	+	-	-	-
$1/\varepsilon$	+	-	-	-

Note: These results reflect how the welfare shock is exacerbated (-), mitigated (+), or not affected by a change in the parameter, ceteris paribus.

of substitution between the two bundles of goods. At high rates of discount and low elasticities of money demand, there will be an incentive for each economy to save and hold more money. If the sender restricts exports or financing to the target, there is a lower demand for the more valuable money and financing, increasing sender welfare to the target's detriment. Import sanctions have the opposite effects.

The NOEM model provides a literature-based framework for sanctions, and also delivers insight for the perceived economic ineffectiveness of sanctions. Theoretically, sanctions must force currency depreciation, inflation pressure, and real resource losses for the target. If it can achieve unambiguous currency depreciation, theory suggests that target entities suffer economically. The export and financial sanctions are similar in their effects on each economy.

Conclusions

The NOEM sanction model provides three basic conclusions about economic statecraft as macroeconomic policies. First, sanctions conflict with each other in certain cases. Using an export and import sanction simultaneously conflict concerning welfare changes, while financial sanctions used alone are unambiguous in their effects. Second, certain parameters are vital to sanction potency. The elasticity of substitution dictates how easily the target can shift purchases and sales under sanctions to other countries and away from the sender. However, the sender's hegemony over the target may play only a small role, which provides more theoretical foundation for pundits of multilateral or universal sanction efforts.

Third, sanctions have similar effects as other macroeconomic policies, and policy makers should expect the exchange rate to experience post-policy movements in response to new market forces. Table 5.1

summarizes the sanction effects on welfare, while tables 5.2 and 5.3 map sanction potency at different levels of the model's major parameters. Economic theory tells us that changing trade or financial flows causes exchange rate shocks that may balance these flows between two countries. However, policy makers continue to use sanction mixes in which ambiguity may exist. While the number of sanction tools is small, the sanction's magnitude may be varied. Moreover, if the sender economy lacks the hegemony to affect the target's trade and financial flows to credibly pursue the stated sanction goal, sanctions may be less potent as tools of statecraft.

Bridging between these economic effects and political goals of sanctions is the policy's ultimate task. If the stated goal is to economically punish the target sovereign and populace for deviant political actions, sanctions can easily achieve such a goal. Ultimately, nations must craft their diplomacy in such a way as to provide a credible threat of economic damage or sanctions are useless. For both policy makers and economists alike, consensus around what sanctions are meant to do is a large step forward. The challenge all sanction studies face is to describe how much shock is enough to reverse a target's deviant action.

Further research should be done on how targets can use domestic monetary and fiscal policies as reactions to reduce sanction problems. The fact that these policies can actually help reduce sanction effects could be a major step forward in sanction research. Since financial sanctions have unambiguous results on target welfare while using every tool in the sender's arsenal has ambiguous effects, the sanction mix may attract third markets because of profit opportunities that senders hand out to noncooperative nations like candy to children. In chapter six, we examine econometric models of these relationships and those implied by humanitarian and political effects of these economic shocks.

Chapter 5A

Mathematical Derivations of NOEM Sanctions Model

This chapter focuses on the equations and derivations discussed in chapter five. New Open Economy Macro (NOEM) models are mathematically intensive and tedious to derive. However, in taking the steps to solve this model, the way sanctions enter and affect the economy is illuminated. Empirical implications of this model are discussed. Any errors or omissions that lead to confusion are my own doing and do not reflect any other author's work. Table 5A.1 provides a symbol list for the equations in chapters five and five A.

The Basic Set-Up

Most of this chapter is applied mathematics, delivering insight as to how macroeconomists can inform policy makers about economic statecraft's effects. This model, as stated in chapter five, provides economists with a way of tracking economic coercion's welfare effects on both the target *and* sender economies.¹ The target country is seen as the foreign country, the sender is the domestic country, and the rest of the world (ROW) is the foreign sector beyond the target when economic statecraft is used. World production is of two goods, domestic and foreign in terms of the sender, delineated by z and z^* . We can think of z and z^* as baskets of goods consumed in the sender and target economies; thus each country produces a unique basket of goods. This dichotomy allows for exports and imports to be different goods in each country. In the pricing-to-market (PTM) version of this model, each country sets its own price because monopolistic competition exists for each country over their respective good. The ROW acts as the Walrasian clearinghouse for consumption and production, taking prices as given by the sender and target.

Table 5A.1 Symbol list for sanctions NOEM model

p	Price of sender good in sender economy
q	Price of target good in sender economy
q^*	Foreign price of target good
p^*	Foreign price of sender good
E	The exchange rate
z/z^*	Sender/target good
P/P^*	The sender's/target's price index
U/U^*	The sender's/target's utility
C/C^*	Sender/target consumption
M/M^*	Sender/target money supply
γ	Multiplier of money demand in utility
$1/\varepsilon$	Consumption elasticity of money demand
θ	Elasticity of substitution between the sender and target goods
$m-n$	Proportion of target of world economy
n	Proportion of ROW in world economy
ρ	Work effort multiplier
β	Present value discount factor
y/y^*	Aggregate demand
C^W	World consumption
G^W	World government spending
G/G^*	Sender/target government spending
W/W^*	Sender/target wages
π/π^*	Sender/target profits
R/R^*	Nominal interest rates in sender/target economy
$B/B^*/B^{**}$	Bonds held by the sender/target/ROW
x/x^*	Sender/target demand for sender good, z
v/v^*	Sender/target demand for target good, z^*
h/h^*	Hours worked by sender/target household = y/y^*
δ_{EX}	Export sanction parameter
δ_{IM}	Import sanction parameter
δ_{FS}	Financial sanction parameter
m_{EX}	The percentage of sender trade involved in export sanctions
n_{IM}	The percentage of sender trade involved in import sanctions
m_{CR}	The percentage of sender financial flows involved in credit sanctions
m_{DB}	The percentage of target income involved in debit sanctions

The Goods Market

In equilibrium, consumption and government spending in each country are the aggregate expenditures. We take government spending in each country to be exogenously determined. Consumption is a function of prices, where each good's price is preset for each country-specific good in terms of their currency. For example, good z is purchased in the sender economy at price $p(z)$. Good z is sold to the target economy and ROW at target currency price $q^*(z)$. The same

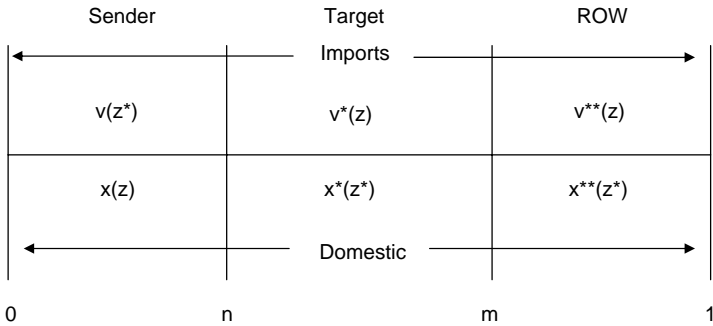


Figure 5A.1 Demands for z and z^* in each nation.

holds true for the prices of good z^* : good z^* is sold to the sender economy and ROW at $q(z^*)$ in terms of the sender's currency, and purchased domestically at $p^*(z^*)$ in the target. Figure 5A.1 illustrates the world demand for each good, each country's domestic and import consumption.

The sender restricts only a portion of its foreign households and suppliers. The world demand for sender output is thus in three parts, based on domestic and foreign consumption, where n represent the sender's size in terms of the world economy; $m - n$ represents the target's relative size. The ROW is the remainder $(1 - m)$.

Goods prices are aggregated in a constant elasticity of substitution (CES) form, where the elasticity of substitution between z and z^* is equal to $\theta > 1$. The price index illustrates the CES functional form that follows:

$$P_t = \left[\int_0^n p_t(z)^{1-\theta} dz + \int_n^m (q_t(z^*))^{1-\theta} dz + \int_m^1 (q_t(z^*))^{1-\theta} dz \right]^{\frac{1}{1-\theta}} \quad (5A.1)$$

$$P_t^* = \left[\int_0^n (q_t^*(z))^{1-\theta} dz + \int_n^m (p_t^*(z^*))^{1-\theta} dz + \int_m^1 (q_t^*(z))^{1-\theta} dz \right]^{\frac{1}{1-\theta}} \quad (5A.2)$$

This equation in its natural logarithm appears as equations 5.1 and 5.2 in chapter five. Since price is a CES function, consumption is also

a CES form. The sender and target consumption levels as functions of price are defined as follows:

$$c(z) = \left[\frac{p(z)}{P} \right]^{-\theta} C; \quad c(z^*) = \left[\frac{q(z^*)}{P} \right]^{-\theta} C; \quad c^*(z) = \left[\frac{q^*(z)}{P^*} \right]^{-\theta} C^*;$$

$$c^*(z^*) = \left[\frac{p^*(z^*)}{P^*} \right]^{-\theta} C^*$$

We assume aggregate demand equals aggregate supply for each good. Total production of each good is equal to $y(z)$ and $y^*(z^*)$, respectively. The demands for each good are symbolized in figure 5A.1. They are as follows for the sender and target, respectively:

$$x(z) = n \cdot y(z); \quad v^*(z) = (m-n) \cdot y(z); \quad \text{and} \quad v^{**}(z) = (1-m) \cdot y(z).$$

$$v(z^*) = n \cdot y^*(z^*); \quad x^*(z^*) = (m-n) \cdot y^*(z^*); \quad \text{and} \quad x^{**}(z^*)$$

$$= (1-m) \cdot y^*(z^*).$$

The PTM model assumes that prices are set in advance of policy. The sanction's imposition, as we see later, initially affects firm revenues and household budgets. The next section describes the asset market that links the countries today and tomorrow through international borrowing and lending.

The Asset Market

The asset market defines how bonds are allocated among the countries, where B_t is the value of assets purchased by the economy in time t , a measure of net savings.

$$nB_t + (m-n)B_t^* + (1-m)B_t^{**} = 0 \quad (5A.3)$$

This sum is equal to zero because it represents a global market for assets where there is a zero-net supply: if $B_t > 0$, the sender is lending to foreigners in net. The sender currency price of these one-period bonds is normalized to $\frac{1}{1+i} = \phi$, where i is the sender's nominal interest rate.

An interest parity condition links the domestic and foreign interest rates. Assuming uncovered interest parity, the sender's nominal interest rate is equal to the foreign nominal rate and the expected appreciation in nominal exchange rates, where the nominal interest rate is determined by the Fisher relationship. Both are described in equations 5.3 and 5.4

in chapter five. The exchange rate in this model is defined as the number of sender currency units per target currency to match other NOEM extensions.² The bond's availability allows households to borrow or lend to allocate consumption between the short and long runs in order to maximize their lifetime utility. The next section details the firm and sets up the budget for the household's optimization problem.

The Firms

The firms earn profits from the sale of goods they produced to all countries, less wages paid to domestic households. Since households are the firms' owners, profits are assumed to be distributed to the households. The sender and target profit functions are:

$$\begin{aligned} \pi_t = & p_t(z_t) \cdot x_t(z_t) + E_t q_t^*(z_t) \cdot v_t(z_t) \\ & + E_t q_t^*(z_t) \cdot v_t^{**}(z_t) - W_t h_t \end{aligned} \quad (5A.4)$$

$$\begin{aligned} \pi_t^* = & \frac{q_t(z_t^*)}{E_t} \cdot x_t^*(z_t^*) + p_t^*(z_t^*) \cdot v_t^*(z_t^*) \\ & + q_t(z_t^*) \cdot x_t^{**}(z_t^*) - W_t^* h_t^* \end{aligned} \quad (5A.5)$$

The firm uses one hour of labor to produce one good. Firms employ only labor in each country³: $y(z) = h(z)$ and $y^*(z^*) = h^*(z^*)$. Firm also sets prices such that price is equal to marginal cost to maximize profit:

$$p_t(z) = \frac{\theta}{\theta - 1} W_t \quad (5A.6)$$

This is true for the target's prices also:

$$p_t^*(z^*) = \frac{\theta}{\theta - 1} W_t^* \quad (5A.7)$$

where price $p_t(z) = E_t q_t^*(z_t)$ and $p_t^*(z^*) = \frac{q_t(z_t^*)}{E_t}$ in the sender economy in terms of target currency.

Aggregate demand is a combination of household and government spending of goods z and z^* from total world production. Aggregate demand equals aggregate supply (aggregate work effort) in equilibrium, where aggregate demand is simply a country-specific proportion of world consumption and government spending.

$$y(z) = x(z) + v(z) + v^{**}(z) \quad (5A.8)$$

$$y^*(z^*) = x^*(z^*) + v^*(z^*) + x^{**}(z^*) \quad (5A.9)$$

The sender's good, z , is purchased by domestic consumption, x , and exports, v and v^{**} .

$$x_t = \left[\frac{P_t(z)}{P_t} \right]^{-\theta} n C_t \quad (5A.10)$$

$$v_t = \left[\frac{E_t q_t^*(z^*)}{P_t} \right]^{-\theta} (m - n) C_t \quad (5A.11)$$

$$v_t^{**} = \left[\frac{E_t q_t^*(z^*)}{P_t} \right]^{-\theta} (1 - m) C_t \quad (5A.12)$$

The target economy has similar demand functions for good z^* , where domestic consumption is v^* , and target exports are x^* and x^{**} :

$$x_t^* = \left[\frac{q_t^*(z^*)}{E_t P_t^*} \right]^{-\theta} n C_t^* \quad (5A.13)$$

$$v_t^* = \left[\frac{P^*(z^*)}{P_t^*} \right]^{-\theta} (m - n) C_t^* \quad (5A.14)$$

$$x_t^{**} = \left[\frac{q_t^*(z^*)}{E_t P_t^*} \right]^{-\theta} (1 - m) C_t^* \quad (5A.15)$$

The ROW takes form if $m - n > 0$; when $m = 0$, there are no sanctions. While one-period bonds are available, the government finances itself through taxes and seigniorage, such that the fiscal budget constraint is as follows:

$$G_t = T_t + \frac{M_t - M_{t-1}}{P_t} \quad (5A.16)$$

Trade sanctions affect the firm's revenue in each country: export sanctions reduce sender revenue and import sanctions reduce target revenue. Further, financial sanctions affect wealth redistribution from previous financial flows and credit availability in these budgets. The representative consumer faces the following, initial budget constraint

in terms of real consumption, repeated here from chapter five for convenience:

$$C_t = \Omega_t + B_{t-1} - \phi B_t - G_t + \delta_{EX} + \delta_{FS} \quad (5A.17)$$

$$C_t^* = \Omega_t^* + \frac{n}{1-n} \cdot \frac{\phi B_t - B_{t-1}}{E_t} - G_t^* + \delta_{IM} + \delta_{FS} \quad (5A.18)$$

where $\Omega = p_t(z_t) \cdot x_t(z_t) + E_t q_t^*(z_t) \cdot v_t(z_t) + E_t q_t^{**}(z_t) \cdot v_t(z_t)$, and

$$\Omega^* = \frac{q_t(z_t^*)}{E_t} \cdot x_t^*(z_t^*) + p_t^*(z_t^*) \cdot v_t^*(z_t^*) + q_t^*(z_t^*) \cdot x_t^{**}(z_t^*).$$

The sender's net sources of income to use in consumption include the revenue derived by the firm, Ω current wealth augmentation, $M_{t-1} + B_{t-1}$; less wealth taken to period $t+1 = M_t + \phi B_t$; and current taxes paid, T_t . The same sources exist for the target. Government spending funds itself from the sum of taxes and the net money supply change through seigniorage, and that bonds are in net zero supply.

The Household's Optimization Problem

The utility function is a linearly separable, discrete time model, where the choice variables are consumption (bonds), nominal money demand, and work effort. While most interpretations of the NOEM model use an unconstrained version of this optimization problem, it is actually more convenient here to use a constrained version because sanctions act on the budget constraints first and foremost. The individual's lifetime utility is, following both Fender and Yip (2000) and Mark (2001),

$$U_t = \sum_{j=0}^{\infty} \beta^j \left[\ln C_{t+j} + \frac{\gamma}{1-\varepsilon} \left(\frac{M_{t+j}}{P_{t+j}} \right)^{1-\varepsilon} - \frac{\rho}{2} h_{t+j}^2(z) \right] \quad (5A.19)$$

$$U_t^* = \sum_{j=0}^{\infty} \beta^j \left[\ln C_{t+j}^* + \frac{\gamma}{1-\varepsilon} \left(\frac{M_{t+j}^*}{P_{t+j}^*} \right)^{1-\varepsilon} - \frac{\rho}{2} (h_{t+j}^*(z))^2 \right] \quad (5A.20)$$

where $\frac{1}{\varepsilon}$ is the consumption elasticity of money demand, and γ, ρ are parameters of the marginal utility derived from money holdings and work effort, respectively.

Each household maximizes their lifetime utility, subject to constraints 5A.17 and 5A.18, respectively. The next section explains the model's optimal conditions and their derivation.

The Model's Euler Equations

The following Euler conditions, the equality between marginal benefit and marginal cost from the earlier-mentioned constrained optimization problem, show the tradeoffs households face in choosing the optimal amount of bonds, money demand, and work effort in hours.⁴ These are repeated from chapter five here because of their importance.

$$\text{Consumption:} \quad \phi P_{t+1} C_{t+1} = \beta P_t C_t \quad (5A.21)$$

$$\text{Money demand:} \quad \frac{M_t}{P_t} = \left[\frac{\gamma}{1 - \phi} C_t \right]^{\frac{1}{\varepsilon}} \quad (5A.22)$$

$$\text{Work effort:} \quad h_t(z) = \frac{W_t}{\rho P_t C_t} \quad (5A.23)$$

The target's equations are analogous, where ϕ is multiplied by the ratio of the exchange rate tomorrow, E_{t+1} , and the exchange rate today, E_t , and put asterisks on all the variables, but not the parameters:

$$\text{Consumption:} \quad \phi \frac{E_{t+1}}{E_t} P_{t+1}^* C_{t+1}^* = \beta P_t^* C_t^* \quad (5A.24)$$

$$\text{Money demand:} \quad \frac{M_t^*}{P_t^*} = \left[\frac{\gamma}{1 - \phi \left(\frac{E_{t+1}}{E_t} \right)} C_t^* \right]^{\frac{1}{\varepsilon}} \quad (5A.25)$$

$$\text{Work effort:} \quad h_t^*(z) = \frac{W_t^*}{\rho P_t^* C_t^*} \quad (5A.26)$$

These conditions are derived by taking the partial derivative with respect to each choice variable in the utility function, and equating the result with the respective partial derivative from the consolidated budget constraint multiplied by the Lagrange shadow price, λ_t , for each time period. In the case of consumption, the time periods are

linked by bonds (net savings), thus the household is implicitly choosing bonds to distribute consumption between the two periods. Equation 5A.24 is the present value of consumption tomorrow equal to the present value of consumption today. Using $-\frac{\phi}{P_t C_t} = \lambda_t$ and $\frac{\beta}{P_{t+1} C_{t+1}} = \lambda_{t+1}$, replace the Lagrange multiplier in the first-order conditions for money demand and work effort to get the results given earlier. The target's conditions are found in similar ways. Interest rate parity allows us to eliminate the target's interest rate from the analysis and focus on the sender's nominal interest rate and the expected change in the exchange rate. Any fluctuation in the exchange rate adjusts the local price of imported goods.⁵ The interactions between the sender and target, again assuming the ROW follows Walras' Law, determine general equilibrium in this model. The starting place of measuring changing welfare, and its resting place after the shock has played itself out, is called the steady state.

The Steady State Derivations with Sanctions

Trade sanctions enter the model here, as a shock to the availability of good z in the target economy (export sanctions) and good z^* in the sender economy (import sanctions). We assume the sender makes policy choices exogenous of price. Credit and debit sanctions are shocks to the wealth derived from credit availability through bonds (credit sanctions) and the income or costs from current bond holdings (debit sanctions); in sum these are the financial sanctions.

The steady state provides two key insights concerning the conclusions of this model. First, it defines the "0-steady state" equilibrium. This starting place helps define a long-run benchmark for responses to shocks, the economic adjustment toward a new steady state after a one-period shock. To solve for the steady state, the convention is to take the natural logarithm of the variables in key equations, then take their derivative, essentially log-linearizing around the optimal conditions. This time derivative is now the percentage change in the variable, as a function of other percentage changes. NOEM models generally begin these derivations with the aggregate price level in the steady state, from equations 5A.2 and 5A.3 given earlier:

$$\hat{P}_t = n\hat{p}_t + (m - n)\hat{q}_t + (1 - m)\hat{q}_t^{**}(z^*) + (1 - n)\hat{E} \quad (5A.27)$$

$$\hat{P}_t^* = n(\hat{q}_t - \hat{E}_t) + (m - n)\hat{p}_t^*(z^*) + (1 - m)\hat{p}_t^{**}(z^*) \quad (5A.28)$$

Variables with a “ $\hat{\cdot}$ ” on them represent the time derivative of the original variable’s natural logarithm, the percentage change in the variable. The percentage change in the aggregate price level is the linear combination of percentage changes in the prices of individual goods z and z^* . Notice that the exchange rate change is also a part of these equations.

The following seven equations are made up the endogenous variables in the steady state, our variables of interest. Assuming $h(z) = y(z)$ in equilibrium:

Labor Supply:

$$\hat{y}_t(z) = \hat{p}_t(z) - \hat{P}_t - \hat{C}_t \quad (5A.29)$$

$$\hat{y}_t^*(z) = \hat{p}_t^*(z) - \hat{P}_t^* - \hat{C}_t^* \quad (5A.30)$$

Aggregate Demand:

$$\hat{y}_t(z) = -\theta(\hat{p}_t(z) - \hat{P}_t) - \hat{C}_t^w \quad (5A.31)$$

$$\hat{y}_t^*(z) = -\theta(\hat{p}_t^*(z) - \hat{P}_t^*) - \hat{C}_t^w \quad (5A.32)$$

Budget Constraints:

$$\hat{C}_t = \hat{p}_t(z) - \hat{P}_t + \hat{y}_t(z) - \beta\hat{b} + \hat{\delta}_{FS} + \hat{\delta}_{EX} \quad (5A.33)$$

$$\hat{C}_t^* = \hat{p}_t^*(z) - \hat{P}_t^* + \hat{y}_t^*(z) + \frac{n}{1-n}(\beta\hat{b} + \hat{\delta}_{FS}) + \hat{\delta}_{IM} \quad (5A.34)$$

$$\begin{aligned} \hat{C}_t^w = n [& \hat{p}_t(z) - \hat{P}_t + \hat{y}_t(z)] + (1-n) \\ & [\hat{p}_t^*(z^*) - \hat{P}_t^* + \hat{y}_t^*(z^*)] \end{aligned} \quad (5A.35)$$

These seven equations define the sender’s and target’s steady state, where Walras’ Law determines the ROW’s steady state. The labor supply equations flow from the Euler labor supply rules given earlier, equations 5A.23 and 5A.26. The aggregate demand equations flow from the world demand for the sender and target good, respectively. The budget constraints are derived from equations 5A.17 and 5A.18; the percentage change in world consumption, \hat{C}_t^w , is derived from the sum of the proportional changes in consumption for the world economies. Sanctions enter these steady state equations through the linearized budget constraints, equations 5A.33 and 5A.34.

The solutions of this seven-equation system provide the steady-state equilibrium of the seven endogenous variables: $\hat{y}(z)$, $\hat{y}^*(z)$, $\hat{p}(z) - \hat{P}$, $\hat{p}^*(z) - \hat{P}$, \hat{C} , \hat{C}^* , and \hat{C}^w , with the potential sanction shocks.

Steady State Solutions

The following equations provide solutions to the endogenous variables given earlier, and begin our ability to analyze the welfare effects of sanctions on both countries. The time subscripts are dropped as these describe a snapshot of each macroeconomy after a policy shock.⁶ Note that the percentage change in bonds held is a key variable remaining to be solved. Its solution in the steady state determines the equilibrium values of the other endogenous variables. This underscores the consumption-savings decision's importance in maximizing utility, given the parameter values of the utility functions and how these variables relate to one another.

$$\hat{y}(z) = \frac{1}{2}[\beta \hat{b} - \hat{\delta}_{FS} - \hat{\delta}_{EX}] \quad (5A.36)$$

$$\hat{y}^*(z) = -\frac{1}{2} \left[\frac{n}{1-n} (\beta \hat{b} + \hat{\delta}_{FS}) + \hat{\delta}_{IM} \right] \quad (5A.37)$$

$$\begin{aligned} \hat{p}(z) - \hat{P} = & -\frac{1}{2\theta} \left[\beta \hat{b} + (1-n)(\hat{\delta}_{IM} - \hat{\delta}_{EX}) \right. \\ & \left. + \hat{\delta}_{FS} (2n-1) \right] \end{aligned} \quad (5A.38)$$

$$\begin{aligned} \hat{p}^*(z) - \hat{P}^* = & \frac{n}{2\theta(1-n)} \left[\beta \hat{b} + (\hat{\delta}_{IM} - \hat{\delta}_{EX})(1-n) \right. \\ & \left. + \hat{\delta}_{FS} (2n-1) \right] \end{aligned} \quad (5A.39)$$

$$\begin{aligned} \hat{C} = & -\frac{1}{2\theta} \left[(1+\theta)\beta \hat{b} - (1-n+\theta)\hat{\delta}_{EX} \right. \\ & \left. + (1-n)\hat{\delta}_{IM} + \hat{\delta}_{FS} (2n-1-\theta) \right] \end{aligned} \quad (5A.40)$$

$$\hat{C}^* = \frac{(1 + \theta)}{2\theta(1 - n)} \left[\beta \hat{b} + (\hat{\delta}_{IM} - \hat{\delta}_{EX})(1 - n) + \hat{\delta}_{FS}(2n - 1) \right] \quad (5A.41)$$

$$\hat{C}^w = -\frac{1}{2} \left[n(\hat{\delta}_{EX} + \hat{\delta}_{FS}) + (1 - n)\hat{\delta}_{IM} \right] \quad (5A.42)$$

To begin the welfare shocks analysis, subtract 5A.41 from 5A.40 to solve for the steady state change in relative consumption as a function of the percentage change in sender bond holdings and sanctions:

$$\hat{C} - \hat{C}^* = -\frac{(1 + \theta)}{2\theta \cdot (1 - n)} \left[\beta \hat{b} + \hat{\delta}_{FS}(2n - 1) + (\hat{\delta}_{EX} - \hat{\delta}_{IM})(1 - n) \right] \quad (5A.43)$$

We call $\frac{(1 + \theta)}{2\theta \cdot (1 - n)} \left[\hat{\delta}_{FS}(2n - 1) + (\hat{\delta}_{EX} - \hat{\delta}_{IM})(1 - n) \right] = \Delta_1^s$ from here. The steady state change to the exchange rate is an implication of purchasing power parity (PPP):

$$\hat{P} - \hat{P}^* = \hat{E} = \hat{M} - \hat{M}^* - \frac{1}{\varepsilon}(\hat{C} - \hat{C}^*) \quad (5A.44)$$

From equations 5A.43 and 5A.44, the steady state change in the exchange rate is a function of sanctions. Much like other macroeconomic policies, sanctions force a deviation from PPP in the short run (t), to be restored somewhat or completely in the long run ($t + 1$). Assume prices are set in time t due to the PTM assumptions. This assumption reflects the pricing decision's timing, as prices are initially known when policy is made. The money demand functions are:

$$\hat{M} = \frac{1}{\varepsilon} \hat{C}_t + \frac{\beta}{\varepsilon(1 - \beta)} \hat{\phi}_t \quad (5A.45)$$

$$\hat{M}^* = \frac{1}{\varepsilon} \hat{C}_t^* + \frac{\beta}{\varepsilon(1 - \beta)} [\hat{\phi}_t + \hat{E} - \hat{E}_t] \quad (5A.46)$$

Subtracting 5A.46 from 5A.45 isolates the differential between the steady state changes to the exchange rate and the short-run change.

This is where the potential overshooting result of Dornbusch (1976) takes place in similar NOEM models (Mark 2001, 234).

$$\hat{M}_t - \hat{M}_t^* = \frac{1}{\varepsilon} (\hat{C}_t - \hat{C}_t^*) - \frac{\beta}{\varepsilon(1-\beta)} (\hat{E}_t - \hat{E}_t) \quad (5A.47)$$

Setting equation 5A.47 equal to equation 5A.43, and assuming the money supply remains constant (\hat{M}_t and \hat{M}_t^* and both equal zero), provides

$$\begin{aligned} \frac{\beta}{\varepsilon(1-\beta)} (\hat{E}_t - \hat{E}_t) &= \frac{1}{\varepsilon} (\hat{C}_t - \hat{C}_t^*) \Rightarrow \frac{1}{\varepsilon} (\hat{C}_t - \hat{C}_t^*) \\ &= - \left[\frac{\beta}{\varepsilon^2(1-\beta)} (\hat{C}_t - \hat{C}_t^*) + \frac{\beta}{\varepsilon(1-\beta)} \hat{E}_t \right] \end{aligned} \quad (5A.48)$$

which uses the assumption that $\hat{C}_t - \hat{C}_t^* = \hat{C}_t - \hat{C}_t^* = \hat{E}_t$ in the steady state due to the PPP restoration from the short-run deviation. Plug 5A.48 into 5A.44 to get:

$$\hat{E}_t = \frac{\varepsilon(1-\beta) + \beta}{\beta(1+\varepsilon)} (\hat{C}_t - \hat{C}_t^*) \quad (5A.49)$$

The PPP restoration is important here, and we see soon that equation 5A.49 is also important for solving this model: equating consumption changes in each economy over the two periods to the resultant change in the exchange rate. In short, equation 5A.49 tells us that as consumption is affected by sanctions in the short-run, so goes the exchange rate shock.

Using the consolidated budgets in percentage change form, equations 5A.40 and 5A.41, and assuming that the percentage change in the demands for specific goods are equal to the percentage change in overall consumption for that economy (where $\hat{x}_t = \hat{v}_t^* = \hat{C}_t$), with government spending in each country constant ($\hat{g}, \hat{g}^* = 0$):

$$\hat{C}_t = n\hat{C}_t + (1-n)(\hat{C}_t^* + \hat{E}_t) + \hat{\delta}_{EX} - \beta\hat{b} + \hat{\delta}_{FS} \quad (5A.50)$$

$$\hat{C}_t^* = n(\hat{C}_t - \hat{E}_t) + (1-n)(\hat{C}_t^*) + \hat{\delta}_{IM} + \frac{n}{1-n} (\beta\hat{b} + \hat{\delta}_{FS}) \quad (5A.51)$$

Subtracting these equations from each other gives the difference in the relative percentage changes in short-run consumption as a function of sanctions and the short-run change in the exchange rate.

Solving for this change less the exchange rate is a function of the percentage change in the current account (net savings) between the sender and target (\hat{b}) and sanctions:

$$\hat{C}_t - \hat{C}_t^* - \hat{E}_t = -\frac{\beta \hat{b}}{(1-n)} + \hat{\delta}_{FS} \left(\frac{1-2n}{1-n} \right) + \hat{\delta}_{EX} - \hat{\delta}_{IM} \quad (5A.52)$$

Equate this result to 5A.43 and solve for the percentage change in bonds held by the sender as a function of sanctions:

$$\hat{b} = -\frac{2\theta(1-n)}{(1+\theta)\beta} [\hat{C}_t - \hat{C}_t^* - \hat{E}_t + \Delta_1^S] \quad (5A.53)$$

Plugging equation 5A.53 into 5A.52, we produce

$$\begin{aligned} \hat{C}_t - \hat{C}_t^* = \hat{E}_t + \frac{2\theta}{1-\theta} \cdot \Delta_1^S + \frac{1+\theta}{1-\theta} \\ \left[\hat{\delta}_{FS} \left(\frac{1-2n}{1-n} \right) + \hat{\delta}_{EX} - \hat{\delta}_{IM} \right] \end{aligned} \quad (5A.54)$$

Plugging this result into 5A.49 and solving for \hat{E}_t leads to:

$$\begin{aligned} \hat{E}_t = \frac{\beta(1+\varepsilon)}{\varepsilon(2\beta-1)} \cdot \left[\frac{2\theta}{1-\theta} \cdot \Delta_1^S + \frac{1+\theta}{1-\theta} \left[\hat{\delta}_{FS} \left(\frac{1-2n}{1-n} \right) \right. \right. \\ \left. \left. + \hat{\delta}_{EX} - \hat{\delta}_{IM} \right] \right] \end{aligned} \quad (5A.55)$$

Using 5A.55 allows us to solve for \hat{b} as a function of sanctions:

$$\begin{aligned} \hat{b} = -\frac{2\theta(1-n)}{(1-\theta)\beta} \cdot \Delta_1^S + \frac{1+\theta}{1-\theta} \left[\hat{\delta}_{FS} \left(\frac{1-2n}{1-n} \right) \right. \\ \left. + \hat{\delta}_{EX} - \hat{\delta}_{IM} \right]. \end{aligned} \quad (5A.56)$$

where again $\frac{(1+\theta)}{2\theta \cdot (1-n)} [\hat{\delta}_{FS}(2n-1) + (\hat{\delta}_{EX} - \hat{\delta}_{IM})(1-n)] = \Delta_1^S$.

In the Betts and Devereux (2000) pricing-to-market model, policy is considered neutral. Notice if there are no sanctions, the percentage

change in bond holdings in the steady state is zero; neutrality results as the households have no incentive to change consumption from its current steady state level. However, with sanctions, the percentage change in bond holdings is only zero under specific conditions, not in general, and thus there are welfare effects. This result suggests that economic coercion, from the slightest restriction to a complete embargo, has non-neutral effects. The welfare costs to both the sender and target are summarized here.

Sanction Effects on the Open Macroeconomy

In the NOEM literature, the welfare effects of changes in real balances are seen as negligible versus changes in consumption and work effort. Because we assume monetary policy is not in play here, we assume the same concerning the welfare effects of sanctions on real balances.⁷ We assume there are three periods: $t-1$ is the steady state, t is the shock period, and $t+1$ is the long-run. The only role of $t-1$ is to define when previously held bonds were purchased or issued to augment wealth (create interest and principal payments) in time t for initial net savers.

Changes in welfare are symbolized by ΔU : $\Delta U = \Delta U_C + \Delta U_h$. For consumption, the percentage changes have already been defined as \hat{C}_t and \hat{C}_t^* . For the sender, the change over time of consumption is $\hat{C}_t + \frac{\beta}{1-\beta} \hat{C}$, where \hat{C} is the change in consumption after the shock and into the long run = \hat{C}_{t+1} . The ratio of $\frac{\beta}{1-\beta}$ reflects the present value of the perpetual change in consumption in the long-run.

$$\Delta U_C = \hat{C}_t + \frac{\beta}{1-\beta} \hat{C} \quad (5A.57)$$

$$\Delta U_C^* = \hat{C}_t^* + \frac{\beta}{1-\beta} \hat{C}^* \quad (5A.58)$$

For work effort, the calculation is a bit more complex. First, because we want to focus on the change in work effort squared, which is what resides in the utility function. To do so, we need to do a linear approximation of work effort around the steady state = h_0 . Following Mark (2001), this approximation around $t = 0$ is $h_t^2 = h_0^2 + 2h_0(h_t - h_0)$, which implies that $h_t^2 - h_0^2 = 2h_0(h_t - h_0)$. Multiplying the right-hand

side of this equation by h_0/h_0 , we get the following for the sender:

$$\Delta U_h = -\frac{1}{2}\rho[2h_0^2\hat{h}_t + \frac{\beta}{1-\beta}h_0^2\hat{h}] \quad (5A.59)$$

Because work effort is assumed to be one-for-one with production, we can use the steady state equilibrium to replace h_0^2 in 5A.59: $h_0 = C_0 = C_0^w = \left(\frac{\theta-1}{\rho\theta}\right)^{1/2}$. Substituting this expression into 5A.59 and its analog from the target economy, we get the following welfare shocks from changes in work effort.

$$\Delta U_h = -\left[\left(\frac{\theta-1}{\theta}\right)\hat{h}_t + \frac{\beta}{1-\beta}\left(\frac{\theta-1}{\theta}\right)\hat{h}\right] \quad (5A.60)$$

$$\Delta U_h^* = -\left[\left(\frac{\theta-1}{\theta}\right)\hat{h}_t^* + \frac{\beta}{1-\beta}\left(\frac{\theta-1}{\theta}\right)\hat{h}^*\right] \quad (5A.61)$$

Focusing on the sender, and using the model's symmetry to ultimately provide similar solutions for the target, we can now replace the unknowns given earlier with their solutions in terms of the exogenous variables and the sanction shocks. Starting with the long-run values, \hat{C} and \hat{h} from Equations (5A.43) and (5A.39), where $\hat{h} = \hat{y}$ in the aggregate. Substitute the value offrom equation (5A.56) in each to get the long-run change in consumption and work effort:

Long-Run Changes

$$\hat{C} = -\frac{1}{2\theta}[\psi_{11}\delta_{FS} + \psi_{12}\hat{\delta}_{EX} - \psi_{13}\hat{\delta}_{IM}] \quad (5A.62)$$

where $\psi_{11} = (1+\theta)\beta u_{11} + (2n-1-\theta)$; $\psi_{12} = (1+\theta)\beta u_{12} - (1-n-\theta)$; $\psi_{13} = (1+\theta)\beta u_{12} - (1-n)$

$$\hat{h} = \frac{1}{2}[(\beta u_{11} - 1)\delta_{FS} + (\beta u_{12} - 1)\hat{\delta}_{EX} - u_{12}\hat{\delta}_{IM}] \quad (5A.63)$$

where $u_{11} = (2n-1)(\theta+1)\frac{(1-n)+\beta}{\beta(1-\theta)(1-n)}$ and

$$u_{12} = -(1+\theta)\frac{(1-n-\beta)}{\beta(1-\theta)}$$

Short-Run Changes

Using the relationships in 5A.54 and 5A.55, and that

$$\hat{C}_t^* = \frac{\hat{C}_t^w - n\hat{C}_t}{(1-n)} \Rightarrow$$

$$\hat{C}_t = \left[\frac{3\varepsilon\beta + \beta - \varepsilon}{\varepsilon(2\beta - 1)} \right] u_{13} - \frac{1}{2} [n(\hat{\delta}_{EX} + \hat{\delta}_{FS}) + (1-n)\hat{\delta}_{IM}] \quad (5A.64)$$

Using the following equality of $\hat{h}_t = \theta(1-n)\hat{E}_t + \hat{C}_t^w$:

$$\begin{aligned} \hat{h}_t = & \theta(1-n) \frac{\beta(1+\varepsilon)}{\varepsilon(2\beta-1)} \cdot u_{13} - \frac{1}{2} [n(\hat{\delta}_{EX} + \hat{\delta}_{FS}) \\ & + (1-n)\hat{\delta}_{IM}] \end{aligned} \quad (5A.65)$$

$$\text{where } u_{13} = \left[\frac{2\theta}{1-\theta} \cdot \Delta_1^S + \frac{1+\theta}{1-\theta} \left[\hat{\delta}_{FS} \left(\frac{1-2n}{1-n} \right) + \hat{\delta}_{EX} - \hat{\delta}_{IM} \right] \right].$$

At this stage, the long-run and short-run shocks to utility are in terms of exogenous variables. The target analog equations are found by replacing $(1-n)$ with $-n$, which holds throughout these final derivations (Mark 2001). For the sender economy, the final changes in utility that result from the sanction shock are as follows:

$$\Delta U = \Delta U_C + \Delta U_h$$

$$\begin{aligned} \Delta U_C = & \left[\frac{3\varepsilon\beta + \beta - \varepsilon}{\varepsilon(2\beta - 1)} \right] u_{13} - \frac{1}{2} [n(\hat{\delta}_{EX} + \hat{\delta}_{FS}) + (1-n)\hat{\delta}_{IM}] \\ & - \frac{\beta}{1-\beta} \frac{1}{2\theta} [\psi_{11}\hat{\delta}_{FS} + \psi_{12}\hat{\delta}_{EX} - \psi_{13}\hat{\delta}_{IM}] \end{aligned} \quad (5A.66)$$

$$\begin{aligned} \Delta U_h = & -(\theta-1)[(1-n) \frac{\beta(1+\varepsilon)}{\varepsilon(2\beta-1)} \cdot u_{13} - \frac{1}{2} [n(\hat{\delta}_{EX} + \hat{\delta}_{FS}) \\ & + (1-n)\hat{\delta}_{IM}]] + \frac{\beta}{1-\beta} \left[\left(\frac{\theta-1}{\theta} \right) \frac{1}{2} [(\beta u_{11} - 1)\hat{\delta}_{FS} \right. \\ & \left. + (\beta u_{12} - 1)\hat{\delta}_{EX} - u_{12}\hat{\delta}_{IM}] \right] \end{aligned} \quad (5A.67)$$

For the target, the symmetry of the model's symmetry leads to similar solutions. The final change in utility is as follows:

$$\Delta U^* = \Delta U_C^* + \Delta U_h^*$$

$$\begin{aligned} \Delta U_C^* = & - \left[\frac{n}{1-n} \right] \left[\frac{3\varepsilon\beta + \beta - \varepsilon}{\varepsilon(2\beta - 1)} \right] u_{13} - \frac{1}{2} [n(\hat{\delta}_{EX} + \hat{\delta}_{FS}) \\ & + (1-n)\hat{\delta}_{IM}] + \frac{\beta}{1-\beta} \frac{(1+\theta)}{2\theta(1-n)} [(\beta u_{11} + (2n-1))\delta_{FS} \\ & + (\beta u_{12} - (1-n))(\hat{\delta}_{EX} - \hat{\delta}_{IM})] \end{aligned} \quad (5A.68)$$

$$\begin{aligned} \Delta U_h^* = & -(\theta - 1) \left[n \frac{\beta(1+\varepsilon)}{\varepsilon(2\beta - 1)} \cdot u_{13} \right] \\ & + \frac{\beta}{1-\beta} \left[\left(\frac{\theta - 1}{\theta} \frac{n}{1-n} \right) \frac{1}{2} [(\beta u_{11} - 1)\delta_{FS} \right. \\ & \left. + (\beta u_{12} - 1)\hat{\delta}_{IM} - u_{12}\hat{\delta}_{EX}] \right] \end{aligned} \quad (5A.69)$$

The welfare effects from sanctions are summarized in tables 5.1, 5.2, and 5.3 in chapter five at specific parameter values initially, then through changing the parameters: n , β , ε , and θ .

The final step is to solve for the terms of trade, as this variable is also a function of sanctions and another potential monitor of sanction effects. Because the exchange rate is changing, the relative export price in the sender economy is likely to change as well. The terms of trade are solved for as follows, where the respective export prices are simply portions of each country's aggregate price index from equations 5A.2 and 5A.3:

$$P_{\tau, \text{Sender}}^{\text{EX}} = \left[\int_0^n (E_t q_t^*(z))^{1-\theta} dz \right]^{\frac{1}{1-\theta}} = \left[n (E_t q_t^*(z))^{1-\theta} \right]^{\frac{1}{1-\theta}} - 0 = n^{\frac{1}{1-\theta}} E_t q_t^*$$

$$\begin{aligned} P_{\tau, \text{Target}}^{\text{EX}} &= \left[\int_0^m \left(\frac{q_t(z^*)}{E_t} \right)^{1-\theta} dz^* \right]^{\frac{1}{1-\theta}} = \left[m \left(\frac{q_t(z^*)}{E_t} \right)^{1-\theta} \right]^{\frac{1}{1-\theta}} \\ &- \left[n \left(\frac{q_t(z^*)}{E_t} \right)^{1-\theta} \right]^{\frac{1}{1-\theta}} = (m - n)^{\frac{1}{1-\theta}} E_t q_t^* \end{aligned}$$

$$\text{TOT}_{\text{Sender}} = \frac{P_{t, \text{Sender}}^{\text{EX}}}{E_t P_{t, \text{Target}}^{\text{EX}}} = \frac{n^{\frac{1}{1-\theta}} E_t q_t^*(z)}{E_t (m-n)^{\frac{1}{1-\theta}} \frac{q_t(z^*)}{E_t}} = \left(\frac{n}{(m-n)} \right)^{\frac{1}{1-\theta}} \frac{E_t q_t^*(z)}{q_t(z^*)} \quad (5A.70)$$

In the steady state, the terms of trade simply become a function of exchange rates, and thus of sanctions.

$$\text{T}\hat{\text{O}}\text{T}_{\text{Sender}} = \hat{E}_t = \frac{\beta(1+\varepsilon)}{\varepsilon(2\beta-1)} \cdot \left[\frac{2\theta}{1-\theta} \cdot \Delta_1^S + \frac{1+\theta}{1-\theta} \left[\hat{\delta}_{\text{FS}} \left(\frac{1-2n}{1-n} \right) + \hat{\delta}_{\text{EX}} - \hat{\delta}_{\text{IM}} \right] \right] \quad (5A.71)$$

Chapter six begins with an empirical assessment of these results, as well as some econometric examples of how the sanctions shock exchange rates, consumption, and production in certain sanction cases.

Conclusions

This chapter shows the tedium and length of solving this general equilibrium. It is logical to assume that sanctions affect the budget constraints of each country involved. The NOEM mathematics and symmetry provide intuition and ease in adding sanctions as simple policy variables to extend this class of models. As NOEM models evolve both mathematically and in their detail, it is likely this baseline model may change. Again, any errors in judgment, logic, or mathematics are my own. I am much indebted to Mark (2001), as that text taught me a great deal about these models.

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Chapter 6

Empirical Analyses of Sanction Effectiveness

Since the goal of the [empirical] analysis [of sanction effectiveness] is to determine what makes economic coercion succeed, including the contribution of sanctions as part of that measure creates a potential endogeneity problem. That is, determining the factors that make a sanction successful is similar to determining what contribution the sanctions made toward success.

(Drury 2005, 45)

Introduction

This quote alludes to the challenges in using current data sets on sanctions without some adjustments. Other challenges include an inability to pinpoint what represents economic coercion's "contribution" to sanction effectiveness. This chapter continues this text's thesis that economic statecraft is ultimately macroeconomic, because sanctions are initiated as if they were macroeconomic policy. Further, decoupling the economic contribution from the political and humanitarian effects of statecraft reduces the endogeneity problem. However, the endogeneity problem is difficult to conquer; endogeneity in this model reflects reality. Sanction effects are based on feedback loops surging through the target economy to create a political critical mass for change.

These estimations combine the intuition from chapters two, three, and four, where the effects play out in the exchange rate as discussed in chapter five. This model may also predict the economic effects in new embargo cases. The hypotheses tested later are all made to understand how policy makers move along the Sanction Effectiveness Continuum. Testing a sanction's economic effects using macroeconometrics focuses

on how changes to exchange rates may take place under sanctions and act as economic shock data. Next, discrete choice modeling is used to investigate the humanitarian effectiveness of sanctions, a la smart sanctions. Smart sanctions are assumed to be focused on decision makers to minimize collateral damage. Thus, comparing social and demographic factors in the target economy before and after sanctions may be used to track humanitarian changes. Finally, political effectiveness is estimated based on Hufbauer, Schott, and Elliott (HSE 1990) data, Drury (1998, 2005) and the author's calculations of what HSE would likely say the political success was in cases after 1990 as well as current ones.

Empirical studies provide researchers with ways to explain the past, but also help forecast how policy may affect the future. There have been many studies of how sanctions in the past have been effective or not vis-à-vis qualitative goals. There have also been many review articles analyzing past studies, especially the HSE data, methods, and conclusions. Recent studies suggest that the sanction literature strayed too far away from its major empirical issues. Drezner (2003) and Drury (2005) argue that investigating sanction success, whether sanctions achieve stated goals, is not worth a researcher's time at this point. Multiple statistical issues, coupled with data problems, make current empirical studies on statecraft immediately questionable at best.

The sanction effectiveness question is still a viable one, however, and must be studied. Policy makers need a body of research to use as a foundation for their decision-making. The ordinal success measures of HSE (1990), Lam (1990), and Van Bergeijk (1989) provide ad hoc, but logical measures. Because a success statistic can be stated as an ordered dependent variable, using discrete choice modeling has now become the standard. Lam (1990) was the first to investigate the HSE (1990) data in more detail using discrete choice modeling. Martin (1993) provides an initial, empirical test of the HSE data, whereas Drezner (2003) investigates threats versus sanctions as an extension of the HSE data. Drury (2005) suggests that a restructure of the HSE success measures is a good beginning, given the data's breadth. Drury's (2005) results are compared to this chapter's output later. These studies are strong examples of using discrete choice modeling to look at different aspects of sanction effectiveness; however, it is both difficult and impractical to walk away from the HSE data set completely, and it is again employed in part here.

There are three empirical exercises that act as the path through this chapter, breaking the chapter into four sections. The first is estimating the economic shock that sanctions cause. This is done through vector

autoregressions (VARs) and impulse-response functions. VARs provide a way to look at the time dynamics of economic coercion, estimating how damaging the effects may be and how long the effects may last. This is done through impulse response functions, where the sanction shock is the impulse, a one standard-deviation shock to target trade or financing with the sender. Because of data limitations, I use only a subset of cases with the United States as primary sender, sixty-five cases in all. This first exercise is to show how viewing sanctions as macroeconomic phenomena can tie itself to exchange rate fluctuations as a measure of economic effectiveness, analogous to other macroeconomic policies. The permanence and explanatory power of the shock on U.S. exchange rates with the target is a new measure of economic effectiveness.

Next the humanitarian effectiveness of sanctions is estimated using discrete choice modeling. If the dependent variable is an ordinal measure of effectiveness, then the independent variables are simply driving the probabilities of effectiveness higher or lower. This text looks at both humanitarian and political effectiveness, where each regression uses similar explanatory variables with the idea that humanitarian success is a station passed by the sanction train on its way to the political goals; the factors assumed to exogenously affect political outcomes also affect human costs.

The next section estimates political effectiveness, which is the empirical focus of this literature. We must look beyond sanction success and make that view operational, looking beyond binary measures of sanction efficacy also. Using ordinal measures and discrete choice analysis of political effects, as in Drury (2005), captures the essence of policy effectiveness. Policy is not meant to pass or fail the test of goal achievement, as it may or may not achieve its stated goal. Marginal movements toward the sanction's goals dictate how economic coercion is effective.

A Brief Set of Caveats

There are two large caveats to any empirics involving sanctions that must be addressed, as in Drezner (2003). Each section here uses data from respected international sources, such as the International Monetary Fund (IMF) and United Nations. However, data collection may be tainted because the data's original sources are flawed. Further, the continued use of a subset of the HSE (1990) data brings in the caveats discussed earlier. In all, these estimates are toeholds on new ways to view these policies, using readily available data as well as

subjective and objective control variables that are generally accepted by sanction scholars. The reader should take these caveats into consideration when viewing the results; the conclusions here discuss further empirical research opportunities.

The Economic Effects

Time-series econometric techniques allow a prediction of sanction effects as if sanctions were macroeconomic policies. Such estimates show a consistent way to track sanction effects over time, comparable regardless of targets across cases. The sender is hurt if, with respect to the target, the exchange rate falls; the target is hurt if the exchange rate rises, where exchange rates are defined as target currency per sender currency units. This inverse view of exchange rates is used here to make the estimates more intuitive for their humanitarian and political effects. The reader should always think of the exchange rate reflecting the relative value of a currency.

Eyler (1998) suggested an ordinal measure of a sanction's economic effectiveness, after calibrating a neoclassical, open economy model.¹ This measure was based on an estimated loss of welfare over the policy's duration.² However, such a measure should also be constructed for the sender. Because chapter five's model focused on the exchange rate changes that result from consumption and work effort effects in both countries, the model here does the same. Other models of macroeconomic effects exist, however, that have provided some control variables used here. These are mainly in the form of gravity models.

Gravity Models

Gravity models come from the international trade literature and are applied in two general ways to economic coercion.³ First, sanctions are modeled as shocks to bilateral trade. Gravity models measure the expected trade between two countries based on country size, distance between the countries, and other factors. As a result, the economic effects of embargoes are either assisted or mitigated in the target's eyes by gravity factors; HSE (1990) includes the relative size of the economies for this reason. By design, gravity models easily become linear regressions, where the level of bilateral trade acts as the dependent variable. Independent variables may include the product of GDP per capita in the two countries, GDP per capita in each country individually, the distance between the trading partners, and other control variables.⁴ The key hypotheses of gravity models are that trade flows

are proportional to the product of the “size” of the trading partners and inversely proportional to the distance between them, an idea drawn from physics where two objects gravitate toward each other based on size and distance between them.⁵

Recent sanction gravity models include Hufbauer et al. (1997), Yang et al. (2004), and Askari et al. (2004). Yang et al. (2004) expanded the time series used in Hufbauer et al. (1997) and focused on a smaller number of cases. They claim that these models are extremely sensitive to sanctions labeling, where the range of labels are either selective (set in specific ways to combat specific problems) or comprehensive. Sanction effectiveness was seen as relatively smaller in magnitude than the results of Hufbauer, Schott, and Elliott (1990). “This [lack of a uniform method of defining sanctions] may provide an explanation for the weak overall effect of selective sanctions—they simply are in too narrow a range of products to have much impact on overall imports, exports, or bilateral trade flows” (Yang et al. 2004, 58). Comprehensive sanctions are assumed to have larger effects; the data are somewhat suspect in certain important cases, including Iraq and Cuba. In short, gravity models provide an easy-to-use method of estimating sanction effects on trade, and may also be applied to financial sanctions easily. Can we further apply macroeconomic techniques to economic coercion, isolating the economic effects? Sobel (1998) took this idea of wealth transfer to another level, employing VARs, the basis of this study’s estimations.

Vector Autoregressions

Sobel (1998) used exchange-rate dynamics as a way to infer sanction effects. If a country’s exchange rate can appreciate as a result of stabilization, then destabilization should cause currency depreciation. Sobel’s question was whether sanctions are temporary in their effects, regardless of their stated duration. He examined the cases of Lebanon and South Africa, comparing two cases with different contexts of UN sanction packages.⁶ The hypothesis was that tracking the change in the real exchange rate as a result of sanctions was a way to at least partially reflect the internal political and economic consequences of statecraft measures (Sobel 1998).

The model here is a VAR analysis, where the sanction shock is modeled like any other macroeconomic shock to the target economy. Impulse response functions provide insight to economic effects from embargoes but also show how policy makers may track future uses of economic coercion before initiating policy. The impulse response helps test the hypotheses of duration, magnitude, and direction of a shock’s effects on the economies involved.

Sobel (1998) used VARs and impulse response functions as a means of measuring the forecasted effect of sanctions on exchange rates; his use of a transfer function assumes that the exchange rate shock that results from UN economic coercion fades as time moves forward. In the macroeconomics literature, there are large differences and implications for permanent versus temporary shocks.⁷ The VAR analysis here investigates sixty-five cases, using data on changes to exports, imports, and the financial flows between the United States and selected target economies as the policy shock variables.

In VAR models, the dependent and independent variables are both lagged on the right-hand side of the equation. A vector of lagged variables is employed to account for autoregressive properties in the dependent variable (in this case the exchange rate) and how this variable may be affected by the exogenous variables' histories. The number of lags is determined by the Akaike Information Criterion (AIC) in order to compare and contrast specifications.⁸ Further, the lag structure and converting each variable into its natural log when appropriate helps ensure the model is cointegrated, such that the time series properties of the included variables are the same.⁹

The impulse response functions are based on the final specifications. For example, if export sanctions are used by the United States on Guatemala, the sanction is modeled as a one-time shock to the Guatemala-U.S. exchange rate in percentage terms through exogenous shocks (sanction policy) to exports, imports, or financial flows also changing in percentage terms. The dynamic structure of the VAR transmits the effects over time, and can forecast the effects over the embargo's potential life. These functions represent new forecasts based on the previous period's realization, innovations of the error term between the endogenous variable (the exchange rate) and the shock variables, the sanctions. These regressions are meant to simply gain access to new measures of a sanction's economic effects.

Dependent Variable Choice

Using exchange rate fluctuations as the dependent variable ties this initial empirical analysis to both the NOEM model in chapter five and to Sobel (1998). This is in lieu of using binary statements, such as the HSE "contribution" score, as a dependent variable.¹⁰ Choosing a particular effectiveness measure has been debated and analyzed throughout this literature's history. In many ways, the perceived ineffectiveness of economic coercion may be a function of using an incorrect set of economic variables. Assessing the damage of selected past cases and

how policy makers can predict the economic damage from future sanctions is the driving force here.

The exchange rate is defined as target currency units per U.S. dollar.¹¹ Sobel (1998) uses transfer functions as theory concerning the sanction effects, and uses the monthly change in the nominal exchange rate as the dependent variable. This assumes that a real exchange rate exists above the street level that is both not fixed and has enough independent variability such that sanction shocks can have a measurable effect. The exogenous variables represent the sanction shocks.

Exogenous Variable Choice and the Data

The independent variables are the exports, imports, and net financial flows between the nations involved in each sanction case. The sanction mix in each case determines which shocks are included in the estimations. The lagged dependent variable is implied by the VAR model itself as well. There are two hypotheses to be tested for each shock variable included, after converting the target's exports and imports with the United States to their natural logarithms, as well as using the U.S. net financial flows with the target. These hypotheses are more global, and not coefficient-specific.

Hypothesis 1: *A shock to these variables should have predictable effects of exchange rates during the sanction's duration.* For example, export sanctions should increase the U.S.—target exchange rate; import sanctions should lower the exchange rate; and financial sanctions should increase the exchange rate. The rationale for these movements is presented in chapter five, albeit with an inverted definition.

Hypothesis 2: *Over the policy's life, the shock's effect should not erode.* Whether the exchange rate effects are permanent or temporary is of major importance to economic coercion's credibility. If the impulse does not create a permanent change in the exchange rate, then the policies can be considered neutral in their effects. If the target knows this, because of the structural relationship between the exchange rate and the international flows, all it needs to do is wait. The sender's expectation is that the shock is permanent in their effects on the target.

The VAR results provide data that can be used as economic shock variables for the humanitarian and political effects of sanctions tested in this chapter.¹² The equations are the same in each case study, where the number of lags (ρ) is specific to each case and is chosen using a

case-specific AIC. Equation 6.1 describes the general specification in each case.

$$FX_{\text{Target-Sender},t} = \mathbf{X}_{t-\rho}\beta_1 + \mathbf{Z}_{1,t-\rho}\gamma_1 + \mathbf{Z}_{2,t-\rho}\gamma_2 + \mathbf{Z}_{3,t-\rho}\gamma_2 + \varepsilon_{\text{Target-Sender},t} \quad (6.1)$$

where FX is the exchange rate, target currency units per sender, in month t ; \mathbf{X}_t is the $1 \times \rho$ vector of lagged dependent variables at time t . β_1 is the $\rho \times 1$ vector of coefficients associated with the variables in \mathbf{X}_t . $\mathbf{Z}_{k,t}$ is the $1 \times \rho$ vector of the k th policy variable, lagged ρ times, where k represents the number of included variables, and γ_k is the associated $\rho \times 1$ coefficient vector for the respective policy variable. The error term, $\varepsilon_{\text{Target-Sender},t}$ is assumed to uncorrelated white noise between time periods. This basic VAR structure sets us the impulse response functions, where the embargo's imposition is that impulse.

Once estimated, the error term is converted to a Wold moving average representation before employing the impulse response functions.¹³ Once this conversion is complete, the impulse response functions are built. By standardizing the error matrix such that the error variance is equal to one (and thus the standard deviation is equal to one), the moving average representation of the error can be rewritten and standardized. Once this is completed, the original VAR equations can be rewritten as variance decompositions, a two-term sum. The first term is the shock term, with coefficients representing the weight of previous lag periods, and the second term represents the dependent variable's time series found to be random and not changed by the shock.¹⁴ The impulse response functions ultimately estimate what the deviations from trend would be if the error term in the original VAR was shocked by one standard deviation.

The real exchange rate is used, deflated in year 2000 terms. The data sources are either the *IMF International Financial Statistics Yearbook*, *Pick's Currency Yearbook* (for years up to 1984 when needed), or the *World Currency Yearbook* (after 1984 when needed). The export data is the real value of exports between the United States and the specific target. The import data is also the real value of imports between the two countries with 2000 as the base year. Net financial flows are represented by the real U.S. net liabilities between itself and the country in question from the Survey of Current Business; in some cases, regional financial flows or the target's overall net liabilities with the world are used because the data were unavailable or unreliable otherwise. This is an unfortunate problem in analyzing target countries that are developing historically. Two issues make using VAR analysis for the entirety of the HSE data set problematic. First, the economic data for some sender countries

involved is parsimonious as is the target's data; the data's credibility may also be an issue even if data is available. China and the former Soviet Union are good examples of senders with troubling data. The cases examined here may help minimize data problems because the United States is either the lone or a partial sender each time. This choice may also introduce bias because the United States is involved every time. However, the following section, taking these caveats into account, provides the VAR and impulse response results.

Results

The results are broken into multiple tables, starting with table 6.1. Table 6.2 provides information concerning the tests of hypothesis 1 given earlier, the direction of the impulse response. Table 6.3 provides the variance decompositions for each case, representing the exchange rate innovation in percentage terms explained by specific shock variables. Table 6.3's data, in combination with Table 6.2's, tests hypothesis 2.

Table 6.1 summarizes the basic information from Appendix 1's cases to be empirically tested. The "lags" represent the VAR specification for each case that minimized the AIC. The approximate duration in months is simply from HSE (1990), Drury (1998, 2005), or the author's assessment of duration in years multiplied by twelve. The sanction mix data tells the reader which variables were shocked. This information helped build each model's specification, as described earlier. Table 6.2 shows the exchange rate shock's direction initially versus the policy's end.

Some shocks are estimated to have permanent effects on target exchange rates, while others have temporary effects. The first month's measure ("1 mo") represents the initial response of exchange rates to policy, while the last month's ("Last mo") sign represents what happened over time. If the last month's sign is different than the first month's, and is also counterintuitive or equal to zero, then sanction effects were not permanent.

To better interpret the results, an example helps. Every case in table 6.2 has either a -1 or 1 in its first-month position if a sanction of that type took place. For example, in the 1992–95 case of Nicaragua, there are -1 , -1 , and 1 , respectively, in each of the first-month positions. Those numbers tell the reader that the sanctions against Nicaragua were full sanctions, employing export, import, and financial sanctions simultaneously. The data also suggest that the sanction's impulses were initially ineffective (-1 represents policy effects moving against the sender's intent) for both export and import sanctions, while

Table 6.1 Cases and Basic Data for VAR Analysis

Target	Dates	Sanction Tools	Contribution Score (HSE)	Approx. Duration (months)	Lags
Argentina	1977–84	EX, FS	2	72	2
Argentina	1978–82	EX	2	48	2
Brazil	1962–64	FS	3	24	2
Brazil	1977–84	FS	3	84	8
Cameroon	1992–98	EX, IM, FS	?	72	9
Chile	1965–66	IM, FS	4	12	2
Chile	1970–90	FS	3	36	2
Chile	1973–90	FS	2	204	2
China	1989–98	EX, FS	1	12	2
China	1991–98	EX, FS	?	96	2
Colombia	1996–98	IM, FS	?	24	7
Cuba	1960–Present	EX, IM, FS	1	Ongoing	2
Egypt	1963–65	FS	4	24	2
El Salvador	1977–81	FS	3	48	2
El Salvador	1987–88	FS	4	12	2
El Salvador	1993–93	EX, IM, FS	?	36	2
Ethiopia	1976–92	IM, FS	3	168	2
Guatemala	1977–86	FS	2	108	2
Guatemala	1990–93	EX, IM, FS	?	36	2
Haiti	1987–90	FS	3	36	2
Haiti	1991–94	EX, IM, FS	?	36	2
India	1965–67	FS	4	24	2
India	1971–72	EX, FS	1	12	2
India	1978–82	EX	2	48	2
India	1998–2005	EX, FS	?	84	2
Indonesia	1963–67	FS	2	36	2
Indonesia	1993–95	FS	?	168	2
Iran	1979–81	EX, IM, FS	3	24	2
Iran	1984–98	EX, IM, FS	3	72	3
Iraq	1980–87	EX	2	120	2
Iraq	1990–2003	EX, IM, FS	3	12	4
Liberia	1992–98	EX, IM, FS	?	72	2
Libya	1978–98	EX, IM, FS	2	144	3
Malawi	1992–94	FS	?	12	5
Myanmar	1988–90	FS	3	24	2
Nicaragua	1977–79	EX, FS	3	24	2
Nicaragua	1981–88	EX, IM, FS	2	108	2
Nicaragua	1992–95	EX, IM, FS	?	36	3
Nigeria	1993–98	IM, FS	?	60	3
Pakistan	1971–72	EX	1	12	4
Pakistan	1979–86	FS	1	132	2
Panama	1987–93	IM, FS	1	36	2
Paraguay	1977–81	FS	3	48	2
Paraguay	1996–96	EX, IM, FS	?	12	2
Peru	1968–74	FS	1	12	3

Continued

Table 6.1 Continued

Target	Dates	Sanction Tools	Contribution Score (HSE)	Approx. Duration (months)	Lags
Peru	1991–95	EX, IM, FS	?	48	2
South Africa	1975–82	EX	2	84	2
South Africa	1985–92	EX, IM, FS	?	84	3
South Korea	1973–77	FS	2	48	3
Sri Lanka	1961–65	FS	4	48	2
Sudan	1989–94	FS	1	12	2
Sudan	1993–Present	IM, FS	?	Ongoing	6
Syria	1986–94	EX, FS	3	48	2
Taiwan	1976–77	EX	4	12	2
Thailand	1990–93	EX, IM, FS	?	36	2
The Gambia	1996–98	FS	?	48	2
Togo	1992–94	EX, FS	?	24	3
Turkey	1974–78	FS	1	48	5
Uruguay	1976–81	EX, FS	2	60	2
USSR	1975–90	IM, FS	2	180	2
USSR	1978–80	EX	1	24	2
USSR	1980–82	EX	1	24	3
USSR	1981–81	EX	1	12	2
USSR	1983–83	IM	1	12	2
Zimbabwe	1983–88	FS	2	60	2

Sources: HSE (1990), Drury (1998, 2005) and author's calculations.

financial sanctions initially were effective (+1 represents policy moving with the sender's intent).

These data allow a comparison to what happened over the sanction's duration, as told in the adjacent cells. For Nicaragua, the last month's values are 1, 0, and 1, respectively. By the sanctions' end, export and financial sanctions succeeded in decreasing the target currency's value, while import sanctions had no permanent effects. Coupled with the initial results, it is estimated that the intent of economic statecraft's impulse was reversed in the export sanction to the correct direction, eroded in the case of the import sanction, and became stronger over time in the financial sanction. The initial conclusion from this example is that U.S. economic coercion against Nicaragua was mixed initially, and became stronger over time through the combination of export and financial sanctions. The variance decomposition data in table 6.3 enhances this output.

This output adds the element of how much the policy shock explained the percentage change in exchange rates. For example, the results of table 6.2 show that sanctions against Brazil in 1962–1964 were financial only and at first were causing economic damage (+1 in

Table 6.2 Initial and cumulative effects of sanction shock—first month (+1 or -1 or 0) versus last month (+1 or -1 or 0)

Target	Dates	Export sanction		Import sanction		Financial sanction	
		1 mo.	Last mo.	1 mo.	Last mo.	1 mo.	Last mo.
Argentina	1977-84	-1	0	0	0	-1	-1
Argentina	1978-82	1	-1	0	0	0	0
Brazil	1962-64	0	0	0	0	1	-1
Brazil	1977-84	0	0	0	0	-1	-1
Cameroon	1992-98	-1	-1	0	-1	-1	1
Chile	1965-66	0	0	-1	-1	1	1
Chile	1970-90	0	0	0	0	1	0
Chile	1973-90	0	0	0	0	1	1
China	1989-98	1	0	0	0	-1	0
China	1991-98	1	0	0	0	-1	0
Colombia	1996-98	0	0	1	-1	-1	-1
Cuba	1960-Present	1	-1	-1	1	1	1
Egypt	1963-65	0	0	0	0	-1	0
El Salvador	1977-81	0	0	0	0	1	0
El Salvador	1987-88	0	0	0	0	1	-1
El Salvador	1993-93	-1	-1	1	1	-1	-1
Ethiopia	1976-92	0	0	-1	1	-1	-1
Guatemala	1977-86	0	0	0	0	-1	0
Guatemala	1990-93	-1	1	1	1	-1	1
Haiti	1987-90	0	0	0	0	-1	-1
Haiti	1991-94	1	-1	1	1	1	-1
India	1965-67	0	0	0	0	1	0
India	1971-72	1	-1	0	0	1	1
India	1978-82	1	-1	0	0	0	0
India	1998-2005	1	0	0	0	1	1
Indonesia	1963-67	0	0	0	0	1	1
Indonesia	1993-95	0	0	0	0	1	1
Iran	1979-81	1	-1	1	1	-1	1
Iran	1984-98	-1	0	1	0	1	1
Iraq	1980-87	-1	-1	0	0	0	0
Iraq	1990-2003	1	0	1	0	1	0
Liberia	1992-98	1	1	-1	-1	1	1
Libya	1978-98	1	1	-1	-1	1	-1
Malawi	1992-94	0	0	0	0	-1	-1
Myanmar	1988-90	0	0	0	0	-1	-1
Nicaragua	1977-79	-1	0	0	0	1	0
Nicaragua	1981-88	1	-1	-1	1	-1	-1
Nicaragua	1992-95	-1	1	-1	0	1	1
Nigeria	1993-98	0	0	1	-1	1	1
Pakistan	1971-72	-1	0	0	0	-1	0
Pakistan	1979-86	0	0	0	0	1	1
Panama	1987-93	0	0	-1	-1	-1	-1

Continued

Table 6.2 Continued

Target	Dates	Export sanction		Import sanction		Financial sanction	
		1 mo.	Last mo.	1 mo.	Last mo.	1 mo.	Last mo.
Paraguay	1977-81	0	0	0	0	-1	0
Paraguay	1996-96	0	0	0	0	1	-1
Peru	1968-74	0	0	0	0	1	0
Peru	1991-95	-1	1	1	-1	-1	0
South Africa	1975-82	-1	0	0	0	0	0
South Africa	1985-92	1	-1	-1	1	-1	1
South Korea	1973-77	0	0	0	0	1	1
Sri Lanka	1961-65	0	0	0	0	-1	0
Sudan	1989-94	0	0	0	0	1	1
Sudan	1993-Present	-1	-1	0	0	0	0
Syria	1986-94	1	1	0	0	-1	-1
Taiwan	1976-77	1	1	0	0	0	0
Thailand	1990-93	1	0	-1	-1	1	1
The Gambia	1996-98	0	0	0	0	1	1
Togo	1992-94	1	-1	0	0	1	1
Turkey	1974-78	0	0	0	0	1	0
Uruguay	1976-81	1	-1	0	0	1	1
USSR	1975-90	0	0	-1	0	1	0
USSR	1978-80	1	1	0	0	0	0
USSR	1980-82	-1	1	0	0	0	0
USSR	1981-81	1	1	0	0	0	0
USSR	1983-83	0	0	-1	-1	0	0
Zimbabwe	1983-88	0	0	0	0	-1	0

the first-month position), but then eroded completely and reversed themselves over the two years (-1 in the last month position). On the surface, these results would be interesting, but once table 6.3's results are integrated, we see that the shock to financial flows explains little of the innovations both initially and at sanction's end: 0.16 percent and 0.79 percent, respectively. The explanatory power of economic coercion measures is case-specific. In combination, like an interaction term, tables 6.2 and 6.3 provide the economic damage data to be used in the humanitarian and political effectiveness regressions given later by multiplying each case's directional term with its percentage.

Summary

The cases with the largest economic effects should be those with impulse responses causing exchange rates to move in the intended direction (hypothesis 1) and be permanent in those effects (hypothesis 2). The impulse response direction and the error term's variance decomposition

Table 6.3 Variance decompositions (%) for VAR results

Target	Dates	Export sanction		Import sanction		Financial sanction	
		1 mo.	Last mo.	1 mo.	Last mo.	1 mo.	Last mo.
Argentina	1977–84	0	0	0.34	3.01	0.32	15.76
Argentina	1978–82	0.02	0.49	0	0	0	0
Brazil	1962–64	0	0	0	0	0.16	0.79
Brazil	1977–84	0	0	0	0	0	99.96
Cameroon	1992–98	0.01	17.88	0.36	2.74	0.03	75.45
Chile	1965–66	0	0	0.41	1.82	3.14	44.26
Chile	1970–90	0	0	0	0	0.31	8.55
Chile	1973–90	0	0	0.64	11.85	0.11	10.37
China	1989–98	0.02	1.56	0	0	4.07	5.99
China	1991–98	0.05	4.89	0	0	0.79	0.2
Colombia	1996–98	0	0	0.08	8.42	0.9	22.12
Cuba	1960–Present	0.23	7.46	2.08	16.17	7.01	35.88
Egypt	1963–65	0	0	0	0	0.24	0.66
El Salvador	1977–81	0	0	0	0	0.04	0.11
El Salvador	1987–88	0	0	0	0	4.13	9.08
El Salvador	1993–93	0.02	1.72	0.45	0.39	0.12	0.95
Ethiopia	1976–92	0	0	2.43	3.25	0.01	95.17
Guatemala	1977–86	0	0	0	0	0.56	7.57
Guatemala	1990–93	0.01	0.93	0.0005	0.88	0.02	0.09
Haiti	1987–90	0	0	0	0	0.13	4.98
Haiti	1991–94	0.03	0.48	0.3	3.18	0.06	1.66
India	1965–67	0	0	0	0	0.36	0.4
India	1971–72	0.16	1.72	0	0	0.04	0.05
India	1978–82	0.08	0.75	0	0	0	0
India	1998–2005	0.04	0.52	0	0	0.43	63.94
Indonesia	1963–67	0	0	0	0	0.64	18.59
Indonesia	1993–95	0	0	0	0	0.76	15.32
Iran	1979–81	0.001	1.22	0.14	3.94	0.48	5.68
Iran	1984–98	0.08	77.83	0.08	6.84	0.33	4.41
Iraq	1980–87	0.02	16.88	0	0	0	0
Iraq	1990–2003	0.06	4.04	0.35	11.33	1.28	22.44
Liberia	1992–98	0.49	2.75	0.81	47.45	1.24	28.64
Libya	1978–98	0.08	1.64	0.17	1.49	0.1	74.57
Malawi	1992–94	0	0	0	0	1.04	1.82
Myanmar	1988–90	0	0	0	0	0.003	0.008
Nicaragua	1977–79	0.95	1.05	0	0	3.8	27.48
Nicaragua	1981–88	0.48	9.61	0.16	36.49	4.13	35.92
Nicaragua	1992–95	0.007	8.23	0.15	0.39	0.22	29.58
Nigeria	1993–98	0	0	0.05	23.13	0.0004	20.55
Pakistan	1971–72	0.08	3.92	0	0	0.31	1.61
Pakistan	1979–86	0	0	0	0	0.03	71.49

Continued

Table 6.3 Continued

Target	Dates	Export sanction		Import sanction		Financial sanction	
		1 mo.	Last mo.	1 mo.	Last mo.	1 mo.	Last mo.
Panama	1987-93	0	0	0.66	4.96	0.37	2.06
Paraguay	1977-81	0	0	0	0	0.2	0.28
Paraguay	1996-96	0.04	0.03	0.63	1.35	0.93	0.08
Peru	1968-74	0	0	0	0	0	39.88
Peru	1991-95	0.33	0.41	0.18	28.89	0.38	1.12
South Africa	1975-82	1.66	0.09	0	0	0	0
South Africa	1985-92	0.001	3.45	1.33	17.45	0.48	18.61
South Korea	1973-77	0	0	0	0	0.01	11.47
Sri Lanka	1961-65	0	0	0	0	3.7	25.87
Sudan	1989-94	0	0	0	0	1.57	31.77
Sudan	1993-Present	0.39	9.93	0	0	0.0004	0.02
Syria	1986-94	0.01	0.96	0	0	0.002	5.49
Taiwan	1976-77	0.62	25.96	0	0	0	0
Thailand	1990-93	0.03	4.91	0.54	7.15	0.002	3.43
The Gambia	1996-98	0	0	0	0	0.07	3.78
Togo	1992-94	0.03	0.057	0	0	0.7	12.11
Turkey	1974-78	0	0	0	0	1.3	12.68
Uruguay	1976-81	1.78	0.19	0	0	0.47	34.08
USSR	1975-90	0	0	0.58	0.69	0	0
USSR	1978-80	0	0	0.69	42.29	0.003	4.68
USSR	1980-82	0.03	0.19	0	0	0	0
USSR	1981-81	0.04	1.48	0	0	0	0
USSR	1983-83	0	0	0.55	0.44	0	0
Zimbabwe	1983-88	0	0	0	0	4.29	10.82

Note: Remainder of variance decomposition is from exchange rate itself.

combined provide an interaction term that represents the estimated economic damage caused by sanctions. Economic effectiveness, as defined in this text, is unlikely to be present unless the target perceives permanent effects from economic coercion. A database for all possible targets should be assembled for such a purpose. Data on humanitarian issues is more parsimonious. Some data have been identified by the UN Inter-Agency Standing Committee (IASC) study and handbook (2004) on sanctions assessment.

The Humanitarian Effects

If gaining international support is important to sanction success, then monitoring the collateral damage caused by sanctions is also important. The smart sanction literature, discussed in chapter four, has initiated a new set of factors for this literature to monitor and test

empirically. If sanctions are blunt instruments that act like macroeconomic policies transmitting their effects to a target nation, collateral damage is an unfortunate consequence of economic statecraft. The Sanction Effectiveness Continuum suggests that the sanction's economic success must be separated from humanitarian success because of this social element.

Two major challenges exist in estimating humanitarian damage to the target during sanctions. First, the omnipresent data problem continues. While the United Nations and World Bank make great attempts to track the evolution of developing economies concerning their level of freedoms, available goods and technologies, and education, these agencies also struggle due to low resources, poor participation by the populace, and unreliable data sources. Linking measures from a census taken under one government to another comes with the hope that logic not politics dictated the data's collection. Across countries, data matching and splicing may work if a global organization gathers, synthesizes, and disseminates the information, but still caveats remain. There is one recent study that has focused on humanitarian effects from sanctions taking these two problems into consideration.

In October 2004, Bessler et al. (2004) released the UN Inter-Agency Standing Committee published a report called the *Sanctions Assessment Handbook*, called IASC 2004 from here. This guide is the foundation of the human effects estimations given later.¹⁵ IASC 2004 outlines the potential problem that may flow from sanctions for an assumed innocent populace. Using data from the World Bank's *World Development Indicators* (2006), this section attempts to utilize the exchange rate effects given earlier as exogenous shocks to test for humanitarian effectiveness in the included cases. The largest initial challenge once a data source is found is deciding on what specific data to include as indicators of humanitarian conditions.

As chapter four discussed, the debate continues to swirl concerning the legality of sanctions and how much collateral damage is too much.¹⁶ Much like the economic results given earlier, it is more precise to talk in terms of effectiveness and not humanitarian success or failure: the less negative the human impact, the more effective the sanction. Instead of using binary measures that force this analysis into the box of success or failure, measuring these effects seems better done by looking at ordinal measures and comparing them across episodes.

Dependent Variable Choice

The dependent variable is a composite indicator built on the sum of the increases and decreases of subindicators. The difficulty, as with all

indicators, is to choose the components well. Each individual indicator of the target's human conditions is given equal weight in this analysis, as debating over which indicator should receive more weight, given the data parsimony, is like two bald men fighting over a comb.¹⁷ This is where IASC 2004 plays a helpful role.

IASC 2004 gives eight categories to measure human conditions in a country: access to health care, water, education, and food; governance and economic conditions; environmental and demographic indicators. The dependent variable in this study looks at six of these categories; due to data parsimony in the *World Development Indicators* (2006) database, all but the economic conditions and demographic indicator are used.¹⁸ Because the other data categories have some indicator that touched all the case studies and their targets, they were the final subindicators of choice. Putting together an index avoids problems of missing data somewhat, as there may be periods in which no data exists for certain indicators. Table 6.4 shows this data, where a qualitative description of each indicator precedes the data.

Health Access: Prevalence and death rates associated with malaria and tuberculosis; deaths of children under five years old; infant and maternal mortality rates.

Food Access: Prevalence of underweight children under five years old.

Water Access: Proportion of population with access to improved water and sanitation sources.

Environment: Proportion of land covered in forest; carbon dioxide (CO₂) emissions; consumption of ozone-depleting chlorofluorocarbons (CFCs).

Education: Proportion of pupils that start grade one and reach grade five; literacy rates; ratio of girls to boys in secondary and higher education.

Governance: Proportion of seats held by women in national parliament.

The categories have an interpretation, as shown in table 6.4, when the data are available.¹⁹ If the post-sanction condition is worse than the pre-sanction condition, the subindicator is given a value of -1 . If conditions were better after the sanction, the value is $+1$. If there is no change or no data, the condition is zero.²⁰ Like other ad hoc measures in the sanction literature, these data are merely a toehold and a beginning toward empirical models of economic statecraft where the human outcome can be compared to past cases, given the pre-sanction data. Figure 6.1 provides a histogram of the final indicator data.

Table 6.4 Humanitarian data estimates for sanction cases

Target	Dates	Humanitarian Indicator						Total
		Health	Food	Water	Environment	Education	Governance	
Argentina	1977–84	1	1	0	-1	0	0	1
Argentina	1978–82	1	1	0	1	0	0	3
Brazil	1962–64	1	1	0	1	0	0	3
Brazil	1977–84	1	1	0	1	0	0	3
Cameroon	1992–98	0	1	0	0	0	0	1
Chile	1965–66	1	1	0	-1	0	0	1
Chile	1970–90	1	-1	0	1	0	0	1
Chile	1973–90	1	1	0	1	0	0	3
China	1989–98	0	1	0	-1	0	0	0
China	1991–98	0	1	0	1	0	0	2
Colombia	1996–98	-1	1	0	-1	0	0	-1
Cuba	1960–Present	-1	0	0	0	0	0	-1
Egypt	1963–65	1	1	0	-1	0	0	1
El Salvador	1977–81	1	1	0	1	0	0	3
El Salvador	1987–88	1	1	0	-1	0	0	1
El Salvador	1993–93	0	1	0	-1	0	0	0
Ethiopia	1976–92	1	-1	0	-1	0	0	-1
Guatemala	1977–86	1	1	0	1	0	0	3
Guatemala	1990–93	0	1	0	-1	0	0	0
Haiti	1987–90	0	0	0	1	0	0	1

Haiti	1991-94	0	-1	0	-1	0	0	-2
India	1965-67	1	1	0	0	0	0	2
India	1971-72	1	1	0	-1	0	0	1
India	1978-82	1	1	0	-1	0	0	1
India	1998-2005	0	1	0	-1	1	1	2
Indonesia	1963-67	1	0	0	0	0	0	1
Indonesia	1993-95	0	1	0	-1	0	0	0
Iran	1979-81	1	1	0	-1	0	0	1
Iran	1984-98	0	1	0	1	0	0	2
Iraq	1980-87	0	0	0	1	0	0	1
Iraq	1990-2003	-1	0	0	-1	0	0	-2
Liberia	1992-98	-1	-1	0	-1	0	0	-3
Libya	1978-98	1	1	0	1	0	0	3
Malawi	1992-94	-1	1	0	0	0	0	0
Myanmar	1988-90	1	-1	0	0	0	0	0
Nicaragua	1977-79	0	1	0	-1	0	0	0
Nicaragua	1981-88	1	0	0	1	0	0	2
Nicaragua	1992-95	0	1	0	-1	0	0	0
Nigeria	1993-98	0	0	0	1	0	0	1
Pakistan	1979-86	1	0	0	-1	0	0	0
Pakistan	1971-71	1	1	0	-1	0	0	1
Panama	1987-93	0	-1	0	0	0	0	-1
Paraguay	1977-81	1	1	0	1	0	0	3
Paraguay	1996-96	0	1	0	-1	0	0	0
Peru	1968-74	1	1	0	-1	0	0	1
Peru	1991-95	-1	1	0	-1	0	0	-1
South Africa	1975-82	1	1	0	1	0	0	3
South Africa	1985-92	0	1	0	0	0	0	1
South Korea	1973-77	1	1	0	-1	0	0	1

Continued

Table 6.4 Continued

Target	Dates	Humanitarian Indicator						
		Health	Food	Water	Environment	Education	Governance	Total
Sri Lanka	1961–65	1	1	0	1	0	0	3
Sudan	1989–94	-1	1	0	1	0	0	1
Sudan	1993–Present	-1	1	0	1	0	0	1
Syria	1986–94	1	-1	0	-1	0	0	-1
Taiwan	1976–77	0	0	0	0	0	0	0
Thailand	1990–93	0	0	1	-1	0	0	0
The Gambia	1996–98	0	-1	0	-1	0	0	-2
Togo	1992–94	-1	1	0	-1	0	0	-1
Turkey	1974–78	1	1	0	1	0	0	3
Uruguay	1976–81	0	-1	0	1	0	0	0
USSR	1975–90	1	1	0	-1	0	0	1
USSR	1978–80	0	1	0	-1	0	0	0
USSR	1980–82	0	1	0	1	0	0	2
USSR	1981–81	1	0	0	-1	0	0	0
USSR	1983–83	1	0	0	-1	0	0	0
Zimbabwe	1983–88	1	0	0	-1	0	0	0

Source: World Development Indicators (2006) and author's calculations.

An example such as U.S. sanctions against India between 1978 and 1982 illustrates the data interpretation. The zeros represent no data change; health care and water availability did not change over the sanction period. However, environmental conditions worsened, while food and education availability and governance conditions were augmented. Are sanctions meant to worsen these conditions? Absolutely not, especially if the sanctions are “smart” and focused. Since the human indicator (HUMAN from here) is a discrete dependent random variable, the model chosen here is an ordered logit model, with similar exogenous variables to Drury (2005).

Exogenous Variable Choice and Hypotheses

This model’s hypotheses revolve around the exogenous factors that may affect human conditions during sanctions. The idea of smart sanctions is that unless sanctions are made more focal, their human costs are larger than they need to be. Further, factors that may affect the political outcome of sanctions may also affect the human conditions.

Other factors follow Drury (2005) and their links to HSE (1990). In short, factors such as the economic hegemony of the sender over the target, the presence of third-party sanction busters, or whether other policies are in place or not should also influence the human costs of embargoes. The hypotheses are as follow, where worsening

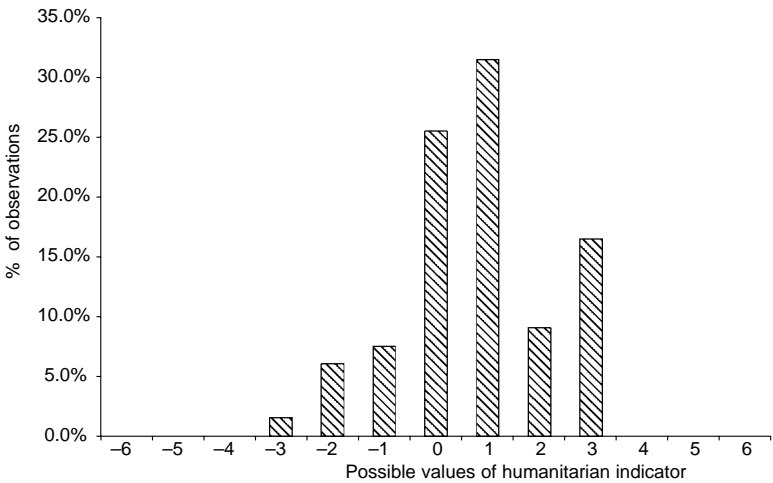


Figure 6.1 Humanitarian data distribution (% of total observations [65 obs]).

Source: World Development Indicators (2006) and author’s calculations.

human conditions or higher human costs are HUMAN becoming relatively more negative as these exogenous factors change in value.

Hypothesis 3: *Sanctions that cause target exchange rates to depreciate resulting in worsening human conditions.* On the surface, if higher exchange rates (target currency falling in value) indicates economic damage from coercion, human costs should rise. The cross-sectional effects of export, import, and financial sanctions are used as variables to test this hypothesis.

Hypothesis 4: *If the target is under economic distress before sanctions, the human cost of sanctions is higher.* If the target economy is already experiencing economic problems, human costs should rise even without sanctions. This is a dummy variable (distress = 1, no distress = 0).

Hypothesis 5: *If a black knight is present, the human cost should be less.* Analogous to political damage, if a sanction buster exists, their substituting for lost target markets supports better human conditions (black knight present = 1, 0 otherwise).

Hypothesis 6: *If there is more than one sender, human costs rise.* This is the opposite of the black knight problem. If other countries are involved as senders, this condition should force more scarcity and more human costs (multiple senders = 1, unilateral sanctions = 0).

Hypothesis 7: *If the total trade between the sender and target is relatively high, the human costs will also be relatively larger.* If sender economic hegemony is measured by the size of total trade between sender and target, the sum of the pre-sanction percentages of target exports and imports involving the sender, then the larger the size of total trade involving the sender, the larger the human costs from sanctions.

Hypothesis 8: *If the sender's costs are relatively large, the target's human costs should fall.* If the sender's costs rise due to sanctions creating a target reaction that affects the sender economy adversely (i.e., a retaliatory oil embargo), the shorter the sanction duration should be and the lower the target's human costs (sender costs are integers between one and four, higher sender costs closer to four).

Hypothesis 9: *If other statecraft policies are in place originating from the sender, the higher the human costs of sanctions.* Generally, other policies are military or diplomatic restrictions. The more restrictive the overall policy package, the higher the relative human costs should be (other policies = 1, 0 otherwise).

Hypothesis 10: *The more recent the sanction, the lower the human costs.* For more recent cases based on start year, humanitarian

Table 6.5 Humanitarian logistic regression results: initial effects of sanction shock

Variable	Results	
	Coefficient	Std Error
Export sanction	-1.220*	0.660
Import sanction	1.506*	0.896
Financial sanction	-0.104	0.183
Target under economic distress?	-0.506	0.412
Presence of a "black knight"?	0.329	0.961
Multilateral cooperation?	-0.638	0.367
Total trade = export % + import %	-0.011	0.007
Sender cost	0.564	0.366
Other policies in place?	-0.249	0.616
Start year of policy	-0.103***	0.033
National security sanction?	-0.695	0.669
Institutional involvement?	-0.687	0.669
Prior relationship good?	-0.756	0.576
<i>Global Results</i>		
Pseudo-R ²		0.194
Observations		65

Data Sources: HSE(1990), Drury (1998, 2005), and author's calculations.

*** significant at the 1 percent level; ** significant at the 5 percent level;

* significant at the 10 percent level.

monitoring and aid is more likely to flow in the face of sanctions, even from the sender's themselves.

Hypothesis 11: *If the sanction is for reasons of U.S. national security, the target's human costs are higher.* Since sanctions involving national security are likely to be more comprehensive and blunt, the human costs should rise under these sanctions (if for national security = 1, 0 otherwise).

Hypothesis 12: *If institutions, such as the United Nations or European Union, are involved in sanctions, the lower the human costs.* On the surface, the involvement of an institution should bring more countries and more monitoring of human costs if any are overtly involved. This hypothesis could go either way (institutional involvement = 1, 0 otherwise).

Hypothesis 13: *If the prior relationship between the sender and target is amicable, the human costs should be lower.* If the nations are historically friendly with each other, human costs are likely to be reacted to more quickly, especially if prior relationships mean cultural connections.

Table 6.6 Humanitarian logistic regression results: cumulative effects of sanction shock

Variable	Results	
	Coefficient	Std Error
Export sanction permanent	-0.007	0.018
Import sanction permanent	0.046**	0.020
Financial sanction permanent	0.003	0.006
Target under economic distress?	-0.200	0.203
Presence of a "black knight"?	-0.530	0.462
Multilateral cooperation?	-0.553***	0.175
Total trade = export % + import %	-0.006	0.004
Sender cost	0.253	0.205
Other policies in place?	-0.328	0.379
Start year of policy	-0.022	0.016
National security sanction?	-0.178	0.372
Institutional involvement?	-0.715*	0.405
Prior relationship good?	-0.700**	0.311
<i>Global Results</i>		
Pseudo-R ²		0.203
Observations		65

Data Sources: HSE(1990), Drury (1998, 2005), and author's calculations.

*** significant at the 1 percent level; ** significant at the 5 percent level;

* significant at the 10 percent level.

Given these hypotheses, building the model is our next task, where the exogenous variables are specific to the hypotheses given earlier. Our major focus is on hypothesis 3, to test this hypothesis when including the economic results given earlier.

The Model

This model's specification is a discrete choice model, an ordered logit model.²¹ Because the dependent variable, HUMAN, was built to have ascendancy, the exogenous variables help determine the probability that an exogenous shock causes more human costs (a coefficient that is negative) or less (a positive coefficient on the respective independent variable), if the effect is significant. The results in tables 6.5 and 6.6 show the effects of the initial and permanent economic effects from the VAR analysis given earlier on the human costs, holding the pre-sanction control variables otherwise constant.

This model is not meant to be a causal model. No claims to causality are made here because without time series data for HUMAN or an analog measure, there is difficulty testing for causality between

economic coercion and human costs.²² In a similar way to the earlier analysis, economic coercion flowing through exchange rate changes acts as the shock; the evolution of the humanitarian conditions result from these shocks.

The ordered logit regression is shown by the model in equation 6.2, and the results follow. This cross-sectional analysis takes the selected cases as observations. The following model is the regression formula used in each case:

$$\text{HUMAN}_i = \beta_k \mathbf{X}_{i,k} + \varepsilon_i \quad (6.2)$$

where HUMAN is the indicator calculated earlier, the data of which is in the "Total" column of table 6.4. β_k is the $1 \times k$ vector of regression coefficients on the included exogenous variables, and $\mathbf{X}_{i,k}$ is the $k \times 1$ vector of explanatory, exogenous variables that test the hypotheses given earlier. ε is the error term in the regression, which has a logistic distribution in this regression. Tables 6.5 and 6.6 test for the determinants of human suffering in sanctions, where the economic shock is first measured (table 6.5) by the one-month interaction term for each sanction involved for sanction case i , and then for the cumulative effects of the sanctions (table 6.6). If the exchange rate was unchanged, the economic effect is considered zero, as if no sanction took place. The remaining exogenous variables are control variables.

Results

From table 6.5, we see that export sanctions and import sanctions, through their exchange rate effects, initially have ambiguous results on human costs. Financial sanctions are not significant in their effects. Export sanctions having a strong, negative effect on human costs is logical. As a sender restricts its exports to an economy, those restrictions may include specific goods that inhibit economic development: technologies, agricultural equipment, other capital, and so on. Such sanctions were at the heart of South African coercive measures, for example.

Import sanctions augmenting social conditions is somewhat confounding, but not when considering the exchange rate effects. If the sender restricts travel to the target, for example, this may lower export prices and attract other countries to buy the target's exports. The costs of such sanctions on the populace may be mitigated by natural market effects; the scarcity issue is not the same as under export sanctions. However, in both cases, the significance level is not extremely high, which acts as a caveat on making too large an inference about these effects.

Among the control variables otherwise, the start year variable from Drury (2005) is negative and significant in its effects. More recent sanctions are correlated with more humanitarian problems, providing evidence to support increased awareness concerning collateral damage, a la smart sanctions. Since many U.S. sanctions against less-developed nations are with formerly friendly nations (Iraq's 1980 case is an example), this problem may also be controlled by a less-developed nation dummy variable. That variable is not included here because the level of ad-hoc variable usage is already high, and determining which countries are less developed versus others may also be definitional and problematic. However, further research may find such a variable useful. It is also perplexing that variables concerning multilateral sanctions, institutional involvement, and the prior relationship between the sender and target were not significant in their effects.

In table 6.6, which changes the model by dropping the initial economic effects and including their permanent counterparts, the results change. Import sanctions continue to be significant, positive in their effects on human conditions, and have become more significant; export and financial sanctions are both insignificant in the long run. The import sanction's significance and direction again is somewhat intuitive, as targets likely adjust easier to these sanctions over time concerning human costs. These results help the smart sanction case, as sanctions have either positive or no effects on human conditions in the long term, using exchange rate fluctuations as the economic shock variable.

Smart sanction arguments to monitor sanction effects closely are supported by the other significant coefficient results. Multilateral sanctions are now significant, as are institutional involvement and a positive prior relationship between the sender and target. For each of these variables, the effects are detrimental to the populace. As multilateral sanctions continue, the fact that more than one sender exists harms the population through general scarcity. The logic here is the same for institutional involvement, where some consortium is reducing the alternative options for the target economy. The positive prior relationship likely hurts the populace because common people gained from that prior relationship. The ease in goods flow suddenly reversed due to sanctions may be this detriment. The multilateral sanctions effects are the most significant of all the results, and the most intuitive.

Import sanctions minimize humanitarian damage to the target concerning human costs and are thus effective sanctions. Export

sanctions are initially ineffective from a humanitarian perspective; both financial and export sanctions are neutral on social costs in the long run; in this way, these sanctions are also effective. However, if there is multilateral cooperation or institutional involvement in policy, especially against a prior friend in the target, the human costs could be significant. The global performance of the model, as stated by the pseudo- R^2 in each case, is not extremely high.²³ This is a general outcome of cross-sectional studies, as there are many other explanatory variables that exist to explain the true human costs of a sanction. However, the variables are somewhat ad hoc here, and that caveat prevails, unfortunately, throughout most sanction studies because of data parsimony. Using a similar methodology, this empirical analysis concludes with the political effectiveness tests.

The Political Effects

These effects are simultaneously the most important and most elusive. There are three issues with defining the political effects of sanctions: (1) the stated goal and its dynamics during the sanction episode; (2) the target's political conditions in place before, during, and after sanctions; and (3) finding a variable that measures the sanction's relative political success. The HSE (1990) data, supplemented by Drury (1998, 2005), provide an ad hoc statistic, but one that is more robust than its contribution score counterpart or the original HSE (1990) success score. Using the data generated from the economic effectiveness results given earlier, the political effectiveness is a cross-sectional examination, where each sanction case is tested for how the economic shock affects the political outcome comparing the initial effects to the longer term. The same exogenous variables are used as in the humanitarian effects model, which parallels HSE (1990) and Drury (2005). In fact, their results are directly compared to the following results when applicable.

Certain attempts stand out as strong examples of testing a sanction's political efficacy using first the HSE (1985) data. Lam (1990) used a probit model to test the HSE hypotheses and conclusions, employing the four-value, political success score of HSE (1985) as the dependent variable by converting it into a binary variable of success or failure.²⁴ Dehejia and Wood (1992) basically repeated Lam's (1990) analysis, and suggest that econometric analyses of sanctions are inherently biased to the point where any assessment has so many data and methodological flaws that any estimation is problematic.

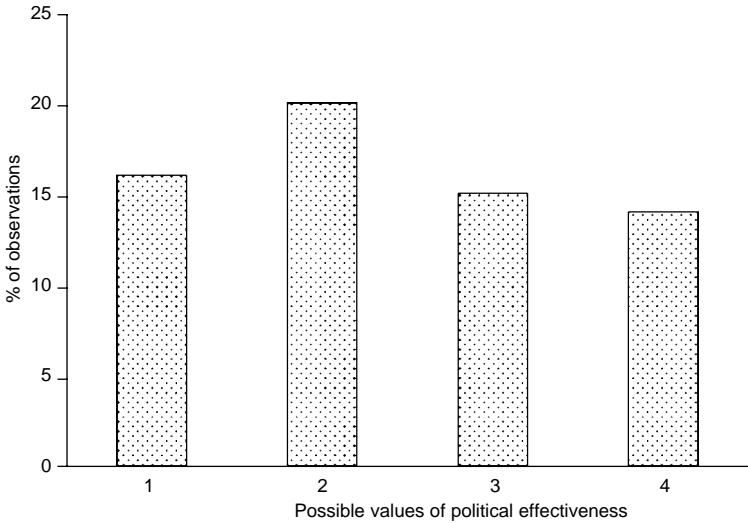


Figure 6.2 Political effectiveness indicator for sixty-five observations (distribution of values by percentage of total).

Sources: HSE (1990), Drury (1998, 2005), and author's calculations.

Dashti-Gibson et al. (1997) underscore the key consideration underlying these analyses. “The purpose of statistical estimation is precisely to find generalizable relationships between variables. The contribution of sanctions—or the components thereof—is precisely what is to be estimated” (611–12). Their analysis uses the same scaling as Lam (1990) to show how sensitive the results are to small changes in specification and data choice. Consensus is followed here, where the dependent variable is ordinal rather than binary, a la Drury (2005).

Dependent Variable Choice

The HSE (1990) data, as in the other studies, provides a beginning to these answers. The focus here is on combining several political indicators and their links to both economic and humanitarian variables above by modeling the target's macroeconomy and its links to political change. The approach here mirrors Drury (2005) using a discrete dependent variable that is ordinal in tracking the relative political change in each case. This variable is called “RESULT”

from here, which ranges from one to four in value. Figure 6.2 provides a histogram of this variable's values for the sixty-five cases examined.

Exogenous Variable Choice and Hypotheses

Using the economic shocks and control variables from the hypotheses 3 through 13, the following hypotheses focus on the political outcome of each case. The RESULT variable increases as the policy is more effective. These descriptions mirror Drury (2005) for comparison when in common.

Hypothesis 14: *Sanctions that cause target currency to fall in value are more politically effective.* If higher exchange rates (target currency falling in value) indicate economic damage from coercion, the current target regime will have pressure, from interest groups or a lack of funding otherwise, to change policy.

Hypothesis 15: *If the target is under economic distress before sanctions, sanctions are likely to be more effective.* If the target economy is already experiencing economic problems, sanctions are likely to exacerbate political pressure on a regime already in trouble.

Hypothesis 16: *If a black knight is present, the sanction will struggle to be politically effective.* This is the classic way in which the target avoids the deleterious effects of sanctions. If a sanction buster can replace the markets abandoned by the sender, the political pressure for change is likely to fall.

Hypothesis 17: *If there is more than one sender, political effectiveness increases.* This tests the ideas of the sanction cartel on the target's politics. The cooperation issue continues to be debated, as tested for in Drury (1998, 2005).

Hypothesis 18: *If total trade between the sender and target is relatively high, the political effectiveness will also be relatively larger.* Sender hegemony is a classic variable claimed to help determine economic coercion's efficacy.

Hypothesis 19: *If the sender's costs of sanctioning are relatively large, the target's rulers are likely to be less pressured for change.* If the sender's sanctions costs are large, the sanction's potency is in jeopardy, and should reduce the political pressure on the target's decision makers.

Hypothesis 20: *If other policies are in place originating from the sender, the political effectiveness of economic statecraft should rise.* Drury (2005) states that certain sanctions are less likely to work without the assistance of covert operations; thus this variable controls for that in testing political effectiveness (42).

Table 6.7 Political logistic regression results: initial effects of economic coercion

Variable	Results and comparisons			
	Coefficient	Std error	HSE	Drury
Export sanction	-0.077	0.283		
Import sanction	0.048	0.362		
Financial sanction	-0.146	0.120		
Target under economic distress?	-0.401	0.276	-**	-*
Presence of a "black knight"?	-0.228	0.488		
Multilateral cooperation?	-0.549**	0.261	-*	-***
Total trade = export % + import %	0.011**	0.005	+**	+
Sender cost	-0.087	0.279		
Other policies in place?	0.436	0.454		
Start year of policy	-0.029	0.027	-**	-**
National security sanction?	0.633	0.379		-*
Institutional involvement?	0.195	0.464		+**
Prior relationship good?	0.152	0.428		
<i>Global results</i>				
Pseudo-R ²		0.138	0.078	0.119
Observations		65	114	114

Note: Drury (1998, 2005) is the source of both the HSE and Drury data (49).

*** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Hypothesis 21: *The more recent the sanction, the more politically effective it is.* This is an ad hoc measure of international interdependence from Drury (2005); however, for less-developed nations, which have been the focus of recent sanctions, their lack of interdependence may lead to more damage (ibid.). This is a difficult hypothesis to assess ex ante.

Hypothesis 22: *If the sanction is for U.S. national security purposes, the political effectiveness is likely to rise.* Sanctions involving national security are likely to be more painful for targets than other sanctions. The political effectiveness, however, may be in question for such a case due to a rally-around-the-flag effect.

Hypothesis 23: *If institutions, such as the United Nations or European Union, are involved in sanctions, the more politically effective the sanction.* Institutional involvement is meant to be an extension of diplomatic prowess and hegemony as senders.

Hypothesis 24: *If the prior relationship between the sender and target is amicable, political effectiveness should rise.* If the nations are

Table 6.8 Political logistic regression results: cumulative effects of economic coercion

Variable	Results and comparisons			
	Coefficient	Std error	HSE	Drury
Export sanction permanent	0.046	0.034		
Import sanction permanent	0.039*	0.021		
Financial sanction permanent	-0.002	0.004		
Target under economic distress?	-0.384	0.268	-**	-*
Presence of a "black knight"?	-0.313	0.452		
Multilateral cooperation?	-0.652***	0.222	-*	-***
Total trade = export % + import %	0.009*	0.005	+**	+
Sender cost	-0.115	0.283		
Other policies in place?	0.365	0.434		
Start year of policy	0.259	0.427	-**	-**
National security sanction?	0.547	0.406		-*
Institutional involvement?	0.026	0.447		+**
Prior relationship good?	-0.005	0.026		
<i>Global results</i>				
Pseudo-R ²				0.157
Observations				65

Note: Drury (1998, 2005) is the source of both the HSE and Drury data (49).

*** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

historically friendly with each other, the cultural links may work with the sanction's efficacy on the target's politics.

Using the ordered probit model for the initial effects and ordered logit for the cumulative changes, the results of the regressions follow.²⁵ The regression results appear in tables 6.7 and 6.8. The following equation outlines the model of political effects:

$$\text{RESULT}_i = \beta_k \mathbf{X}_{i,k} + \varepsilon_i \quad (6.3)$$

where RESULT_i ranges from one (not effective) to four (most effective) for each sanction case i . β_k is the $1 \times k$ vector of regression coefficients on the included exogenous variables, and $\mathbf{X}_{i,k}$ is the $k \times 1$ vector of explanatory, exogenous variables that test the hypotheses given earlier. ε is the error term in the regression, distributed normally in the probit and logistically in the logit.

Results

From both tables 6.7 and 6.8, the results on the common variables with Drury (2005) and his interpretation of the HSE (1990) results match in terms of significance for total trade (a measure of the sender economic hegemony over the target) and multilateral cooperation. The cooperation variable is negative and significant in all the studies, and this provides additional evidence that cooperation is not necessary for sanction success, and in fact may be detrimental. Martin (1992), Pape (1997), and Drezner (2003) all consider the issue of cooperation deeply and the question remains somewhat unanswered; these results corroborate Drury (2005) and HSE (1990) that cooperation may be detrimental with fewer cases, fewer explanatory variables, and a higher level of goodness of fit. The sender's size driving political change is extremely intuitive, and connects to the target's elasticity of substitution falling in cases where the sender dominates the target's international market options. One way this variable should be enhanced is to include the sender's financial dominance (or lack thereof) over the target as well. The shock variables pick up some of this explanation as well.

The significant common variables from Drury (2005) and HSE (1990) that are not significant in this study are the economic distress variable, and the control variables of institutional involvement, the start year of policy, and whether sanctions are for national security purposes or not. This may be because the economic shock variables' inclusion picks up the explanatory effects of these variables in past regression, or the sample size adjustment takes away cases from the other studies that would otherwise replicate their results. Since the goodness-of-fit measure is marginally greater in this study than in Drury's results, the inclusion of the exchange rate shock variables positively influences the regression's explanatory power, as other included variables are essentially the same in both studies. To repeat as a caveat of comparing these studies too much, using just the U.S. cases here may bias these results upward in fit.

In the initial regression results in table 6.7, the coefficient on distress is negative as in other studies, with a p -value of 0.14, marginally insignificant. Also notice that the start year variable is not significant initially and then becomes significant and negative in the cumulative effects shown in table 6.8. This could be explained somewhat by globalization, as targets have been able to take advantage of globalization in more recent sanctions than in older cases, also a highly debatable result.

None of the economic shocks are significant initially. Once sanctions begin, the target's political reaction is not immediate. The power in these results lies in the comparison to the long-term effects of economic sanctions, shown in table 6.8. The cumulative results show that the effects are stronger in the long term, becoming more significant and with anticipated results per the hypotheses given earlier.

Import sanctions, in their cumulative effects, are positive and significant. As import sanctions continue, the correlation with political change is significant. The p -value on this coefficient is 0.06. The other sanctions are not significant, though export sanctions have the correct sign and a p -value of 0.17. Financial sanctions do not have significant effects on political outcomes in these cases. Additionally, this could be an anomaly of the sample size and concentration on cases where the United States was the sender only. However, assuming American hegemony over financial markets worldwide throughout the last sixty years, and that most financial sanctions in the data originate from or flow through the United States and its currency as transactions, these results feel counterintuitive. Easily circumvented and difficult to precisely define, financial sanctions may be victims of rhetoric and lack a credible threat to targets. Import sanctions in contrast, and export sanctions to a lesser extent, may be more detrimental to the target and its rulers, translating to marginal changes in the target's politics.

In short, these results both differ from and mirror the results in Drury (2005). The economic shock as characterized by a change in exchange rates shows how sanction mix affects political outcomes. Import sanctions are now seen as effective in both human concerns and political changes. The other sanctions either have little effect or are close to significant. Adding other cases may enhance these results, again because the United-States-only cases may bias these results significantly.

Conclusions

These estimations combine the intuition from chapters two, three, and four, where the effects play out in the exchange rate as discussed in chapter five. This model may also predict the economic effects in new embargo cases. This chapter engaged in three empirical studies, expanding the sanctions literature. Using exchange rate shocks as measures of economic sanction effects in the first empirical exercise, these outcomes are used as exogenous variables data for regressions

and hypotheses tests concerning humanitarian and political effectiveness of economic coercion. The results show that import sanctions are more effective on human costs and simultaneously on changing the target's politics than any other sanction. Financial sanctions show little efficacy, while export sanctions show mixed results. The exchange rate shocks tie to chapter five's model as a measure of economic efficacy in sanctions. Future research may use a similar time series analysis but different dependent variables such as the terms of trade, domestic target prices, target unemployment, sender unemployment in specific industries, and so on. From a humanitarian and political perspective, it is likely the cross-sectional work will continue, where the expansion will be better data and new control variables.

Following Drury (2005), some control variables show intuitive results on both humanitarian and political outcomes. Cooperation between nations, where the sender may be alone but other nations implicitly assist in statecraft, was seen as having little effect. Multilateral sanctions were detrimental to both humanitarian and political outcomes from sanctions. The total trade between the countries, a connection to gravity models, is significant in the political effects initially; as sanctions continue, total trade is less important. These results show that sanction scholars can go beyond the models and data currently available in conducting empirical studies, especially where sanctions are viewed as macroeconomic policies.

Chapter 7

Conclusions and Policy Recommendations

Economic Coercion in a Spartan Fashion

Economic coercion, as an option in international diplomacy, has been in existence since the Megarian Decrees of 435 BC. Many historians debate whether these decrees, which acted to prohibit Megarians from using Greek ports or markets, initiated the Peloponnesian War. Current economic powers continuously debate over how to impose sanctions on upstart, rogue nations, remaining somewhat divided on actions and perceived consequences. North Korea's missile and nuclear tests in 2006 showed the world three key aspects of economic sanctions and statecraft, as the United Nations debates new measures.

The first is how sanctions walk a fine line between economic coercion and provoking war; the current case of North Korea and the Megarian case parallel each other in this way. "It does seem clear that in imposing restrictions of Megarian trade the Athenians were seeking a middle course. To have done nothing may have encouraged hostility to Athens, whereas resorting to the military option would have violated treaty obligations and provoked a military response from Sparta" (Simons 1999, 14). War is a constant specter hanging over many sanctions, though some targets cast a much longer shadow than others concerning geopolitics.

Second, certain target countries feel the weight of sanctions over time and retaliate. North Korea, under full U.S. financial sanctions since 1993, repeatedly states she is willing to negotiate over missile and nuclear programs if the United States began to lift its financial embargoes. This shows that current sanctions are having some political effects, pushing North Korea to develop a bargaining chip for the negotiation table. However, are they hurting the regime, the people,

or both? If Kim Jung Il is willing to provoke a military episode, it seems that sanctions are hurting the regime; war is likely to be very detrimental to the North Korean people ultimately. The UN reaction to the July 2006 missile tests, which the international community agreed was itself a move of North Korean statecraft to awaken the world, was initially split. China and Russia, two of North Korea's major trading partners and historic sources of military hardware, refused to initially endorse Security Council Resolution 1695 to impose sanctions on Kim Jung Il's nation in 2006, while Western Europe, South Korea, Japan, and America pleaded for this resolution.

Third, economic statecraft struggles to achieve political goals when the bar is set too high. Analogous to Cuba, Libya, Iran, and Iraq, it is unlikely that North Korea's international stance will change before the death of its current leader, a death that does not guarantee the regime's demise. If the sanctions had worked correctly, vis-à-vis their stated goal, the brinkmanship of 2006 would not have occurred. However, this is the bane of economic statecraft: focus on a political goal is unlikely to be consistent or precise. As in Ancient Greece, economic coercion can provoke exactly what it is trying to avoid. That leads to a classic and constant question in this literature.

Are Sanctions Effective?

This text outlines the political economy of economic sanctions, where the perspectives and studies are wide in academic genesis, focused throughout on what sanctions do. In a time where the world powers have generally moved away from the military option unless provoked, and where the United States has become the world's leading sanction sender, three basic economic ideas drive the literature's generalization that sanctions are ineffective. First, sanctions credibly reinforced by military options make economic coercion meaningless. Sanctions are no longer a precursor to military conflict; they have become a substitute or complement for military conflict. The empirical analysis of chapter six suggests that U.S. import sanctions have shown humanitarian and political effectiveness, while export and financial sanctions are mixed in their effects. Since most sanction packages are a mix of tools, this ambiguity may lead to these perceptions of ineffectiveness.

Second, the inability to gain enforceable international coalitions implies there are many third-party options for targets to circumvent sanctions further, reducing the credibility of sanctions. Ownership of a highly demanded, natural resource, for better or worse in our world, provides some insurance against effective sanctions. Nigerian sanctions

of the 1990s show evidence that certain countries decided not to sanction a military, human rights violations machine because of potentially losing Nigerian oil resources (O'Sullivan 2003). As Asia's demand for oil continues to increase parallel to its economic growth, the U.S. ability to sanction oil-exporting nations is likely to fall further. However, larger nations provide avenues for countries to avoid deleterious sanction effects by providing alternative trade routes. Cultural and ideological connections, as between China and North Korea, may be as powerful a force as profit.

Third, and maybe most important, the sanction goal may be defined such that sanction effectiveness is doomed to failure *ex ante*. Cuba has become a foundational case as to why sanctions are not effective, especially in penalizing the populace while targeting the ruling class. How could sanctions defined by complete political turnover ever work outside of a confluence of circumstances or military force? North Korean sanctions have become another important example of continued sanction ineffectiveness based on stated goals. Kim Jung Il remains as the North Korean leader while sanctions continue to mount.

The Sanction Effectiveness Continuum has four points along which a sanction travels: ineffectiveness, economic success, humanitarian success, and political success. This is a continuum because sanctions are not meant to discretely jump from one success level to another, but to move marginally toward stated political goals. Sanction effectiveness must be seen as steps toward a goal, not based completely on goal achievement. Policy makers must change their view on sanctions mechanics. This chapter concludes the text and makes policy recommendations under the belief that there are various levels of sanction effectiveness. The Continuum begins with sanction ineffectiveness.

Sanction Ineffectiveness

If the payoffs from sanction initiation provide a dominant strategy to engage in economic coercion measures, the policy maker must monitor transition points. Theoretically, the reason why sanctions end is because continuing sanctions are no longer the sender's dominant strategy. If the stated goal is to apply economic and political pressure on the current target regime to curb their behavior, many sanctions apply such pressure forcing the target economy to seek new markets, imposing higher costs on the target economy. Sanctions are effective generally in one of the following three ways.

Economic Effectiveness

Cuba and South Africa are strong, contrasting examples of economic versus political effectiveness. In the Cuban case, the stated goal was and remains Fidel Castro being removed from power. This goal has not changed, nor will it until Castro's death.¹ Economic success is a function of how the target economy is injured by policy. Chapter five of this book explained a new model of sanction effects using open economy macroeconomics, where the target's real exchange rate path should follow the sanction effects. If the sender truly has the ability to cause exchange rate fluctuations, reflecting macroeconomic reactions of one country to another's policies, then sanctions are simply another type of macroeconomic policy. What may force a sanction episode's end is the imposition of large human costs.

Humanitarian Effectiveness

Smart sanction analysis has developed due to the damage economic coercion is perceived to impose on an "innocent" populace. Less-developed nations have been, and likely will be in the future, the quintessential sanction target due to inherent political instability. Can sanctions be constructed in such a way so as to minimize collateral damage, or are they meant to harm the populace as a means to an end? From the previous chapters, it seems unlikely that sanctions can avoid damaging the public at large, and as a result struggle to focus on any one group.

For sanctions to be effective from a humanitarian perspective, policy must constrain its effects to the target rulers. Socioeconomic and human development measures provide data sources to potentially track a policy's collateral damage. In many sanction cases, there are other countries to provide food, clothing, medical supplies, and other essentials while sanctions take place. Of course, depending to which theory the policy makers subscribe, the more the harm done to the populace, the more likely it is that the sought-after change takes place. Others argue that the more the populace suffers, the more likely they will rally around their current leader, especially if effective propaganda campaigns takes place or a specific regime exists that imposes its will on its people.

Economists struggle with measuring international human conditions due mainly to poor data rather than poor methods, defaulting to income inequality measures such as the Gini Coefficient, net mortality rates, misery indices, education statistics, and others, as broad stabs

in tracking socioeconomic conditions. These data, unfortunately, simply do not exist for many countries. Humanitarian effectiveness in economic sanctions may be seen as an afterthought due to a lack of consensus over what data to track for humanitarian conditions and data availability, which is a mistake. Human suffering is likely to mitigate economic effects that would otherwise lead to political efficacy.

Political Effectiveness

For policy makers, defining political success should not be organic, it should be realistic. Of course, the luxury that analysts have is clear vision concerning the past. Political effectiveness in economic coercion comes in two general ways.

Intended Change in Target Behavior, Including Governmental Overthrow

This is true political success. The target actions are reversed, and the sender's intention comes to fruition. The sender is now challenged to release the target economy from the embargo and monitor how the target continues as a member of the international community. Also, how the populace reacts to a new government may be a key factor in how these policies truly become effective sanctions. Haitian sanctions are an example of sanction efficacy on high one day and looking terrible the next: problem government falls, democratic government enters, humanitarian problem ensue with disastrous consequences (Simons 1999, 107). The Sanction Effectiveness Continuum is meant to keep policy makers and scholars focused on the steps sanctions ascend to take policy from initiation to success or failure. Most rulers do not leave office willingly, and thus sanctions rely on positively affecting opposition forces in the target economy, and negatively affecting the current ruler's ability to govern. Chapter four suggested that public choice drives the sanction's political effectiveness and is tied to the level of opposition in the target economy.

Marginal Change in Target Behavior

The sender's political goal may be on the road to achievement through coercive measures, but doomed to never be achieved. This is a major problem with many sanctions, as the sender's original intent is not realized, even though the target's politics actually turn toward the stated goal. Rhetoric, for better or worse, is its own worst enemy, especially in supporting the credibility of further action. Chapter three

suggested that game theory models exist where the commitment level of senders is based on issuing credible threats. The more the target's behavior turns toward the sender's demands, the more successful the sanction episode on the margin. Chapter six showed that political success is most likely through import sanctions, as is with humanitarian effectiveness from the same policies.

This text has discussed many models and ways to track sanctions, where effectiveness is viewed in stages rather than as a single political triumph at any cost. General conclusions and policy recommendations follow.

General Conclusions

Economic Statecraft Must Act Like a Cartel

Sanction regimes that act like cartels split the world in three pieces. Certain countries either do not react or pledge their support for or against the embargoes. The policy cartel forces markets to accept a cost of political deviance that the countries within the policy cartel agree is the benefit-maximizing level of sanction imposition. In this way, the target's political market consumes the cartel's policy at a monopoly price. Once multilateral sanctions have been initiated, the sender must worry about nations cheating on the agreements, substitutes markets coming to the surface, and the fact that the sanctions are not homogenous products. If the sender can act as a dominant firm (the United States), driving the coalition (the remaining United Nations) because it is a dominant leader, then the game and public choice theory lessons fall quickly into place toward explaining sanction efficacy.

Sanctions Are Macroeconomic Phenomena

While there is much discussion and hope that sanctions can be analyzed and devised as microeconomic phenomena, this view is naïve. Economic coercion aims to affect national political decisions, whether that is to isolate a portion of or the entire target economy, they must be viewed analogous to monetary and fiscal policies. It is important to also recognize economic statecraft is not a trade policy or a capital control or exchange rate policy in classic ways. Trade and financial connections between two countries are manipulated for political reasons in a sanction episode. Export and capital controls,

nontariff barriers to imports, and sanctions are just different terms for similar policies. The key is why the policy is applied.

Sanctions should be viewed as macroeconomic policies because the policy's intent is to transmit costs upon the target as a whole. The beggar-thy-neighbor effects displayed in the New Open Economy Macroeconomics (NOEM) models is exactly what sanctions intend to do. In these models, the analysis centers on how macroeconomic policy originating in a larger country may lead to lower welfare in other countries due to exchange rate effects. In chapter five, the model showed how sanctions can be modeled as such policies; chapter six provided estimates as to the exchange rate effects in sixty-five episodes. While the results were ambiguous under some policy combinations, examining macroeconomic variables investigates what sanctions are at their core.

Smart Sanctions Are Great In Theory, Difficult in Practice

From their definition to implementation and beyond, smart sanctions as devised in the literature are rife with problems. The theoretical idea of smart sanctions is very appealing: focused sanctions that minimize collateral damage and reduce the target government's resources to be pernicious internationally or oppressive domestically. Smart sanctions are a light form of trade and financial sanctions. They are simply non-comprehensive sanctions on specific goods and financing deemed focal to the stated political goal; these measures are simply specific statecraft and one should expect generalized effects from a blunt instrument (Craven 2002).

Sanction policy should be focused rather than blunt instruments if possible. Policy makers and scholars all should agree that minimizing damage to the target populace while maximizing the political effects is exactly what sanction efficacy and efficiency is all about. Sanctions seen as blunt, broad instruments initially, where the sanction mix determines the effects, may be a compromise. However, in any sanction, collateral damage must be expected. Differentiating smart sanctions from others is currently a semantic exercise rather than a research question. Chapter six showed that sanctions generally have little effect on human conditions to date through a cross-sectional analysis of historic cases.

These conclusions summarize the main points concerning sanctions made in this text, leading to simple policy recommendations for any economy deliberating sanctions as statecraft.

Policy Recommendations

Nations Must Seek Sanction Alliances with Nations Regionally

For countries such as the United States, slipping economic hegemony signals a need to reassess alliances and agreements such that a united approach to economic statecraft can take place. Drury (2005) eloquently described how the U.S. president has initiated sanctions on many occasions. These unilateral measures may have been more effective if a coalition of nations, especially those countries possessing large percentage shares of alternative trade and financing with a specific target, was in place regionally to act as sanction allies.

Alliances are only as strong as their weakest members. Such coalitions would diminish the American president's power in engaging sanctions. Such alliances cannot hurt economic statecraft's cause. Any sanction alliance must be built with the strongest world economies, not just the larger democracies, and retain vision enough to allow emergent economies to join rapidly. Russia, which recently failed to join the WTO because of antipiracy problems and a lack of commitment to international legal issues involving trade, could make a better case to join in American eyes if it were willing to act as a parallel sender on sanctions. Such an alliance would also take the focus off of alleged American neocolonialism and on the task at hand: maintain a world where economics is used rather than the military to solve regional diplomatic problems with renegade governments. Ideological issues must also be secondary to what ultimately is a change in the way the United Nations uses tools of economic diplomacy.

Build and Agree On Empirical Models to Predict Sanction Effectiveness

This text has steered away from discussing sanction "success" and instead focuses on marginal movements as measures of "effectiveness." Sanctions have effects that can be viewed by various parties as successful or not: relative effectiveness is the key measure to watch. Economic effectiveness is primary. Most sanctions pass this test. Chapter six's economic model provides this evidence through simple econometrics to predict how a sanction shock will change the target economy's exchange rates. The exchange rate shock should be a reaction to the economies changing, moving in a predictable fashion, and may also affect the sender.

Humanitarian effectiveness is not secondary per se, but is only observable once the economic effects take place. The estimation of humanitarian efficacy in chapter six provides a beginning to predict how exposed the target is to social costs. Social problems can become political problems, for either the sender or target, depending on how the target government spins the social costs that flow from sanctions. Humanitarian effectiveness must be autonomous of political effectiveness and keep from initiating rally-around-the-flag effects anywhere in the world.

The sanction's political effects are based on a specific, stated goal but really on moving the target nation marginally toward that goal. If the goal is stated as political turnover, the sender is overstating its economic power. Even at the height of American economic hegemony in the twentieth century, using economics alone could not force such political turnover. Political success, if based on goals of substance rather than rhetoric, is much easier to achieve marginally.

A Sanction Must End

Sanctions, like any other economic decision, are subject to the law of diminishing marginal returns. As time wears on in perpetual sanctions, such as U.S. sanctions on Cuba, the measures' power fades for two reasons. The price of continuing sanctions rises over time for all parties. The sender's maintenance and oversight costs alone rise in cost due to higher wages, attempts to circumvent the measures, and pressure groups lobbying for sanctions to end. There are also diplomatic costs: if sanctions continue, their goals have not been achieved. If social costs result, the longer the policy remains, the more the target populace suffers. The international community may call for sanctions to end simply to mitigate the target populace's suffering. The sender nation also suffers in both explicit and implicit ways by supplying sanctions for long periods of time, such that the demand for sanctions within the sender nation is likely to fade with time. The original political rationale is likely to erode through social change in the least, and the price the public is willing to pay is likely to fade. The key problem with ending sanctions is what price is paid to credibility in ending these measures prematurely, another diplomacy tradeoff for the ages.

* * *

At the time this text is being written, the United Nations is deciding what to do about North Korea. Three months after Security Council

Resolution 1695 was passed, North Korea conducted a nuclear test underground, in violation of the 1974 Non-Proliferation Treaty. It is likely that if Kim Jung Il's regime remains belligerent, and continues to upset its largest ally, China, due to the possible trade problems they would face by not following new UN proposals, these sanctions are likely to increase in intensity and their effects. Only time will tell as we enter year fifty-seven of North Korean sanctions. Unfortunately, brinkmanship and other acts of provocation are driving for just that, the antithesis of economic statecraft. And so it goes.

Appendix 1

Brief Cases Histories of Selected Sanction Episodes

These brief histories focus on U.S. economic statecraft initiation and continuation since 1960.¹ Providing background information, this chapter pays homage to and derives much from the extensive chronology provided by Hufbauer, Schott, and Elliott (HSE 1990) plus new studies and data. These brief histories provide other information, not emphasized by HSE, concerning certain macroeconomic variables. Other sources are quoted as needed case by case. This appendix provides the reader a taste of these cases' diversity while not substituting for texts with more focus on specific, multiple cases: HSE (1990) remains the encyclopedic work. O'Sullivan (2003) looks at recent cases in outstanding depth and detail; Askari et al. (2004) looks at multilateral cases.

Table A1.1 provides the cases and dates for the examples in this chapter, all with the United States as unilateral sender or a partner in a multilateral policy. Sanction studies have now focused on effectiveness in many different ways, not just a binary success or failure statistic. Appendix 1 presents historic cases and shows differences and similarities in each sanction's political economy, providing background for the empirical work in chapter six. Some of these cases are not mentioned elsewhere in the text qualitatively, but all cases are part of chapter six's empirical analysis. Stated data made in each case, though available from multiple sources, originate with the International Monetary Fund's website, *www.imfstatistics.org*, unless otherwise referenced.

An Isolated Case: North Korea, 1950–Present

Due to extreme data parsimony, North Korea is for now only a qualitative study. Some of the classic sanction issues exist. The sanctions are

Table A1.1 Selected cases

Target country	Sanction dates	Target country	Sanction dates
Argentina	1977–84	Libya	1978–98
Argentina	1978–82	Malawi	1992–94
Brazil	1962–64	Myanmar	1988–90
Brazil	1977–84	Nicaragua	1977–79
Cameroon	1992–98	Nicaragua	1981–88
Chile	1965–66	Nicaragua	1992–95
Chile	1970–90	Nigeria	1993–98
Chile	1973–90	Pakistan	1971–72
China	1989–98	Pakistan	1979–86
China	1991–98	Panama	1987–93
Colombia	1996–98	Paraguay	1977–81
Cuba	1960–Present	Paraguay	1996–96
Egypt	1963–65	Peru	1968–74
El Salvador	1977–81	Peru	1991–95
El Salvador	1987–88	South Africa	1975–82
El Salvador	1993–93	South Africa	1985–92
Ethiopia	1976–92	South Korea	1973–77
Guatemala	1977–86	Sri Lanka	1961–65
Guatemala	1990–93	Sudan	1989–94
Haiti	1987–90	Sudan	1993–Present
Haiti	1991–94	Syria	1986–94
India	1965–67	Taiwan	1976–77
India	1971–72	Thailand	1990–93
India	1978–82	The Gambia	1996–98
India	1998–2005	Togo	1992–94
Indonesia	1963–67	Turkey	1974–78
Indonesia	1993–95	Uruguay	1976–81
Iran	1979–81	USSR	1975–90
Iran	1984–98	USSR	1978–80
Iraq	1980–87	USSR	1980–82
Iraq	1990–2003	USSR	1981–81
Liberia	1992–98	USSR	1983–83
		Zimbabwe	1983–88

Sources: HSE (1990), Drury (1998, 2005), and author's calculations.

long term; in HSE (1990) it was the longest running sanction in their data set and remains so to date.² The sanctions changed in 1994, amidst the loss of allies in the former Soviet Bloc and reduced concession trade with China in lieu of hard currency trades. Further, the philosophy of self-reliance, *juche*, drove North Korea toward a nuclear program and profiting from selling arms and weapons systems to belligerent nations in the Middle East. Sanctions that began in 1950

as parallel acts to the Korean War continued as a way of stemming communism's tide during the Cold War. It is likely that the lack of dynamics and data in this episode has led to few studies before 1994.

Recently, authors such as Dreszner (1999), Simons (1999), and Martin (2000) have discussed North Korea at length. HSE (1990) provide extensive background, likely to be repeated in their third edition. Martin suggests that U.S. sanctions against North Korea became driven by incentives rather than aimed at punishment (2000, 107). The carrot-stick idea is also featured in Dreszner (1999), where positive incentives and punishment are discussed as policy options.

The threat of economic sanctions [rather than positive incentives] was unsuccessful in generating all the desired concessions [concerning nuclear fuel reprocessing] for two reasons. First, North Korea's expectations of future conflict were so extreme that it preferred stalemate to total acquiescence . . . Second, the United States could not compromise its demands due to the normative importance it placed on nonproliferation issues. (283)

This case is unique because of its duration, as coercive policies continue with worsening geopolitics that have forced the United Nations to reassess its sanctions package against Kim Jung Il's regime. North Korea claims economic isolation of its people, save relationships with Japan, China, and South Korea. U.S. sanctions are full sanctions, and deemed a function of national security. Elliott (2003) suggested a lifting of all nonproliferation and non-security related coercion policies (6). Rennack (2003) provides an outstanding overview of the case, stating that sanctions continue because North Korea remains a potential terrorist nation through funding and committing direct acts of terror, a nonmarket state under the Trade Agreement Extension Act of 1951 and the Trade Act of 1954, and engaged in nuclear proliferation (5–11). However, tracking sanction effects outside of the anecdotal is virtually impossible because no acceptable data exist.

In October 2006, as this study was being completed, North Korea conducted an underground nuclear test. This is likely another act of brinkmanship, as were the missile tests of July 2006. North Korea may see the end of sanctions very soon, with full-scale conflict. The following are brief histories of the cases empirically examined in chapter six.

Argentina: 1977–84

Argentina experienced two different, related sanctions between 1977 and 1984. The first was a reaction to human rights abuses, according

to UN stipulations. Political murders took place by the score, as Argentina's military government attempted to eliminate its enemies. In February 1977, President Jimmy Carter suspended aid to Argentina; Argentina immediately refused aid from the United States (HSE 1990, v. 2, 445). It decided to finance its military and economy through its domestic capital market. Debt rose steadily, and the human rights problems subsided from 1977 to 1982.

Argentine president Galtieri in 1982, amidst a large military buildup and economic implosion, sent 4, four thousand troops to the Malvinas (Falkland Islands), a British protectorate. Immediately, the United Kingdom and United States began full economic sanctions against Argentina, and Argentina retaliated by beginning a military conflict. The war ended quickly, though the sanctions lasted another full year. By the end of 1983, the Argentine government was overthrown. The economic situation in Argentina from 1975 to 1984 was a roller coaster of mismanaged central banking, large debt excesses for military control purposes, and international policies that restricted many markets (Di Tella and Dornbusch 1988, 311). Economic and military aid from the United States was cut off by 1977, not to return until 1984. In 1982, the United Kingdom cut all its Argentine aid and trade. In 1976, 7 percent of Argentine exports went to America or Britain, while 19 percent of their imports originated in these sender economies. The 1977 sanctions from America were still on during the Malvinas conflict. The decision to invade the Malvinas put additional economic pressure on the Argentine capital markets already suffering from monetary policies that had caused three devaluations in five years (Corradi 1985, 132). The sanctions against Argentina were full sanctions, consisting of both trade and credit. Once the overthrow took place, sanctions were lifted.

Brazil: 1962–64, 1977–84

During the early 1960s, the threat of U.S. financial sanctions cast a cloud over every decision Brazilian president Goulart made. In 1962, Brazil wrote into law a bill limiting the amount of income international firms could derive from their Brazilian subsidiaries and investments. Goulart ordered capital expropriation, petroleum-producing capital in particular, from U.S. firms in 1962 (Wesson 1981, 22). This decision was blamed on pressure from leftist forces within Brazil, forces taking a stand against aggressive capitalists (U.S. investors in specific) invading Brazil. Once the capital was expropriated, the United States formally cut 75 percent of its economic and military aid to Brazil, on

the advice of a Brazilian government official that sanctions would have large effects on the Goulart government's ability to retain power (HSE 1990, v. 2, 222). America influenced the International Monetary Fund and UN agencies to delay loans to Brazil. From 1940 to 1965, the United States was the largest supplier of loans to Brazil internationally, a pattern developed between many Latin American nations and America in the postwar era (Salazar-Carrillo and Fendt 1985, 179).

Robert Wesson reported that six hundred million dollars in loans were approved by the United States between 1960 and 1962, but only 20 percent of these loans landed in Brazil (1981, 107). Goulart was ousted in 1964, and the U.S. aid packages returned. The military government that followed Goulart was a human rights disaster, limiting political freedoms and holding no free elections. A purge of communists took place in Brazil, including book-burnings and labor union disintegration. Inflation increased 86.6 percent in 1965, due to monetary expansion and economic stagnation.

In 1977, Brazil's military government refused military aid from the United States after perceived human rights abuses by Brazil's government. America nominally cut aid for the next seven years. In 1984, Reagan established a new military aid relationship with Brazil; these sanctions suppressed Brazil's international capital market by direct intervention. The sanctions restricted only aid and credit directly. The Brazilian economy grew between the first and second sanction episodes; in the 1962 episode, U.S. real GDP was thirty times her Brazilian counterpart, shrinking to twelve times the size by 1977. Brazil's trade dependence fell from 1962 to 1977 also, as exports to the United States fell significantly from 62 to 17 percent of total exports, and Brazil's imports from America fell from 35 to 20 percent.

In the first episode, Goulart was forced out of office in 1964 in a military coup. Burns (1993) saw the U.S. economic sanctions as tantamount to the military overthrow of Goulart, as Goulart became unable to control his leftist government's position after losses of aid and loans. In contrast, Wesson (1981) saw the sanctions as doing little in the face of U.S. military presence and an unprecedented call for military rule in Brazil.³ The second episode's end came with less excitement, as America simply reversed its position on Brazil's human rights situation, electing to grant aid that the Brazilian government had earlier renounced.

Cameroon: 1992–98

In early 1992, soldiers engaged in summary executions of political demonstrators. Political violence continued to sweep through

Cameroon through 1993, as the Cameroon Democratic Union's vice-president was abducted and killed; this assassination was suggested to be politically motivated (U.S. Dept. of State, 1994a). Constitutional changes took place such that there was less democratic and personal freedom in Cameroon, worse its citizens human rights situation. As a reaction, the United States cut aid and oil imports from Cameroon.

The Cameroon economy remains based on oil as its main export, but it also exports coffee and other agricultural products. Cameroon sold 7.5 percent of its exports in 1990 to the United States, down to 0.4 percent in 1991, while it purchased 6.6 percent of its imports from America in 1991. Cameroon's economy suffered in the early 1990s. Real GDP fell at a rate of 2.9 percent per year from 1991 to 1994 (U.N. Statistical Yearbook 1997). From 1995 to 2000, Cameroon's economy rebounded well, fueled by better politics and economic growth worldwide.

Chile: 1965–66; 1970–90

Chile was the world leader in the copper markets in the early 1960s. In 1965, due to rising international demand for copper, Chile increased the raw copper price from \$0.36 to \$0.38 per pound. The copper price increase was followed by American copper and aluminum companies augmenting their prices, as aluminum and copper were close substitutes on the world market. Copper was Chile's principal export market, making its copper earnings almost entirely dependent on export prices (Corbo and Fischer 1994, 31). The United States restricted imports of Chilean copper, and aid was nominally cut. By 1966, America reinstated aid to Chile, and the raw copper price settled to the pre-sanction price of \$0.36 per pound. Chile's dependence on American sales fell dramatically, possibly a function of the 1965 sanctions; by 1970, the United States made up only 9 percent of Chile's export market, down from 43 percent in 1965. America sold Chile 30 percent of her imports in both 1965 and 1970, however. HSE (1990) suggested that the import restrictions on copper, coupled with aid and loan sanctions, forced Chile to rethink its pricing policies (276–79).

The 1970 sanctions against Chile were much longer in duration. These sanctions focused on ending the presidency of Salvador Allende. Before Allende's government, there was the Chilean Christian Democracy. Unfortunately, both the political right and left (Allende) opposed tax and social reforms. In 1970, by a slim margin, Allende won a parliamentary election. The United States consequently cut

loans and aid to Chile, as asset expropriation invoked sanctions via the Hickenlooper Amendment.⁴ Allende was killed during a coup d'état in September 1973. Of the many groups attempting to seize power, the military took control. The sanctions against Chile continued through the 1970s and 1980s, shifting focus to new human rights problems during the new government's regime.

Between 1973 and 1990, a military government ruled Chile, suspending parliament, restricting freedom of press, and participating in other human rights violations. The United States reacted by cutting financial and military aid. Credit sanctions continued into the 1980s, with many battles in the U.S. Senate over aid reinstatement. U.S. sanctions became more nominal over time, and by 1990 were off completely. In certain years, 1976 and 1985 particularly, U.S. restrictions eased, with loans and aid given for "humanitarian" purposes (HSE 1990, v. 2, 360–61). The Chilean dependence on international trade began to slow the economy, leading to currency devaluations and revaluations of debt (Dornbusch and Edwards 1994, 85).

Financial sanctions were the only restrictions used in the 1970 sanctions. Politically, Allende's assassination in 1973 ended his regime, bringing a new government into power. This new government, however, would compile just as bad a human rights record as Allende's. Political goals were achieved, one quickly and the other over a long stretch of time. Chile's imports were 27 percent from the United States in 1973. Chile experienced high inflation and volatility in real GDP growth, though private investment from foreign sources grew between 1977 and 1981 by three billion dollars.

China: 1989–98

China was first sanctioned in 1949, measures that continued through 1970. These sanctions were concerned with the spread of communism along the Pacific Rim, especially after the Korean War began in 1950. Once the Korean War was over in 1953, international participation in the Chinese embargo shrunk to only the United States and United Kingdom; by 1958, Britain retreated as well. The U.S. goal was a blockade of communist expansion (Leyton-Brown 1987, 68). Sanctions ended in 1970 because of changes in U.S. trade strategies (HSE 1990, v. 2, 101). In the 1980s, these fear resurfaced somewhat, culminating in 1989.

Beijing's Tiananmen Square was the site of student-driven, pro-democracy protests in May 1989. The Chinese government declared martial law in Beijing and moved in troops. Hundreds were killed,

hurt, and wounded as troops opened fire on demonstrating crowds. America acted immediately by curtailing all government contract activity, arms flow, and loans to China. Sanctions stiffened to influencing loan activity between China and international agencies and governments. In 1988, the Chinese purchased 12 percent of their imports from the United States and sold 7 percent of their exports to America. Many countries did engage in some form of embargo in 1989, with the United States pressuring some loan deferments, but the Chinese economy was little affected. Over the first five years of sanctions, Chinese real GDP grew at 10.2 percent per year, with slow inflation until 1992. These sanctions were more political reaction than action, a stand the United States felt morally obliged to take.

Chinese sanctions were imposed again in 1994 due to alleged sales of missile systems to Iran and Pakistan, and over goods piracy issues. To try and stop yet another arms race between India and Pakistan, these U.S. sanctions reduced sales of missile technology to China, which the American government saw as going straight through to Pakistan for profit. By the end of 1994, the sanctions were partially lifted due to an accord between the countries on third-party transactions (*Wall Street Journal* 1994). China oscillated politically between selling and not selling the weapons systems to Iran and Pakistan; issues over Chinese piracy of U.S. technology and allowing a huge black market for such things as videos and music exacerbated pressure for larger sanctions (Simons 1999, 160). By 1999, sanction pressure ebbed. While other, tighter sanctions were threatened for alleged human rights abuses, U.S. trade with China has increased in trend since 1994.

Colombia: 1996–98

Colombia has been associated with narcotics trade, specifically cocaine, for decades. In the 1990s, Colombia's president Samper was associated with drug traffickers and accused by the United States of undermining drug enforcement progress (Dow Jones News Services 1996b). Early in 1996, Colombia's refusal to sign a trade accord with the EU was pressured by U.S. sanctions (Dow Jones News Services 1996a). U.S. aid came to Colombia in many forms in the early 1990s, from financial to military, specifically to reduce the amount of drug trade taking place in the United States. The sanctions were on imports of Colombian coffee, flowers, among Colombia's largest export sectors, as well as aid. Sanctions ended when Andres Pastrana was elected as Colombian president in 1998. The problems of political corruption and drug trafficking continue today, even under Colombia's free-trade

agreement with the United States. “The armed insurrections and narcotics trafficking that accompany [the insurrections], are among the most significant threats to the Colombian economy” (Grieco and Schott 2006, 63).

The Colombian economy is a primary products economy. Coffee, roses, and apparel are among their chief exports (CIA Factbook 2000). In 1996, Colombia imported 36.1 percent of its total from the United States, selling America 40.2 percent of its exports. Colombia’s economy grew during the Samper regime at a quick pace. Real GDP grew at an average of 4.28 percent per year from 1991 to 1995 (U.N. Statistical Yearbook 1997). After that regime ended, Colombia fell into a recession for the remainder of the 1990s (*ibid.*).

Cuba: 1960–Present

Cuban sanctions are among the most heavily studied and debated. Fidel Castro led a communist revolt in Cuba that finally overtook the democratic Cuban government in 1960. The Soviet Union’s involvement in both funding and supporting Cuba was perceived as a threat to the United States and the stability of other Latin American nations. In 1962, Soviet missile deployment to Cuba pushed the Cold War superpowers to the brink of a nuclear exchange. The Soviets acquiesced to U.S. demands, the missiles were removed, and the threat subsided. Beginning in 1960, the U.S. reduced its trade with Cuba, and by 1965 the sanctions were as complete as any American measures to date. Throughout the 1970s, the U.S. intelligence network attempted to undermine Castro.

The regime withstood a continuous campaign of CIA-orchestrated terrorism, military invasion, industrial sabotage, agricultural arson, assassination, threat of assassination, the manipulation of regional bodies, the pressures of the “missile crisis,” intimidation of domestic and foreign companies, threats to trading nations, and all the many burdens of the broad economic war being waged by a superpower against a relatively small Caribbean island. (Simons 1999, 127)

These coercion measures became the template for much of American, anticommunist activity in Latin America throughout the 1970s and 1980s. Cuban troops were deployed to other communist revolts in Africa, including Ethiopia and Angola, increasing pressure to increase sanctions. In the late 1980s, pressure built on Cuba, as the Soviet Union began to break down economically and politically.

Through the 1990s, Cuba began to suffer as a result of losing its main trading and financing partner, which increased the potency of U.S. coercion. "U.S. sanctions against the Castro regime have complicated the economic agenda sought by Havana, namely reliance on foreign investment as a substitute for lost Soviet subsidies. U.S. sanctions have cost the regime hard currency" (Fisk 2000, 82).

Cuban sanctions remain in effect based on an anti-Castro stance, and are simply part of everyday events in Washington. The policy's simple purpose is to punish the Cuban government and people for allowing Fidel to remain in power. The Cuban case is hotly debated but lightly examined quantitatively due to a lack of reliable data. These sanctions are unlikely to end before Castro's death, and then may depend on his successor.⁵ Cuban economic statistics are extremely suspect, though exchange rate and trade data are used in chapter six.

El Salvador: 1977–81; 1987–88; 1990–93

In 1977, the United States was supplying El Salvador with 90 percent of its military aid. Political problems within El Salvador made America leery of continuing a high level of financial support. El Salvador withdrew new requests for military aid to avoid being denied the funding (Russell 1984, 120). U.S. arms sales to El Salvador continued after 1977, though at reduced levels, and there were few economic problems for El Salvador from this first sanction. Coffee is the historic leader in El Salvador's export market. After 1978, as her real GDP moved up rapidly, the El Salvador economy began to slump as coffee's value internationally decreased. El Salvador's real GDP fell almost 33 percent from 1977 to 1983. Her dependence on America increased from the first to the second episode; in 1977, America constituted 33 percent of El Salvador's exports and 30 percent of her imports. By 1986, these numbers increased to 44 and 39 percent, respectively. American aid to El Salvador never ceased completely in either sanction; U.S. economic aid to El Salvador doubled between 1980 and 1983 (Russell 1984, 122).

In 1987, four U.S. Marines died in a street attack in El Salvador's capital, San Salvador, and amnesty was granted shortly thereafter to the perpetrators by El Salvador's highest court (HSE 1990, v. 2, 606). Amnesty was granted because the killings were "purely political" in their nature. The United States threatened to withhold 10 percent of an aid package to be delivered in 1987; President Duarte overturned the amnesty ruling by executive order and the aid arrived. Human

rights issues were front and center in the 1990 sanctions on El Salvador. The killing of six Jesuit priests in late 1989 led to another aid cut in 1990. These sanctions lasted until 1993 when human rights were considered to be augmented by the U.S. Congress.

El Salvador experienced 3 percent growth per year of real GDP from 1989 to 1992, while inflation averaged 16.8 percent over the same time period. El Salvador's substantial trade ties to America, its previous experience with sanctions, and its growing external debt stock made this an effective sanction. HSE (1990) claimed the first sanction a failure, as the military government was neither threatened from within nor strongly pressured by America and continued to rule. The second sanction was claimed successful, as the amnesty decision was overturned. In 1990, El Salvador purchased 37.9 percent of its imports from the United States and sold America 34.1 percent of its exports. The late 1980s were a recessionary period for El Salvador, during which time there was much political upheaval. However, the early 1990s were strong economic years for El Salvador, as real GDP grew at an average rate of 6.2 percent per year from 1991 to 1995 (U.N. Statistical Yearbook 1997).

Ethiopia: 1976–92

In 1976, Haile Selassie abdicated his rule under military pressure, and a military junta replaced him. President Mengistu Haile-Mariam's new government immediately nationalized all land and most industrial properties, including U.S. firms and assets. By 1978, with the threat of U.S. aid losses, Ethiopia signed an agreement with the Soviet Union. U.S. military and humanitarian aid was curtailed. Loans were defaulted and, under new legislation and the Hickenlooper Amendment, further sanctions were imposed.

In 1984, bad harvests and a lack of timely aid damaged the Ethiopian economy. The United States did help, but only in humanitarian efforts. By 1986, an agreement was reached for expropriated asset compensation, but human rights abuses continued. Conflicts with Somalia and continuous civil war drove Ethiopia into further domestic problems. By 1990, rebels made large advances; by 1991, Mengistu was overthrown and the U.S. sanctions ended in 1992 as free elections took place in Ethiopia after sixteen years of civil conflict.

Ethiopia's real GDP growth before sanctions in 1976 was slow. Between 1973 and 1976, real GDP increased at 1.89 percent per year; prices climbed 14.5 percent per year. Her government spending deficit was 5 percent of GDP in 1976 and the current account was in

surplus. External debt was 18 percent of GDP in 1976. During the sanctions, the current account was in deficit throughout, as expected with droughts and subsequent famine; prices doubled between 1977 and 1987, while real GDP never grew more than 5 percent annually but twice in ten years between 1977 and 1987. In the late 1980s, however, there was a recovery, followed by problems until 1992. Real GDP grew an average 6 percent between 1986 and 1988, then fell 3.3 percent per year between 1990 and 1992.

Guatemala: 1977–86; 1990–93

Sanctions were imposed against Guatemala in 1977 for suspected human rights abuses and alleged mass political killings by both leftists in power and conservatives inside Guatemala attempting to gain power. In 1977, U.S. military aid and loans were reduced; in 1981, the U.S. severed diplomatic ties and canceled all military sales, aid, and loans due to continued poor reports on the Guatemalan civil rights situation. After democratic elections in 1984, the Reagan administration renewed aid and loans; in 1986, Guatemala received aid and military equipment, albeit at levels below pre-1977 agreements.

America purchased 37 percent of Guatemala's exports and provided 36 percent of her imports in 1976. Guatemala also found assistance from the USSR. As its economic situation fluctuated heavily between 1976 and 1986, Guatemala's real GDP increased at 12.2 percent per year from 1976 to 1978, and then fell at an average of 0.63 percent per year from 1979 to 1986. Prices increased 10.7 percent per year from 1976 to 1980; from 1981 until 1986, prices grew at 12.5. In the period between 1982 and 1984, there was 1.5 percent average inflation. Guatemala's debt to GDP ratio doubled from 8.8 percent in 1976 to 17.6 percent in 1986.

In March 1990, the *New York Times* reported that Thomas Strock, the American ambassador to Guatemala, was recalled to protest politically motivated killings of U.S. citizens; the human rights situation in Guatemala was reported as "deplorable" (*New York Times* 1990). In response to political pressure concerning drug trafficking and the aforementioned murders, President Bush threatened to again curtail economic aid unless Guatemala's government resolved these issues overtly. After more killings in the fall, the American Congress suspended \$2.8 million in aid. In 1993, aid was resumed after Guatemala had sufficiently improved the human rights situation.⁶

In 1990, the United States accounted for 25 percent of Guatemalan exports and 20 percent of imports, down from the first

sanction episode where the United States made up 36 percent of Guatemala's total international trade. Guatemala's inflation rate for 1985 through 1990 averaged 21.9 percent; however, real GDP grew over the same period at a modest 2.33 percent average. Guatemala's external debt was stable over this period, but relatively large; at the end of 1989, their debt was 34 percent of GDP, down from the previous two years. Guatemala's government spending deficit grew between 1985 and 1990, as did their current account deficit, in real terms. Guatemala's chief export was coffee, accounting for one-third of its exports in 1990.

Guatemala was a Latin American success story throughout the 1990s. From 1990 to 1999, real GDP grew at an annual average of 4 percent (U.N. Statistical Yearbook 2001). This was during sanctions, which shows the sanctions were low in their economic effectiveness.

Haiti: 1987–90; 1991–94

The United States suspended aid to Haiti after blatant human rights abuses in November 1987; thirty people were killed attempting to vote (HSE 1990, v. 2, 598). One month later, President Duvalier, blamed for ordering these political murders, went into exile. A military government stepped in and ironically the violations subsided. In 1990, new elections were held, and aid restored somewhat by the countries participating in the sanction.⁷ A priest, Jean-Bertrand Aristide, was sworn in as president of Haiti on February 8, 1991.

The external debt of Haiti tripled between 1979 and 1987. Prices in Haiti deflated by 11.4 percent in 1987, and then grew slowly until 1990, at an average of 5.5 percent per year. In 1990, Haitian prices began to soar, and continue to increase throughout the decade. From 1987 to 1990, Haiti's real GDP fell by 1.35 percent per year. This first sanction embargoed loans and aid only, though America claimed 84 percent of Haitian exports and supplied 64 percent of her imports in 1986.

In September 1991, violence erupted in Port-au-Prince with a coup attempt, and President Aristide lost power. America threatened renewed sanctions if the coup leaders did not step down and allow Aristide back into the presidency. The coup leaders did not and Haiti faced both trade and credit sanctions. U.S. oil companies were forbidden to deal with Haiti; Haitian assets and loans were also frozen. The sanctions became an embargo from the United Nations with Security Council Resolution 875; this increased the pressure on the military regime and had an immediate impact (Cortright and Lopez 2000,

90–92). Between 1991 and 1993, sanctions stiffened and eliminated all aid, as the talks between coup leaders and the deposed Aristide stumbled. The United States accounted for over 80 percent of Haitian exports and 65 percent of imports by 1991. On October 17, 1994, Aristide was back in power, and sanctions were lifted soon thereafter.

The 1991 policies against Haiti were punitive. Using both trade and credit sanctions, the United States forced Haiti's small, dependent economy into economic ruin. The Haitian economy of the late 1980s mocked other military economies in the Caribbean and Latin America. From 1991 to 1995, Haiti's real GDP fell 4.1 percent per year. This incredible slowdown was accompanied by 25.1 percent inflation.

India: 1965–67; 1978–82; 1998–99

The Indian sanction episodes are spread over time, imposed for many reasons. Balasubramanyam (1984) suggested sanctions imposed on India in 1965 were to combat agricultural reforms considered problematic by the United States. U.S. food packages, initially meant to help the poor, were perceived to be detrimental to agricultural production in India by 1965; President Johnson food aid packages should stop and force India to prioritize its agricultural planning better (Balasubramanyam 1984). Pakistan then invaded Kashmir, and the U.S. military aid to India was cut. With food and military supplies cut off, the threat of widespread famine increased with a bad harvest. By 1967, India has its food and economic relief packages restored under a new agreement that demanded India's reformation of an agricultural, five-year plan; food supplies from America came in smaller packages over time. America supplied India with 30 percent of its imports, while buying 18 percent of India's exports in 1964.

India's economy in 1965 was neither large nor industrial. Real output per capita grew over the 1960s, except for 1965 and 1966. The aid that flowed into the Indian economy as foodstuffs was 30 percent of the total value of Indian aid by 1967 (179). In reality, much of the U.S. aid came to promote Indian industry. Consumer prices in India increased 11.4 percent per annum from 1965 to 1967, while real GDP fell in 1965 by 6 percent, growing in 1966 by less than 1 percent. Government expenditure, as a percentage of GDP, rose from 1967 to 1977 steadily. The agricultural sector's dominance in the Indian economy fell over this time, and the manufacturing sector began to grow. Real GDP grew at 4.6 percent per year in those eleven years.

In 1978, the United States passed a bill restricting the flow of high-grade uranium exports to countries not willing to meet new standards and requirements for nuclear testing and use. India's aboveground, "peaceful" nuclear test in 1974 worried many nations about Indian nuclear program safety. India had become much less dependent on America by this time; only 12 percent of imports were American, while India sold 13 percent of its exports to the United States in 1978. In 1980, India refused to meet new UN safeguards and standards, though uranium shipments never completely stopped. When India requested new shipments in 1981, no action was taken on the request. By 1982, however, India was receiving low-grade uranium shipments from France. The Indian economy in 1978 was growing; from 1975 to 1978, India experienced 6.5 percent average growth of real GDP, with 2.2 percent average inflation.⁸ India's economy continued to grow, after a downturn in 1979 attributed in HSE to energy prices, and was little affected by sanctions. The key sanctioned good, uranium, was a minuscule part of the Indian economy, with an estimated value in trade of one ten-thousandth of Indian GDP.

This issue continues to be of interest to the United States, especially as border skirmishes are standard practice between Pakistan and India over Kashmir and other issues. India's economy, however, has strengthened dramatically in the last thirty years, especially in the last five. In May 1998, India conducted five, aboveground nuclear tests in stark violation of the 1995 version of the UN Non-Proliferation Treaty. Pakistan began to worry and an arms race ensued. The United States acted immediately to sanction development aid. India felt the wrath of these sanctions quickly. "Faced with slowing foreign investment and widening trade and budget deficits, Indian Finance Ministry officials are eager to see foreign development aid return" (Karp 1999).

India's economy continued its stagnant ways until the end of the 1990s. Through the 1990s, the Indian economy made a decisive turn toward a better export mix of manufacturing and agriculture. In 1993, agriculture was 64.9 percent of exports and manufacturing 34.5 percent. In 1998, those proportions had become 53.8 percent and 45.6 percent, respectively (UN International Trade Yearbook 2000). Real GDP growth in India increased over the 1990s at a historic pace, an annual average of 6.275 percent (UN Statistical Yearbook 2001). Since sanctions were basically focused on weapons technology, they did little to change the Indian economy's direction.

Indonesia: 1963–66; 1993–95

Indonesian rebels pushed for Malaysia's formation in the early 1960s, seeking asylum in this newly formed country. The United States immediately came to the aid of Malaysia, a new state created in a democratic image. Indonesia's refusal to support and recognize Malaysia led to U.S. sanction threats. Malaysia was formed and immediately severed diplomatic and economic ties with Indonesia. Indonesia ceased all trade and openly supported various pro-Indonesia forces in Malaysia. The United States asked and received support for sanctions from the United Nations. Many UN members began to pull investments out of Indonesia in response to Indonesia's "Crush Malaysia" policies; in reaction to U.S. sanctions and capital flight, Indonesia nationalized U.S. oil interests in 1965, bringing more pressure for sanctions (HSE 1990, v. 2, 254–55). Indonesia's consumer prices doubled in 1963, doubled again in 1964, and quadrupled in 1965. In 1966, Indonesia's CPI increased tenfold. Skyrocketing inflation was accompanied by stagnant real GDP growth, averaging 1.7 percent between 1963 and 1966. The United States sold Indonesia 35 percent of its imports.

The 1990s were great times for the Indonesian economy through the Southeast Asian currency crises of 1997. Though the average inflation rate has been 8.5 percent, real GDP growth was 8 percent annually from 1990 to 1997. Government spending deficits were in surplus during the early 1990s. The current account balance was in deficit throughout the 1990s, a by-product of growth, macroeconomic policy, and capital inflows; national debt stock equaled 99 percent of GDP at the end of 1992.

In September 1993, alleged human rights abuses by the Indonesian military caused sanction threats from the United States. Worker rights in East Timor were eroding, and the Clinton administration stopped the sale of Jordanian fighters to Indonesia (Cronin 1994). This news came on the heels of Indonesia's unprecedented economic growth. The United States nominally sanctioned Indonesia over these abuses, and by 1995 the sanctions were lifted. In both cases here, the United States sanctioned credit only, though the United States accounted for approximately 20 percent of both Indonesian exports and imports in 1993.

Iran: 1979–81; 1984–Present

On January 16, 1979, the Shah Pahlavi of Iran abdicated, seeking asylum in the United States. The Ayatollah Khomeini announced his

seizing of power and appointed a provisional government. In November 1979, the U.S. embassy was overrun; sixty Americans were among one hundred persons held hostage in protest of the United States granting the Shah asylum. The United States sent in a negotiation team, which was refused. The next day, President Carter ordered the suspension of arms sales and oil purchases with Iran. Iranian assets in the United States were also frozen. Iran nominally announced a suspension of oil shipments to the United States. In January 1981, the hostages were released, but sanctions went away very slowly.

The United States played a modest role in Iran's economy in 1979, supplying Iran with various goods, including rice, wheat, manufactured goods, and military hardware in return for oil. In 1977, 12.8 percent of Iran's exports were sold to the United States (UN Statistical Yearbook 1980). Iran's government spending was in heavy deficit territory; by 1978, Iran's external debt balance was more than 100 percent of GDP. After 1977, real GDP fell 15 percent per year over two years, and prices began to steadily climb. This sanction's effectiveness was a function of the United States closing all its markets to Iran officially; the World Bank also applied pressure for countries to not readily give credit to Iran, which also helped the American cause.

Alleged Iranian involvement in the Beirut car bomb death of two hundred Marines in 1983 led to export sanctions. When it became apparent that the Iran–Iraq conflict of the mid-1980s also involved chemical weapons use, the United States immediately banned all chemical exports to both countries. As Iran became more belligerent, so did the sanctions. There were trade and financial sanctions levied against Iran, attempting to punish their economy for supporting terrorism and war with Iraq. Iran's economy suffered from U.S. pressure on international agencies to cut loans and other UN countries' trade involving Iran. In 1987, the American import embargo was augmented, but the effects were short-lived because of a trade diversification strategy employed by Iran (O'Sullivan 2003, 65).⁹ In 1989, Iran and the United States negotiated for the release of over five hundred million dollars in frozen Iranian assets in America; almost one billion dollars worth of assets remained frozen, however. Iran's support of terrorist organizations led to additional sanctions in the mid-1990s, though not as complete as previous sanctions. In 1996, the United States passed the Iran–Libya Sanctions Act (ILSA). This act was meant to not only provide breadth to direct sanctions against Iran but to expand economic and legal punishment to domestic companies and foreign entities that acted as sanction busters.

In 1978, the United States accounted for 28 percent of Iranian imports, and 12 percent of exports; the figures fell to 1 percent and 5 percent, respectively, by 1984. Oil cartel riches eroded as the petroleum price plummeted in the 1980s. The average growth rate of Iranian real GDP between 1983 and 1988 was 0.7 percent. Because of constant tension between Iran and Iraq, government spending was in a deficit from 1976 on, while the current account fluctuated from deficit to surplus as the oil price fell then rose, respectively. One statistic of note: the external debt of Iran fell over the second sanction period, until 1990, when it doubled. Prices in Iran quadrupled between 1983 and 1990. The hostage case can be viewed as a success, as the hostages were released. The 1984 sanctions, as they did not rid the world of Iran's dictatorship or Iranian-funded terrorist activities, are a political failure as Iran has continued to be an open supporter of terrorism and anti-American activity.

Through the 1990s and into this decade, Iran has drawn broader UN attention. With continued terrorist ties and a recent expansion of its nuclear program, Iran has become a rogue nation. With a new authoritarian government in power, it is likely that the current sanctions will remain for some time and possibly expand among UN members. Iran's economy continued to grow through the 1990s and into this decade. On average, real GDP grew in Iran at a 5.8 percent annual average from 1990 to 2001, which is similar to the growth rate of the U.S. economy over the same time period (UN Statistical Yearbook 2003). This is where we need to be careful in generalizing that sanctions have not worked, as the macroeconomic statistics do not necessarily reflect the plight of the common person in Iran (Amuzegar 1997).

Iraq: 1980–87; 1990–2003

Sanctions began in 1980, based on increased terrorism believed to be originating from within Iraq. Also, Iraq expanded its weapons technology, using chemical weapons on Kurdish rebels and Iranian soldiers, a problem that continued through 2003. American opposition to Iran and the continuing conflict between Iraq and Iran helped Iraq's position with the United States during the 1980s. The United States ceased exports of jet engines and nuclear fuel to Iraq from 1980 to 1983. Export sanctions were the only sanctions noted by HSE (1990). In 1983, Iraq was removed from the list of terrorist nations, only to return in 1989. HSE (1990) see this first case as a moderate failure, as terrorist activity originating in Iraq did

not cease. In 1990, Iraq began an explicit military campaign in Kuwait, possibly indicating how little Saddam Hussein feared sanctions.

Economic statistics for Iraq are extremely hard to both gather and believe. Some possible sources include the IMF, World Bank, UN, and CIA documents, and some splicing of data series for Iraq through 1991. Between 1981 and 1989, the average real GDP growth in Iraq fell by 2.9 percent; the average inflation rate over the same time was 11.2 percent. Iraq was not dependent on American goods, with only 7 percent of imports coming from the United States, which purchased 3 percent of Iraqi exports in 1980. War debts, from the war with Iran, were large and culminated with the Gulf War buildup in 1990.

The second set of sanctions against Iraq was much different from the first. Iraq invaded Kuwait on August 2, 1990. A long queue of countries formed against Iraq, which made finding substitute markets for exporting oil and importing food difficult. Whereas the 1980 sanctions were export only, the 1990 sanctions were comprehensive, originating with the United Nations. During a time of economic growth in Iraq, trade was closed from the outside and international credit availability was virtually eliminated. During the 1990s, the Iraqi economy was subject to weapons restrictions, surprise inspections, and careful scrutiny by the international community. Iraq's economy became isolated from the major world powers. "In this endeavor, the *universal*, multilateral structure of sanctions also was important. Had a regional body, rather than the United Nations, mandated multilateral sanctions on Iraq, its oil wealth would have enticed other countries not bound by the regional sanctions to trade with Iraq" (O'Sullivan 2003, 155).

Following the terrorist attacks of September 11, 2001, the Bush administration looked at Iraq as a country who funded and harbored the organizations responsible. Sanctions were then remade in complete, originating this time more directly from the United States. Threats of military action began in earnest, made credible by the invasion and takeover of Afghanistan in 2002. The U.S. invasion of Iraq in March 2003 effectively ended economic sanctions. Before the 2003 invasion, according to the United Nations, Iraq's economy was volatile. Real GDP grew at an annual average of 14.8 percent from 1997 to 2001 after falling at an annual average of 13.7 percent from 1991 to 1996 (UN Statistical Yearbook 1997 and 2003). Sanctions were a political failure, but Iraqi economic welfare certainly plummeted as a result of sanctions (Yousef 2004).

Libya: 1978–Present

Moammar Gadhafi, as the leader of Libya, isolated Libya from much of the world. Libya's support of terrorist groups forced the United States to sanction arms sales in 1978. From 1978 to 2004, Libyan belligerency was a constant factor in American–Libyan relations. In 1982, the United States embargoed oil imports from Libya in an attempt to curtail oil profits from becoming terrorist funding. In January 1986, as a reaction to terrorist attacks in Rome and Vienna believed to be funded by Gadhafi, comprehensive U.S. sanctions were imposed. In March 1986, the U.S. military had two events take place in the Mediterranean Sea involving Libya. First, U.S. warships stationed themselves in waters Gadhafi warned would provoke action. This tension led to two Libyan gunboat sinkings and a missile site being destroyed. International reaction to this U.S. retaliatory move, Operation El Dorado Canyon, was poor. “Probably not in twenty years had there been a period of such intense international criticism of the United States as the last two weeks of April 1986” (Davis 1990, 145). As a result, few countries joined in on the U.S. sanctions. By the end of 1986, the only other country involved was France.

However, a Libyan link to the bombing of Pan Am Flight 103 in 1988 strengthened world resolve against Libya, but the United States continued to be the key sender nation. Libya provided asylum for two individuals accused of the bombing, not acquiescing to international appeal for extradition. As a result of that event 270 people died. In 1992, the United Nations voted to uniformly adopt full sanctions on air travel and arms sales to Libya, making the existing sanctions that much stronger (Lewis 1992). These were UN Security Council Resolutions 748 and 883.

In 1996, Libya was named along with Iran in a new U.S. law to penalize both domestic and foreign companies for dealings with these countries (see the section on Iran earlier). The ILSA further isolated Libya's economy. The United States has recently dropped most of its sanctions against Libya, and trade has begun again. The economic damage of these sanctions was significant, especially on inflation, but humanitarian conditions were supported by the regime. “Sanctions on Libya did not precipitate a humanitarian crisis by any standard, although they did significantly diminish the standard of living of most Libyans . . . The main influence of U.N. sanctions on the humanitarian situation in Libya was through the inflation that sanctions encouraged” (O'Sullivan 2003, 211–12). In 1999, Libya finally handed over the terrorists, and there was momentum toward lifting the long-standing sanctions.

In 2004, UN sanctions were lifted as Libya came out and spoke against international terrorism.¹⁰ Whether Libya continues its stance against international terrorism remains to be seen. The overall effectiveness of over twenty-five years of sanctions is still in question. First, Gadhafi is still in power. Second, terrorism originating out of Libya or funded by Gadhafi continued for decades, and may still exist. However, Libya economically limped through the 1990s, a time where worldwide economic growth should have naturally affected Libya's economy positively. Real GDP fell at an annual average of 0.74 percent from 1991 to 1999 (UN Statistical Yearbook 2001).

Malawi: 1992–94

Military assistance was cut by the United States to Malawi in 1992. This resulted from human rights abuses on the part of the government. Malawi's self-proclaimed, life-president Kamuzu Banda began to arrest opposition leaders and a demonstration over wages turned violent, where twenty-two people were killed by pro-Banda forces. Western Aid Donors had imposed economic aid sanctions on the Malawi government of Dr. Banda beginning in 1991 (Kachala 2002). Reports of prisoner mistreatment, especially those in political opposition to Banda, further turned friendly Western nations and the World Bank against the regime (*Toronto Star*, May 13, 1992). Aid was summarily cut until human rights were augmented. Aid was reinstated in 1994 after elections voted against Banda's regime. Human rights are still in question for Malawi.

In 1991, Malawi exported 15 percent of its foreign sales to the United States, while buying only 3.3 percent of its imports from America. Malawi's economy during the 1990s became one of intense inflation. By 1999, food prices increased thirteen times from their 1990 levels; real GDP grew at a good pace of 4.45 percent, however (UN Statistical Yearbook 2001). Malawi received over sixty-five million dollars in development aid through UN channels in 1994, down to forty-eight million in 1995; industrial production grew from 1993 to 2000 at an average of 4.4 percent per year (*ibid.*).

Myanmar (Burma): 1988–90

A military coup overthrew the government in 1988, and worries increased that the new government would become a Chinese ally, begin to violate human rights through martial law and suppression of opposition and the press, and be nondemocratic by definition.

These worries ceased in 1990 when elections were held and the financial sanctions imposed were lifted. Japan was likely the most threatened of the three nations involved; sanctions continue from other nations, but the United States and United Kingdom have generally been opposed to major sanctions against Myanmar since this episode (Simons 1999, 3). President Clinton, under the Burma Freedom and Democracy Act, barred new investment originating from the United States in 1997 (Hufbauer and Oegg 2003, 127). However, in 2003, a motorcade ambush forced a switch in the U.S. stance, leading to import and financial sanctions imposition on Myanmar. This latter case is not empirically discussed in chapter six. Myanmar's economy is mainly agricultural. In 1987, Burma sold 8 percent of its exports to Japan, West Germany, and the United States and purchased 30 percent of its imports from the same group (Drury 1998).

Nicaragua: 1977–79; 1981–88; 1992–95

Civil war ravaged Nicaragua in the early 1970s as rebels took aim at President Anastasio Somoza Debayle, who in December 1974 imposed a state of martial law to control the spread of Sandinista rebels. U.S. sales of police equipment and economic aid were suspended to Nicaragua.¹¹ Pushing to end martial law and nationwide labor stoppages, the United States persuaded the IMF to hold back a debt service loan in 1978 (HSE 1990, v. 2, 452). In July 1979, the Sandinistas overthrew Somoza, and full economic aid was restored. Nicaragua engaged in relatively large government spending in the 1970s to fund its internal conflicts continuing into the 1980s. In 1986, 55 percent of the Nicaraguan government spending was military. Nicaraguan trade dependence on the United States dictated this sanction's focus. In 1977, the United States accounted for 26 percent of Nicaraguan trade; by 1981, it accounted for 35 percent.

The Sandinistas then began to fund leftist groups in El Salvador. In 1981, President Reagan suspended all aid to Nicaragua to combat the Sandinista movement. The problem was exacerbated by the Soviet Union's willingness to make up Nicaraguan losses from U.S. sanctions. Reagan pushed to fund the growing anti-Sandinista (contra) groups in Nicaragua, but found stiff opposition in the U.S. Congress. In 1984, general elections were held in Nicaragua, and a military leader named Daniel Ortega came to power. The United States saw these elections as bunk and completely controlled by the military; Reagan opted to fund a CIA attempt to stabilize the Nicaraguan

situation, and the election process in particular (HSE 1990, v. 1, 179). Reagan, in 1985, cut all aid and trade with Nicaragua, seized assets, and deported ambassadors. In 1990, elections were held again and Ortega was voted out of office. The fighting stopped and trade began again, including economic aid packages.

Close (1988) stated that Nicaragua is one of the richest resource countries in Central America, but ranked among the poorest in terms of GDP per capita by 1986. Nicaragua, due to U.S. sanctions, lost approximately \$341.8 million dollars in loans from 1981 to 1986 (103). Throughout the embargo period, Nicaragua attempted land-use reforms, completely turning their agricultural policies upside down. The United States, one of the major importers of Nicaraguan goods historically, likely hurt those reforms through sanctions.

By the mid-1980s, the Nicaraguan economy faced stagnation. Inflation in 1985 was 219 percent, followed by 681 percent and 911 percent the next two years. From 1984 to 1990, Nicaraguan real GDP fell by an average 2.8 percent per year. The inability to gain access to cheap development loans, via the IMF or the United States, led to problems. Smith (1992) posited these credit problems led to the end of the Sandinista regime. When Nicaragua was released from sanctions in 1990, the new government attempted to use the country's resources to reform the economy, rather than relying on U.S. technology or foreign loans.

HSE (1990) saw the 1977 sanctions as a success with the end of the Somoza regime. The 1981 sanction is seen by HSE as a failure, with political success but little economic contribution. The lack of assistance Nicaragua found internationally put pressure on the Somaza government to fund its military internally. “[President Ronald] Reagan froze Food for Peace aid to Nicaragua in 1981 and blocked a \$9.6 million wheat sale to that country” (Simons 1999, 122). Nicaragua struggled at the macroeconomic level during this sanction, with real GDP falling by an average of 1.5 percent per year during the seven sanction years.

Sanctions in 1992 were again imposed on Nicaragua for human rights violations. After over fifty killings by police officers in Nicaragua, the State Department recommended that the president impose sanctions on specific interest groups to stem the violence (U.S. Dept. of State, 1994b). The Sandinista Popular Army was singled out specifically as one of these groups. In 1995, the Sandinista government was replaced, and sanctions went away; aid still remained far below pre-1990 levels (Haugaard 1997). Nicaragua's economy in 1992 was purchasing 25 percent of its imports from America and

selling 26 percent of its exports to American markets (UN Statistical Yearbook 1996). Real GDP growth was negative from 1991 to 1993, but rose to 3.2 percent growth in 1994 (Hauggaard 1997).

Nigeria: 1993–98

Nigeria's economy was sanctioned by the United States in 1993, as were other African nations, for human rights violations. A coup also stopped Nigeria's path toward democracy, and imposed a military regime. The coup came after democratic elections, which were Nigeria's first in over a decade. "By the time the current ruler, General Sani Abacha, seized power in November 1993, Washington had canceled the visas of important military personnel, restricted arms sales, halted all U.S. economic and military aid, and cut off Nigeria's access to trade credits and guarantees" (Fadopé 1997). Most international observers felt the best measure against the new regime was to focus on reducing oil importation, as that was said to be the source of funding for suppression.

Human rights activists were also murdered, which led to military aid being cut and an asset freeze by the United States. The sanctions were not universal, which likely hurt their potency. "Many human rights groups and opposition organizations within Nigeria urged an oil embargo and financial sanctions following the cancellation of elections in 1993 and the execution of nine Ogoni activists in 1995, but the United Kingdom and other major powers opposed such action" (Cortright and Lopez 2002, 30). Sanctions eased after elections were held in 1998.

Nigeria's economy is based on oil and mining, as over 95 percent of her exports are in extractive industries (UN International Trade Yearbook 2001). Nigeria experienced strong growth during the 1990s, amidst political strife and being a nation on the brink of civil war. Real GDP grew at an annual average of 6.03 percent from 1991 to 1999; however, food prices increased nine times over the same period (UN Statistical Yearbook 2001). Developmental aid to Nigeria fell precipitously in the 1990s, partially due to sanctions. In 1993, Nigeria received \$478 million from international sources, and by 1995 that number was down to \$40 million; aid picked back up in 1997 to \$200 million and was back down to \$149 million by 1999 (*ibid.*). In 1991, Nigeria purchased 7.9 percent of imports from the United States, and sold America 46.9 percent of its exports, mainly oil.

Pakistan: 1971–72; 1979–90

In 1971, Pakistan was sanctioned for pursuing nuclear arms sales as well (see the section on India earlier). Pakistan, in 1976, agreed to buy reprocessed nuclear fuel from France to begin producing atomic power and nuclear armaments after the 1975 Indian invasion of Kashmir.¹² In 1977, the military overthrow of Premier Bhutto led to more international worries, as the new government under General Mohammed Zia ul-Haq pushed for nuclear energy and weaponry (HSE 1990, v. 2, 505). In 1979, after much delay and worry over the French deal, Pakistan constructed a nuclear power plant and began operations. They refused to follow U.S. safeguards. The United States promptly cut military and economic aid. In one year, Pakistan eased its stand, and the United States became more congenial in terms of financial sanctions; aid was sent again and divided evenly between the economy and military. The obvious fear was a possible arms race between India and Pakistan, which did take place in limited form. Sanctions on nuclear technology and fuel continued throughout the 1980s.

The 1977 military takeover by General Zia began a new phase in the economic history of Pakistan. GDP growth was significant over the sanction period. On average, GDP grew 6.1 percent from 1978 to 1983. In 1984, military expenditure was 28 percent of overall government spending. Between 1978 and 1983, all sectors of the economy, except services and construction, grew above the GDP growth rate (Noman 1990, 181). Through the rest of the 1980s, Pakistan's economy grew at an annual average of 6.03 percent.

Panama: 1987–90

In 1987, Manuel Noriega headed the Panamanian Defense Forces. Acting as dictator, Noriega suspended much of his people's democratic rights. The United States vowed to restore these rights, by force if necessary. Sanction threats led to violent demonstrations against America, causing damage to the U.S. embassy. As an attempt to ruin domestic sentiment toward Noriega, the United States suspended trade preferences, held up international bank transfers, restricted U.S. companies in Panama from paying local taxes, and stopped shipments in Panamanian dollars (Conniff 1992, 159).

The United States accounted for two-thirds of Panamanian exports and 35 percent of imports in 1986. The trade and credit sanctions were swift and comprehensive. In December 1989, Noriega and other

major military officers stepped down, giving in to the American military presence in Panama and grassroots dissent toward Noriega. The Noriega-governed economy of Panama was one of increasing debt and military expenditure. Between 1987 and 1990, real GDP fell by 0.65 percent per year while inflation moved at a 0.5 percent average. HSE (1990) cited the economic measures' inability to force a change, supporting evidence that this case was a marginal failure.¹³ Panama was somewhat dependent on the United States for its international trade, selling 66 percent of its exports to the United States, and buying 34 percent of its imports from American firms. Panama's external debt before sanctions was over 100 percent of GDP in 1987. The sanctions did not cause new problems, they just exacerbated existing crises.

Paraguay: 1977–81; 1996–98

Human rights abuses in Paraguay stimulated the United States to suspend aid in 1977. Paraguay's problems centered on a tribe of indigenous peoples known as the Ache Indians. Alfredo Stroessner's regime, in power since a 1954 *coup d'état*, was believed to be killing Ache by the dozen and taking political prisoners, trying to eradicate the Ache from Paraguay. After conflicting evidence on government involvement in these crimes, the United States suspended military aid (HSE 1990, v. 2, 434). The United States also attempted to influence credit flows with limited success. In 1981, the United States reversed its policy after evidence of human rights improvements, and aid was restored (435). Paraguay relied on the United States for about 15 percent of both exports and imports in 1977; sanctions, however, were in financial form only. HSE (1990) felt this case was not a success, as Ache Indians continued to be incarcerated and Stroessner remained in power until 1989. From 1981 to 1990, the Paraguay economy experienced an average of 22 percent inflation per year, and 3.1 percent average growth of real GDP. The United States was able to pressure for curtailed international loans flow and stopped a development loan of \$141 million from coming into Paraguay (HSE 1990, v. 2, 435).

The 1996 episode was to prevent a coup attempt by Lino Oviedo, which came on the eve of new elections. The governing body, which had been in place since the time of Stroessner's departure, was led by President Juan Carlos Wamosy. The struggle for power between Oviedo and Wamosy became a failed coup attempt, and Oviedo became defense minister as a compromise (Sonntag 2001, 136). The United States embargoed military and financial aid in an attempt to

stop the struggle. Once elections were held in 1998, the sanctions were eased. The Paraguayan economy was stagnant in the 1990s, not taking advantage of global growth. Real GDP grew at an annual rate of 2.24 percent from 1991 to 1999; consumer prices tripled over the same time period (UN Statistical Yearbook 2001). In 1995, developmental assistance to Paraguay was \$180.4 million, which fell to \$102 million in 1997, and then again to \$77.6 million in 1999 (*ibid.*).

Peru: 1968–74; 1995–98

Military buildup and U.S. asset expropriation led to restrictions of economic and military aid to Peru in 1968. Peru bought French Mirage fighters in 1967, indicating to U.S. president Johnson's administration that Peru was beginning a military buildup. Simultaneously, a Standard Oil subsidiary's assets became disputed ground in Peru. President Fernando Belaunde Terry had negotiated with the United States over the ownership of Peru's northern oil resources in 1963. The subsidiary, International Petroleum Company (IPC), was accused of tax evasion and political meddling (HSE 1990, v. 2, 309–310). In late 1968, an agreement was reached between IPC and Peru; shortly thereafter, Belaunde was overthrown by the military. This military government immediately took control of the oil resources by force. The United States, in response to the expropriation, suspended some economic and military aid. "Predictably enough, given the hostility of the World Bank and the United States government to the brand of radical nationalism displayed by Peru since 1968, there was a price to be paid for ready access to the international capital market" (Thorp 1991, 76).

Financial sanctions continued until 1974, as the United States and Peru agreed on compensation payments for expropriated property, and aid was restored. The United States also pressured the diversion of international loans. The United States sold Peru 8 percent of exports and purchased 11 percent of its imports. Peru experienced moderate growth from 1966 through 1974, averaging 4.5 percent per year; inflation was also moderate at 8.8 percent per year over the nine years.

Peru and Ecuador engaged in a brief border skirmish and political tension thereafter from 1995 to 1998. The bombardment of a Peruvian military outpost, on the heels of gun battles, put the two countries on the brink of war. To curb hostilities, the United States cut military aid to both countries. The Peruvian economy was little hurt by this outside of higher arms prices. Peru's economy was volatile from the late 1980s through the 1990s. Real GDP fell

between 1989 and 1993 by 3.52 percent per annum, growing at 7.7 percent from 1994 to 1997, to then grow from 1998 to 2001 at a paltry average of 0.9 percent per year (UN Statistical Yearbook 2003). Prices in Peru were historically calm during the 1990s.

South Africa: 1975–82; 1985–92

In 1960, South African police massacred sixty-four civilians. Many African nations lobbied for the United Nations to use sanctions in response. Curiously, the United States lobbied against specific sanctions initially, and was not originally a participant in initial UN embargoes against South Africa. In 1964, however, the United States nominally began to sanction South Africa, by voting to restrict EX-IM Bank loans availability. Military hardware sales were also restricted. These sanctions continued until 1975, and then expanded.

In the early 1960s, South Africa lost foreign investment and import markets due to sanctions. As South African domestic policies became more restrictive, so did international economic sanctions. "Inflation was stable, however, up until the late 1970s; South Africa grew at a modest rate, fueled by countries willing to break the sanction lines and a monopoly position in diamonds and gold mines. This market power also gave the United States and United Nations easy-to-detect goods in policing sanction breakers" (Moorsom 1986, 31). By the 1970s, sanction potency was fading, but South Africa was hurt by increasing oil prices.

South African real GDP was growing at 2.9 percent per year between 1958 and 1961; inflation grew at 2.1 percent per annum over the same time. From 1964 to 1976, the South African economy became more dependent on U.S. goods and markets. By 1976, South Africa was importing 21.6 percent of its goods from America, and selling the United States 10.2 percent of its goods. In 1964, the percentages were 18.9 percent of imports and 8.6 percent of exports. South African real GDP growth was an annual average of 3.68 percent from 1971 to 1975 (UN Statistical Yearbook 1978).

As a reaction to India's 1974 nuclear test, the United States set major restrictions on countries looking to buy raw uranium from American sources. South Africa did not meet these new requirements and uranium shipments were curtailed. The nuclear possibility, coupled with South African sanction-busting for Rhodesia, expanded sanctions already against apartheid. In 1986, sanctions were further strengthened. An antiapartheid movement grew within South Africa, as a reaction to a 1984 law stating "mixed" race and indigenous South

Africans would receive parliamentary representation, but the majority, black African population would not be represented (Lipton 1988, 5). The international protests, led by such activists as Desmond Tutu, furthered UN sanctions. Augmented sanctions called for banning both nuclear collaboration and new U.S. investment, prohibiting bank loans and computer sales to the South African government, and stopping Krugerrands purchases (Orkin 1989, 135–36).

South African support and participation in Angola's civil war led to further cuts in military hardware sales to South Africa. After some worsening domestic violence, South Africa began to turn around politically. By 1992, free elections were held. Nelson Mandela (long imprisoned for his opposition to apartheid) was freed, and the world saw South Africa slowly reform. Nelson Mandela was later elected president of South Africa in 1994.

The sanctions restricted South Africa from finding inexpensive substitute markets for oil. By the 1980s, fewer economies were coming to South Africa's rescue, as the world moved uniformly against human rights abuses. Helping Rhodesia during U.K. sanctions in the 1960s and 1970s showed South Africa's initial lack of fear over international embargoes. The United States took many years to join the original sanctions, as U.S. business interests seemed to outweigh the political rationale for sanctions.¹⁴

From 1985 to 1992, South Africa's real GDP grew at 0.5 percent per year, while inflation averaged 15.3 percent over the same time. These numbers are worse than any eight-year span in postwar South Africa. Some authors, like Lewis (1990), Lundahl (1992), and Hazlett (1992), tried predicting effects on apartheid directly. They all claimed the end was near and were correct. These sanctions initially struggled to achieve the goal of dissolving apartheid. In hindsight, it is likely that the 1985 strengthening of sanctions put pressure on apartheid to end.

South Korea: 1973–77

Nuclear safeguards, proliferation, and international security, similar to recent measures against their northern neighbor, were reasons for these sanctions against South Korea (ROK). Another reason was human rights violations. Political challenges and fear of another conflict with North Korea (PRK) sparked restrictions of political freedom from fear that PRK was trying to undermine the current ROK government from within; these internal measures were enforced by ROK troops. Aid reduction, specifically military assistance, was initiated in

August 1973 by the United States; there will still American troops in South Korea, however, as part of a long-term peacekeeping effort.

Related to these reductions was the U.S. reaction to ROK seeking to purchase weapons-grade nuclear materials or technology to reprocess nuclear fuel for weapons from France. ROK's transactions began to stir international interest, especially after India's above-ground weapons tests in 1974. Dreszner (1999) suggests that the U.S. reaction was a threat to reduce aid and trade if ROK went through with the reprocessing plant purchase (257). In 1975, ROK ratified the 1968 Non-Proliferation Treaty and America slowly backed away from sanction threats. The human rights violations also eased as did tensions by 1977.

The South Korean economy in the 1970s was a developing economy, moving quickly to become an industrialized one. In 1972, the United States purchased 46.7 percent of ROK exports and sold ROK 25.7 percent of its imports. South Korea's real GDP grew at a rate of 9.78 percent per year between 1969 and 1973, while inflation grew at 8.7 percent over the same time (UN Statistical Yearbook 1975).

Sri Lanka: 1961–65

Oil asset expropriation led to U.S. financial sanctions against Sri Lanka (Ceylon at the time). In 1961, the Sri Lanka government alleged that the level of foreign investment did not reflect profits generated by foreign oil companies there (Karunatilake 1971, 270). America purchased 9 percent of Sri Lankan exports; 3 percent of Sri Lanka's imports were purchased from the United States. In 1962, the United States passed the Hickenlooper Amendment, legally restricting aid of any country that expropriated U.S. assets. Sri Lanka lost more economic and military aid due to this legislation. Sri Lanka also found no friends at the International Bank of Reconstruction and Development (IBRD). The IBRD declared that the World Bank would grant no loans to Sri Lanka because of the inadequacy of compensation proposed for nationalized foreign assets (Kodikara 1982, 123). In 1965, the government of Prime Minister Bandaranaike was voted out of office, and the new government quickly agreed to compensate oil companies for their losses. Economic aid, the only sanctioned good, resumed shortly thereafter.

The Sri Lankan economy was based on rubber, coconut, and rice at the time. Sri Lanka experienced 3.9 percent average growth, accompanied by 1.1 percent average inflation during the 1950s. HSE (1990) felt these sanctions were incredibly successful, perceiving

the aid lost stimulated governmental change and subsequent compensation for seized assets. With little external debt before 1961, and relative little trade dependence on the United States, the financial sanctions working alone did little to affect the Sri Lankan economy.

The Sudan: 1989–Present

Human rights problems, including mass starvation caused by civil unrest and war, led the United States to look at the Sudan as a place in need of assistance. However, when the Sudan was unable to repay a U.S. loan in 1989, America cut all economic and military aid, except for food. This sanction continued for six months, and the loan was summarily forgiven. The Sudan was not largely dependent on American markets, buying 11 percent of her imports from and selling 3 percent of her exports to the United States. After a military overthrow of a democratically elected government, the civil war ended poorly from the U.S. view and all aid was cut in mid-1989. In 1991, amidst famine and dissolving political situation, the Sudan received humanitarian relief. The allocation of those goods, however, was under a multinational UN force to make sure they were used to feed the hungry.

The 1980s were particularly harsh on the Sudan as a result of civil unrest. Prices rose from 1986 to 1990 by 500 percent, and rose 2500 percent between 1990 and 1993. Fixed investment plummeted after 1989; real GDP was highly volatile between 1984 and 1992. Debt moved up during sanctions to 90 percent of GDP by 1992. The current account moved deep into deficit territory over the sanction years. The Sudan forged agreements with Cuba, Libya, and other international undesirables for military hardware (HSE 1990, v. 2, 634). The United States still provided humanitarian relief, in large quantities, as did the United Kingdom. O'Sullivan (2003), in an expansive case study, suggests that a more positive approach with the Sudan be taken; in 2002, the Sudanese Peace Act in the United States began such a process. "U.S. policy also needs to underscore how positive changes in Khartoum's behavior will result in improvements in its relationship with the United States" (O'Sullivan 2003, 279). The Sudanese economy is agriculturally based. Real GDP grew at an average of 5.75 percent from 1992 to 2000, which was as strong as any Western nation (UN Statistical Yearbook 1997 and 2003). However, prices soared over the 1990s, increasing tenfold between 1990 and 1995.

Syria: 1986–94

In 1980, Syria found herself on a list of countries that the United States believed to directly support and fund international terrorist activities. In 1985, Syria helped the release of hostages from an airplane hijacking. The United States subsequently loosened export controls on Syria and purchased more oil. In 1986, however, Syria was accused of developing chemical weapons. America accounted for only 6 percent of Syrian imports in 1986. The U.S. ban on chemical sales to Syria for weapons production also included limited military hardware sales. After Syria was linked to a group taking responsibility for an attempted airline bombing in 1986, many European countries cut aid; the U.K. cuts were the most severe, also cutting diplomatic ties with Syria. From 1984 to 1989, Syria's real GDP grew an average of 0.4 percent per year.

The 1986 sanctions were eased when Syria spoke out against Iraq's invasion of Kuwait. Syria's diplomatic role in the Gulf War, denouncing Iraq's actions, renewed a positive status with the West and sanctions became less restrictive after 1990. The stance against Syria lightened further when she agreed to the Arab–Israeli peace conference in 1991. However, due to Syria being named as a country funding terrorist groups and a recent reversal to speak out against the West, the United States has imposed full sanctions again. Syria's international relations worsened during the 2006 conflict between Hezbollah and Israel, where Israel blamed Syria and Iran of using Lebanon as a puppet state to fund anti-Israeli activities.

The Syrian economy is based on oil, though cotton and olives are also large agricultural industries. Real GDP grew at a pace of 7.57 percent from 1990 to 1998; between 1999 and 2001, this growth rate was under 0.2 percent per year (UN Statistical Yearbook 1997 and 2003). Prices in Syria, one of the major concerns with comprehensive sanctions, were held stable through the late 1990s after rising about 80 percent from 1990 to 1995 (*ibid.*).

Taiwan: 1976

U.S. sanctions against Taiwan in 1976 were similar to those against India, Pakistan, and South Korea discussed earlier. The omnipresent issue of nuclear proliferation, especially with the threat of its immediate use against an assumed aggressor by new nuclear powers, has made even a modicum of evidence enough to initiate economic coercion. Based on intelligence reports that Taiwan wanted to develop nuclear

weapons, licenses for Taiwan to buy U.S. nuclear reactors were stalled, effectively acting as an export sanction. “Nuclear exports to Taiwan were not cut off, but export licenses were deliberately delayed” (HSE 1990, v. 2, 424). The Taiwanese economy, much like the South Korean economy, was a market economy breaking out of its development shell in the 1970s. Taiwan’s trade with the United States increased quickly throughout the decade. Taiwan purchased 22 percent of its imports from the United States and sold America 41 percent of its exports in 1975. These sanctions ended when Taiwan agreed to shut down its reactor program in 1977.

The Gambia: 1994–98

A bloodless coup took place in the Gambia in 1994, putting in a non-democratic government and ousting then president Dawda Jawara. Sanctions were imposed immediately on the Gambia to coerce the new government, under Colonel Yahya Jammeh, to restore democracy. A combination of international economic sanctions and domestic protests impelled Jammeh to announce a two-year schedule for returning the country to “civilian” rule (Saine 2002). Military and financial aid was embargoed until the United States was assured that free elections were restored and human rights protected. After free elections and a clean bill of human rights health, sanctions ended in 1998.

The Gambia has a small, agriculture-based economy. Real GDP grew at an annual pace of 5.68 percent from 1997 to 2001, with prices remaining stable over the same time period (UN Statistical Yearbook 2003). The United States purchased approximately \$100,000 in Gambian exports in 1998, exporting \$12.9 million in goods and services to the small nation (UN International Trade Yearbook 2001). The credible threat of damage to the Gambia came in the form of aid restrictions. Developmental assistance drop from \$40 million in 1997 to \$38 million in 1998 to \$32 million in 1999; by 2001, aid was back up to \$48 million (UN Statistical Yearbook 2003).

Thailand: 1990–93

A military government ruled in Thailand from 1976 to 1988. In August 1988, Chatichai Choonhavan was voted prime minister. In 1990, political killings and some civil unrest raised eyebrows internationally. U.S. aid was restricted, but in trivial amounts. Ultimately,

measures against Thailand between 1990 and 1994 were a mix of the 1974 Trade Act's Section 301 sanctions and anti-proliferation measures. Many U.S. firms lobbied for financial sanctions against Thailand, complaining about the Thai government's subsidies to pirating firms. In late 1990, the U.S. Pharmaceutical Manufacturers Association filed a formal trade complaint against pharmaceutical imports from Thailand, and importation was curtailed under Section 301 due to unfair trade practices and patent violations. After both patent and human rights problems seem to settle down during 1993, America reinstated aid. Recently, Thailand has experienced a military overthrow, though no UN resolutions have flowed to initiate sanctions.

Thailand, with real GDP growing from 1988 to 1994 at an average 10 percent per year, with inflation averaging 5 percent, quickly became an Asian financial center, competing directly with Hong Kong until the Asian currency crises of 1997. Thailand was an industrial economy in 1990, with 79.8 percent of her exports in manufacturing, specifically food and textiles. Industrial supplies and machinery dominated Thailand's imports. Thailand was relatively dependent on America for 30 percent of its trade in 1989.

Turkey: 1974–78

A political problem in Cyprus led to economic sanctions against Turkey in 1974. After a Greek takeover, defying a U.S. warning, Turkish troops invaded Cyprus in 1974. Problems began when Turks living on Cyprus lost many of their rights in 1964, as the government revoked any rights Turkish national and descendants had on the island. In 1974, a power struggle took place, and the Greek government attempted to seize control. In the name of protecting their citizens, Turkey moved against Cyprus' government.

Reacting to this invasion, the United States cut military aid. Turkey renounced this sanction, claiming that the military aid and sales were essential elements of the NATO Treaty (Denktash 1982, 78–79). The largest failure of U.S. sanctions against Turkey was not preventing the United Kingdom, Italy, and West Germany from acting as substitutes arms suppliers. Also, the sanction's concentration was on the military, not the economy. The United States told Turkey not to use U.S. weaponry on Cyprus, and to negotiate a settlement. The strain in Turkish–American relations also led the USSR to Turkey's rescue, though military aid never completely ceased between the United States and Turkey. The Turks also found friends in Libya, Saudi

Arabia, and Iraq. Fighting a bloodless war for the next three years, Cyprus' Greek government, for reasons other than this crisis, fell apart. A new, Turk-friendly government took over Cyprus by September 1978. The United States subsequently lifted the arms and aid embargoes.

During the 1960s and early 1970s, Turkey had impressive economic growth. Real GDP grew between 1963 and 1978 at a 6.5 percent average; the numbers are even larger for the time period between 1970 and 1973. Foreign aid, in conjunction with agricultural and industrial policy reforms, fueled the Turkish economy prior to 1973 (Harris 1985, 76). Turkey had rapid government spending and money creation, increasing inflation after 1973. Turkey's balance of payments situation deteriorated so bad as a result of the 1973 oil crisis, as their dependence on foreign oil mounted, the international capital market stopped lending to Turkey (80). America claimed 12 percent of Turkish trade in 1973. Over the sanction period, real growth fell sharply, government spending and debt and prices and unemployment all rose.

Uruguay: 1976–81

Uruguay's military regime was accused of holding political prisoners in deplorable conditions in 1976. The United States reacted by banning arms shipments to Uruguay, followed two years later by economic aid restrictions. During this sanction, domestic price instability led to poor economic growth, furthering a need for economic aid (Rottenberg 1993, 305). In 1980, America sent an aid package to Uruguay, though most international agencies claimed human rights abuses continued afterward. In 1981, U.S. military sales resumed, to the chagrin of many human rights organizations and Uruguay's political moderates.

Uruguay's economy is an agriculture-based economy. America bought 11 percent of Uruguay's exports and provided 8.3 percent of her imports in 1976. Cattle and sheep herding and processing were Uruguay's largest industries. Government spending was rapid over the sanction period. Increased debt service pressured Uruguay exports, which fell after 1980 in real terms (Harris 1985, 80). The United States also provided Uruguay with military and economic aid in small amounts.¹⁵ HSE (1990) felt that Uruguay's human rights situation was not resolved by sanctions, and deemed these embargoes a failure, as evidence provided by Uruguay of better social conditions was unconvincing.

Union of Soviet Socialist Republics (USSR): 1975–83

These U.S. sanctions were Cold War sanctions, reactions to the threat of communism spreading through Soviet funding and trade support of new governments, or rhetorical moves to posture on the world stage. There were numerous episodes identified by HSE (1990), the most of important of which was the grain embargo of 1981.¹⁶ Many of these measures were small in their magnitudes. In 1975, the United States finalized the Trade Act of 1974. In 1972, the USSR imposed a tax on the emigration of educated citizens, which threatened the Most Favored Nation (MFN) status of the USSR being discussed; the MFN label for the USSR was a key issue for the 1974 Trade Act (HSE 1990, v. 2, 386–87). In 1975, U.S. imports to and financial flows with the USSR were restricted due to the delay in MFN status. This continued nominally for years. In 1978, alleged U.S. intelligence activity in the USSR was thwarted, and the spies were put on trial. As a result, the United States restricted technology exports to the Soviet Union. This sanction was also somewhat nominal.

In 1980, U.S. sanctions began to have more substance. The Soviet invasion of Afghanistan initiated worldwide reactions, and U.S. sanctions were an immediate policy reaction. American exports of grain to the USSR were sanctioned in 1980, as diplomacy to remove Soviet troops from Afghanistan fell apart. The decision by President Carter for the United States to not participate in the 1980 summer Olympiad in Moscow can be seen as an import sanction. The grain embargoes are an important case for two reasons. First, the measures are seen as a grand example of why sanctions do not work between major economic and political powers, and may have cost U.S. workers and farmers dearly due to sales reductions. Second, this episode continued American statecraft's use of an economic tool as diplomatic reputation; if a country acts as an aggressor against an otherwise innocent nation, U.S. economic sanctions flow immediately thereafter. "The U.S. decision to implement the grain embargo was framed in terms of the concern for relative gains [the economic and political benefits would exceed their costs] and reputation" (Dreszner 1999, 76).

Sanctions were imposed again in 1981 due to the Soviet support of martial law in Poland. This is another important episode illustrating the immediacy of U.S. economic statecraft due to international human rights violations. These sanctions included travel, grain, and technology exports that lasted only until 1982, as a new trade agreement began new negotiations (HSE 1990, v. 1, 209). A South Korean

airliner was shot down in 1983 by the USSR, Korean Air Lines Flight 007, for crossing into Soviet air space and allegedly not reacting to warnings to turn back across the border. It took seven days for the Soviet Union to admit to the downing of Flight 007; U.S. travel sanctions were augmented as a result.

Trade between the Cold War superpowers fluctuated in the early 1970s, but was relatively low as a percentage of the nations' overall trade. The United States purchased a negligible amount of Soviet exports in 1974 and sold the USSR 3 percent of Soviet imports. Soviet statistics on their domestic economy are parsimonious and suspect during this time. Real GDP growth in the USSR from 1970 to 1975 is reported by the United Nations at an average of 5.33 percent per year, where inflation was negligible over the same timeframe (UN Statistical Yearbook 1977).

Zimbabwe: 1983–88

Zimbabwe was no stranger to economic sanctions when the United States cut aid and credit in 1983. Zimbabwe was the white-ruled part of Rhodesia (Southern Rhodesia) between 1965 and 1980; Zimbabwe is adjacent to South Africa. The Rhodesian economy was heavily sanctioned throughout the late 1960s and 1970s by the United Kingdom and United Nations for its repression of blacks and its foreign policies. The right-wing, white government of Ian Smith declared independence unilaterally from the United Kingdom in 1965, and sanctions were swift, comprehensive, and punitive. These sanctions continued through the 1970s; South Africa became Rhodesia's trade station, hoping the lack of success in Rhodesian sanctions would ease sanctions against apartheid (Renwick 1981, 51–52). Petroleum purchases and sales for Rhodesia would have the opposite effect on both countries. In 1976, South Africa ironically imposed its own sanctions on Rhodesia, where sanction continuation was based on a turnover to majority (black) rule of Rhodesia in two years. In 1978, the Rhodesian government planned to hold elections, elections that in 1979 voted in a black prime minister. By April 1979, the old government was gone, and Rhodesia became majority-ruled. A violent power struggle ensued, and the United Kingdom negotiated a cease-fire in December 1979. In 1980, Zimbabwe became independent.

America and Zimbabwe disagreed on some key foreign policy issues in the early 1980s. Zimbabwe disagreed with the U.S. accusation that the Soviet Union deliberately downed a Korean Air jetliner and further believed that the Grenada invasion was unnecessary (HSE

1990, v. 2, 568). Also, there was some civil unrest in Matabeleland, Zimbabwe's western frontier, as President Robert Mugabe alleged South Africa was supplying rebel forces there with weapons and fuel. In 1983, the United States cut aid and credit to Zimbabwe as a reaction to anti-American statements made to the United Nations and world press.

More aid was embargoed in 1984 because America felt that distributing aid would not happen efficiently in Matabeleland. In 1986, after another verbal attack from Zimbabwe, U.S. aid was further cut. In 1988, aid was restored in the hopes that the failing Zimbabwe economy would be stimulated. The United Kingdom disagreed with the U.S. reaction to Zimbabwe's complaints, continuing to provide assistance and trading goods.

Agriculture industries account for over 70 percent of Zimbabwe's labor force in 1985 (UN Statistical Yearbook 1990). From 1981 and 1986, real GDP per capita fell from \$484 in 1980 U.S. dollars to \$454. Inflation averaged 15.2 percent per year between 1981 and 1986. HSE felt this sanction was a failure as sanctions hurt those who needed food, and did not deter the Zimbabwe government from speaking out on international matters.

Summary

This chapter provides brief case histories to springboard further case-specific analyses. Chapter six investigates these cases empirically in an attempt to see how economic effectiveness compares not only to the measures by HSE (1990) and others, but how it may drive sanctions along the Sanction Effectiveness Continuum. The case studies provided us with a historical picture of the political and economic situation in each of the selected cases.

Notes

Chapter 1 To Sanction or Not to Sanction?

1. See Sharp (2006) and his collaborators for an in-depth investigation of the 2006 events in Palestine.
2. The situation has both worsened and eased since a North Korean underground nuclear test in October 2006.
3. Hufbauer, Schott, and Elliott (1990) put together the most comprehensive summary of sanction cases to date. This study is mentioned in almost every article and book in the literature, and will be often mentioned in this text. The third edition of that study is imminent.
4. Because this text focuses on tracking the economic effects rather than the legality of sanctions or the diplomatic aspects of using embargoes, the differences between tools of statecraft and coercion are seen as negligible. Sanction nomenclature leads to confusion over terms and tedium in reading and writing about these policies. However, this confusion among sanctions, economic coercion, economic statecraft, embargoes, and so on is discussed in Drezner (1999), Bonetti (1997a, b), and Drury (2005), e.g., and is a substantive issue in some disciplines.
5. The public choice literature suggests that the target populace is never completely innocent in a target's deviance, as interest groups are made up of target citizens. However, it is a matter of perspective. The target, acting rationally, engages in policy to better itself; the sender reacts for the same reasons.

Chapter 2 Basic Sanction Analysis

1. See Bolks and Al-Sowayel (2000) concerning an empirical assessment of sanction duration.
2. This is case 65–3 in Hufbauer, Schott, and Elliott (1990). There one will find more details than in Galtung (1967).
3. See Gaisford and Sood (1996) for more on trade sanction optimality.
4. See Pugel (2003), chapter nine, for a textbook exposition of barriers to trade versus free trade outcomes. Also see Carbaugh and Wassink (1988).

5. The South African case is the most-often quoted and referenced case in this literature. It is also one of the longest in duration and had three different incarnations seeking multiple goals over time. See Crawford and Klots (1999) and Drury and Chan (2000) for edited volumes on South African sanctions.
6. Hufbauer, Schott, and Elliott's (1990) two-volume treatise on sanctions is said to be updated in 2007.
7. The classic result of a quota is a "deadweight" loss of welfare. If the sender government imposes an import sanction, sender citizens experience higher prices and lower quantities for target goods, and thus lose some of their consumer surplus gained under unrestricted free trade. This loss is more than sender producers' gain from higher sales of domestic substitutes for the target's goods. The result is a net national loss, a reduction in national welfare. In the target's export market, there is a loss of producer surplus greater than the target consumer's gain as a result of lower prices and higher quantities available in their domestic markets.
8. In chapter four, public choice theory provides some more similarities between import sanctions and import quotas.
9. The idea of smart sanctions is expanded upon in chapter four of this text, and is gaining steam in this literature. Arms sanctions, however, like any other sanction, fall under the umbrella of trade sanctions in theory. See Cortright and Lopez (2002) for a broad, edited volume on smart sanctions, specifically arms embargoes.
10. The dichotomy of real versus financial sanctions is a large one in the capital markets. Financial sanctions are capital market sanctions, but affect entitlements directly rather than physical capital directly. This is important because instead of the target losing a rate of return on a physical asset, they lose the ability to financially invest in the sender economy. Also, through the balance of payments, financial sanctions have trade balance effects and vice-versa.
11. The financial sanction is much like credit rationing. If the sender acts as a major target creditor, the sender merely rations credit, much like a bank would to certain markets domestically.
12. The United Nations Charter is on the web: Chapter 7 is located at <http://www.un.org/aboutun/charter/chapter7.htm>.
13. This case is briefly discussed in Appendix 1 under Zimbabwe's case, the current name for Southern Rhodesia. A reviewer suggested that my treatment of Baldwin's text here understates the broad scope of Baldwin's work. It is important to note the timing of Baldwin's (1985) book. The first edition of Hufbauer, Schott, and Elliott (1990) came out the same year, and was subsequently updated. While many authors have cited Baldwin, as I do here, Hufbauer Schott, and Elliott (1985 and 1990) has dominated the literature because of the empirical dimension in each edition. Baldwin's text is seminal beyond doubt, and actually acts as a comprehensive theoretical and literature review to 1985 on sanction topics.

14. This rally-around-the-flag effect of sanctions is discussed in more detail in chapter four, as public choice models have assumed that certain target political systems are impenetrable due to the ruling class' ability to make the sender the bad guy in citizens' eyes. See Baldwin (1985, 183) for more.
15. A. Cooper Drury, one of the foremost political scientists in this field, has written extensively about the HSE study, its power and pitfalls. See Drury (1998, 2005) and Chan and Drury (2000) for multiple angles on the HSE (1990) data, hypotheses, and conclusions.
16. The product of the economic and political scores is also highly debated because it lacks continuity. See Drezner (2003) and Drury (2005) for more. This is an ad hoc measure in any case. If a sanction receives a "nine," this comes from one possible combination of political and economic scores: three and three. If the score is an eight, there are two possible combinations: four for political and two for economic, or vice-versa.
17. Studies complain about the subjectivity of HSE's conclusions, but these data are used to not only refute the HSE claims, but to also enhance other episodes' analyses. Lam (1990) and Drury (2002) are good example of specification changes in an attempt to enhance the robustness of the HSE conclusions.
18. The GNP-GDP debate in this literature has not really begun, and I believe that it is due to HSE's continued use of GNP as the main measure of both the cost of sanctions and the nation's relative size. Some of this use comes from gravity equation theory, where GNP is used to measure relative size and includes all trade. Gravity equations, and their role in this literature, are discussed briefly in chapter six. The literature should update to GDP for future studies and case analysis and break the foreign flows away from the other economic measures.
19. See Galtung (1967) for the beginning of this idea.
20. See Drury (2005), chapter nine, for conclusions on this, and Martin (1992) for counterpoint to Galtung (1967).
21. This statistical procedure is utilized in chapter six of this study. All these conclusions flow from Drury (1998) and are basically repeated in Drury (2005), which is in many ways a follow-up and expansion of the 1998 study.
22. In HSE (1990), the nine policy recommendations are stated in volume 1 on page 94.

Chapter 3 Sanction Initiation and Continuance: Enter Game Theory

1. McCain (2004) is an amazing introductory text on game theory and serves as general background for this primer. Osborne (2004) is a more technical but still approachable text, as is Watson (2003).

2. See Drezner (1999), chapter two, for a simple model and background on political game theory. Drezner (2003, 646) also provides a simple example in the sanction context.
3. See Drury (2005), chapter three, for a recent use of such a variable empirically as an update to HSE (1990) and its use of the prior relationship.
4. The public choice framework in chapter four extends this basic idea.
5. The Sanction Effectiveness Continuum provides the insight that sanction decisions have multiple stages and payoffs, which stretch across economic, humanitarian, and political efficacy.
6. See Eaton and Engers (1992) concerning the target's toughness, and Eaton and Engers (1999) concerning the sender's resolve. These are expanded upon later.
7. See McCain (2004), chapter twelve, concerning commitment. The commitment game lies between the competitive and cooperative games because its outcome hinges on the commitment's credibility.
8. See Lisa Martin (1992, 1993). Her work is the game theory pillar in this literature. Her studies are aimed at identifying cooperative games played between the sender and other countries deciding to join the sender or assist the target. Much of her work is on strong versus weak leadership, discussed in more detail later.
9. See Drezner (1999, 38), chapter two, note 22, for another definition of Nash Equilibrium.
10. Steil and Litan (2006) discuss a real-world analog of this example in chapter six of their text. The real-world example concerns PetroChina and the Sudanese government seeking funding for oil exploration and production in 1999 through an initial public offering in the U.S. equity markets.
11. See Bonetti (1997b) for a discussion of game theory and other models in the context of sanctions, leading up to public choice models, in an outstanding survey article.
12. See Kaempfer and Mertens (2004) for more on dictator sanctions and theoretical issues specific to these cases.
13. Pape (1997) and Drezner (2003) are both excellent investigations as to the credibility and power of threats versus their omission in the HSE (1990) data and from the literature otherwise.
14. The Israeli blockade of Lebanon in July and August 2006 may be clairvoyant of future sanctions. The naval blockade took place parallel to a military invasion of southern Lebanon. As a result, Lebanon pleaded with the United Nations to order a cessation of military activity and an immediate lift of the blockade. The effects on the Lebanese economy, coupled with the military action, had a devastating trajectory.
15. See Jack (1940) and Pigou (1941) for more on economic warfare, Pape (1996) for the use of strategic bombing as a means of coercion, and Pape (2005) for a role reversal concerning terrorist suicides acting as coercive measures.

16. HSE (1990) include some sanctions with military conflict alongside of sanctions. The bias in these episodes toward the military victor makes statistical analyses imprudent. These sanctions are eliminated from the set of those analyzed in chapter six for this reason. See Pape (1997) for a breakdown of these cases from the HSE (1990) data.
17. Thailand recently experienced a bloodless coup of its democratic system in favor of military rule with allegiance to a monarchy. It is likely that the September 2006 coup will become yet another sanction case.
18. This is typical of the bargaining literature; Rubinstein (1982) is a seminal work.
19. The existence of subgame equilibria (given perfect knowledge, the player will choose a Nash Equilibrium when making a decision) is guaranteed under a finite and perfect information game. Information is assumed both symmetric and perfect; future models are likely to expand on the theme of information asymmetry.
20. The Iraqi sanctions of 1990–2003 when the United States invaded Iraq are now a famous case study. See Askari et al. (2003, 48) for a brief history, as well as Appendix 1 in this text. Also see Cortright and Lopez (2000), chapter three.
21. Cartels are illegal in the United States, when prosecuted and proven to be so in a court of law, on either side. However, implicit cartels exist within the United States and explicit cartels exist internationally. Regardless, the lessons to be learned from price theory are enlightening.
22. Also from microeconomics, the Bertrand model is the Cournot model application where price instead of quantity is controlled. However, they have the same outcome if competition is allowed. The Cournot model suggests that the quantity at which profit maximization takes place, and indirectly price, is where the firms in the oligopoly choose a cooperative strategy rather than take market share via expansion of supply; the Bertrand model focuses on price, indirectly affecting quantity. See Varian (2002) for an accessible version of each of these models in the context of microeconomic theory.
23. See Haass (1998) for a strong argument against the proliferation of sanction use in terms of the United States using sanctions as default diplomacy.
24. Individual countries have brought international cartels to trial and punished them for their price-fixing activities in domestic courts, but international enforcement is a major issue. See Connor (2004) for recent legal actions and successes against international cartels.
25. Looking at the target's openness, exports and imports summed as a percentage of Gross Domestic Product (GDP) may provide insight here.
26. The following website has the basic details and background on this Act, where some updating is needed, given recent relaxation of

- sanctions against Libya. See http://www.fas.org/irp/congress/1996_cr/h960618b.htm for the Congressional record.
27. The “carrot–stick” approach of economic statecraft is discussed extensively in Drezner (1999).
 28. Martin (1993) extends her 1992 study, but the conclusions are very similar. There is a larger discussion of audience costs and sender credibility in the 1993 study.
 29. This makes the question of sanction duration large, as time not only naturally erodes sanction effects due to diminishing returns (if sanction effectiveness is a function of time) but also provides more opportunities for cheating and new markets to emerge, reducing the present value of economic statecraft’s benefits in both the numerator (net benefits) and the denominator (the present value discount factor). More studies on sanction duration are needed in this literature.
 30. Pape (1997) argues strongly that sanctions may have no future beyond this economic damage.
 31. These countries are simply the longest episodes currently in place. Iraq, Iran, Libya, and South Africa are all veterans of long-term sanctions.
 32. Recently, the United States softened its stance against Libya in response to her supposed disassociation with al-Qaeda and her leader expounding the tenets of “liberal internationalism.” See Hurd (2005) for more.
 33. See Pape (1997, 99–100), tables 1 and 2, for a breakdown of the HSE (1990) cases, where “Political Destabilization” is analogous to such a goal.
 34. See Lam (1990), Drury in multiple studies (1998, 2005), Drezner (2003), and Sobel (1998). There is some debate that the previous trade relations between sender and target have little to do with sanction effectiveness, where Lam and Drury have explicitly included the trade flows as independent variables in a regression.
 35. See Dunning (2005) for a recent paper on this connection.
 36. See the brief history of Haitian sanctions in Appendix 1 and in Askari et al. (2004) and HSE (1990), case 87–1.
 37. Hazard functions have been used to test for a sanction’s optimal duration. See Bonetti (1994) for a technical analysis of sanction duration.

Chapter 4 Public Choice Theory and Smart Sanctions

1. See Pape (1997) for one of the most critical works on whether sanctions are a good policy choice at all, and Craven (2002) for the use of smart sanctions.
2. Craven (2002) discusses the flaws of smart sanctions at length. This study is informative on the aspects of international law, but is not

- preachy about the need for all sanction regimes to turn and focus strictly on humanitarian factors and effects.
3. See Buchanan and Tullock (1962) for what is considered the seminal work in public choice theory, as well Tullock (1987) for a brief history and summary. Becker (1983) is seen as the father of modern public choice, and is the springboard for most of Kaempfer and Lowenberg's works.
 4. William Kaempfer and Anton Lowenberg are leaders in the sanction literature and have applied public choice theory in many studies. Their 1992 text on economic sanctions is not only a treatise on public choice theory generally, but on political economy in statecraft as well.
 5. See Bonetti (1997b) for a review of Kaempfer and Lowenberg (1992) and others. Bonetti is critical in this survey about public choice theory and its inability to easily test its hypotheses empirically (340).
 6. Kaempfer and Mertens (2004) examine sanction imposition against a dictator, which has many real-world applications.
 7. The trade linkage signifies the percentage of the target's total trade with the sender before the sanction is imposed. This is more or less a measure of openness with the sender. Bonetti (1997a) empirically investigates the HSE (1990) data using openness as the focal independent variable. Chapter six's empirical investigations of sanction effectiveness will discuss the use of openness and trade linkages as explanatory variables in more detail.
 8. See Kaempfer and Mertens (2004).
 9. Drury (2005) is one of the best texts in this literature in its breadth on political economy and empirical analyses. His models are the foundation of the humanitarian and political models in chapter six. See Drury (2005), especially chapters four, five, and six, for his examination of U.S. presidential sanctions.
 10. An example of this is the current sanction package on Iran as a result of its funding terrorist organizations such as Hezbollah. However, this policy package is one of many the United States currently has in play concerning international terrorists. The point is that governments such as those in Iran and Syria choose to pursue policies that are guaranteed an economic statecraft reaction from the United States in the least, and possibly the United Nations as well. A target may continue a deviant policy simply because the economic and political pressure specific to certain groups in these countries is not strong or focused enough to act as a credible threat. Thus, the target government continues and the sender's policies become more like rhetoric, but damage the populace.
 11. This analysis is slightly different than the classic public choice model of economic statecraft. Refer to Kaempfer and Lowenberg (1992) for a full exposition.
 12. USA Engage has more than that number listed on their website, www.usaengage.org, and remains fairly current on any new episodes.

13. This recent work is an outstanding study of public choice theory, along with microeconomics applied to sanctions, but (like many other public choice papers on sanctions) circumvents empirical work.
14. A reviewer suggested these sanctions are not focal, but in fact aimed to dismantle apartheid directly while minimizing the damage to South Africa's black citizens. This is a root problem with many studies on South Africa. Starting with Porter (1979) on through Major and McCann (2005), the belief that South African consumers and businesses were irreplaceable because of either the diamond industry or financial investments in the Kruggerand is hyperbole. South African sanctions finally worked because there was a general consensus in the United Nations that institutions such as apartheid were detrimental to worldwide movements toward economic amnesty and democracy for all. Regardless of the study or model, a true international consensus was needed for South African sanctions to become effective, and part of that effectiveness was over a decade of economic stagnation, which hurt the poor that the sanctions were attempting to help more than the elite they were seeking to depose. This is the classic sanction paradox when dealing with human rights.
15. Of course, there was a lack of conclusive evidence concerning the stockpiling of such weapons by the Iraqi government as alluded to on many occasions by President George W. Bush as the cause for Iraq's invasion. Iraq's constant and protracted problems with facilitating UN inspectors did not help their cause.
16. In 1996, the United States passed legislation allowing firms within its borders and without to be economically punished as a result of not complying with sanctions. The Iran–Libya Sanctions Act of 1996 prohibited investment from flowing to Iran and Libya from U.S. firms, and also set the conditions under which firms in other countries could also be sanctioned for their financial involvement in these countries. Libya was dropped in this act's renewal on April 23, 2004, as it finally conformed to the conditions of UN sanctions after the downing of Pan Am Flight 103.
17. See the OFAC website for more details on this agency inside the U.S. Treasury Department: www.treas.gov/offices/enforcement/ofac.
18. The black knight idea was first applied in Galtung (1967) implicitly as a sanction buster; HSE (1990) used it as the name for the former Soviet Union and its satellite nations when helping a communist country or government during U.S. sanctions against new governments and rebellious forces in Central America and elsewhere during the 1970s and 1980s. In many empirical studies, the existence of a black knight is a control variable, as discussed in chapter six.
19. The carrot–stick approach also applies here, as it does when examining smart sanctions. See Drezner (1999) for more on this approach, its pitfalls and possibilities.

20. See the Stockholm Process' website, <http://www.smartsanctions.se/> under the link "UN Sanctions." There are regular updates at this site. Bondi (2002) also lists recent arms embargoes (111).
21. See Naylor (1999), chapter sixteen, for an interesting and disturbing history of the relationship between Iran and U.S. arms manufacturers leading up to the Iran-Contra Affair.
22. See Goldstein and Turner (2004) for more. This text is regarded as the best on currency crises. See Stein and Litan (2006) for a detailed overview of the conclusions and their perceived pitfalls of this text.

Chapter 5 Open Economy Macroeconomics and Sanctions

1. The NOEM model appears in many forms and forums as the initial study. The textbook version in Obstfeld and Rogoff's model (1996) is somewhat accessible; Mark (2001) is more accessible.
2. The IS-LM model and its components can be found in a low-tech form in many intermediate macroeconomics texts. See Blanchard (2002), chapter six, as a good intermediate example, whereas Romer (2005), chapter five, has a more advanced explanation.
3. In certain cases, I will refer to equations in chapter five A. However, for the non-economist, the layout of this chapter is meant to mix intuition directly with the mathematics to focus on the conclusions for purposes of policy making.
4. Since 1990, the United States has engaged in many financial sanctions. Asset seizures are default sanctions for the United States through the Office of Foreign Asset Control (OFAC).
5. Throughout the analysis here, it is important that the non-sanction world collapse to the baseline model for reasons of consistency.
6. The public choice theorist may argue that the income of special interest groups may outweigh the deadweight losses of sanctions. Following Bonetti (1997b) and his arguments, the public choice framework is intuitively sound, its lack of an empirical model makes it difficult to leap from macroeconomic theory where sources and uses of income are explicit or just do not exist.
7. For more on Lerner symmetry, see Bhagwati (1999), chapter twelve.
8. It may be more aesthetically pleasing to sanction scholars to have the target as the domestic economy, especially since the focus of almost every model to date is on the target's dynamics. However, this model begins with policy initiation, and thus with the sender.
9. Recent advances in the NOEM change this assumption to allow differentiation between the countries and their view of import substitution for the domestic good. See Bergin (2003) for more.
10. The distinction between nominal bonds denominated in the sender's currency and *real* bonds denominated in local goods is a big one.

However, in the case of sanction analysis, it seems more appropriate to use nominal bonds, as the sender sanctions income and the market for new loanable funds. The effects on the model are trivial given other simplifications made here. See Mark (2001), chapter nine, for more on this distinction in NOEM models.

11. Since 1990, the United States has engaged in many financial sanctions. Asset seizures are default sanctions for the United States through the Office of Foreign Asset Control (OFAC).
12. There are recent studies in the NOEM literature that include capital costs. See Kollmann (2001).
13. The logarithmic utility function is a special case of the class of utility functions called “Constant Relative Risk Aversion” or CRRA, where $C = C1 - \gamma/(1 - \gamma)$, and the logarithmic case is when $\gamma = 1$. Many other studies have generalized and allowed γ to vary from 1. See Blanchard and Fischer (1989, 43–44) for a great overview.
14. Seminal models include Cagan (1956) and others. The money demand function here is a “Cagan-style” model, similar to the CRRA models of consumption.
15. This comparison of utility is important for thinking about sanctions in the context of public choice models from chapter four.
16. We should expect that, much like other “labor supply” conditions, the individual will only work a maximum number of hours, regardless of those conditions. The labor supply curve will bend backward at some number of hours. We will assume that in the log-linear form given later, the backward bend is not a concern.
17. The terms of trade and their effects on the economy when changing are generally the centerpiece in arguing against trade barriers. See Pugel (2003) for an accessible approach to this issue. Equations 5A.70 and 5A.71 derive the terms of trade.
18. See HSE (1990) for more data and details.

Chapter 5A Mathematical Derivations of NOEM Sanctions Model

1. Chapter six uses exchange rate data to estimate the sanction shock econometrically. In that estimation, the target is the focus, as the exchange rate shock is used to observe human and political changes from economic coercion.
2. While it is more intuitive to think of the exchange rate in terms of the sender currency, since most of the NOEM studies and model versions followed for this text use an exchange rate in terms of the foreign country, sender currency per target here, the same convention is used. In chapter six, this definition is reversed because it is more intuitive.

3. It is likely a version is imminent. See Cavallo and Ghironi (2002) for a version of the NOEM model with productivity shocks, alluding to a need for capital accumulation to be added in future research.
4. By choosing bond holdings, the household is really choosing how it intends to trade off current consumption for future consumption once the levels of work effort and money demand are determined. Once bond holdings are decided, they imply an optimal consumption level, derived in equation 5A.16.
5. This assumption is later relaxed, as in other pricing-to-market models. See Mark (2001), chapter nine, for more details.
6. I used MathCad based on Maple™ technology to solve for these systems instead of doing the algebra by hand.
7. The amount of money held by the household is a clearinghouse for non-interest bearing asset demand after consumption and work effort are determined. This allows a focus on the real versus nominal variables in this analysis. See Obstfeld and Rogoff (1996), chapter ten, for more.

Chapter 6 Empirical Analyses of Sanction Effectiveness

1. See Kim and Pagan (1995) for basic calibration techniques, especially for those followed in Eyler (1998).
2. Eyler (1998) was based on the target economy and did not provide any estimates of effects on senders.
3. See Rose and Spiegel (2004) for a recent addition to the literature. While their model concentrates more on the reaction of lending economies to sovereign default, the use of gravity models is well showcased in their work.
4. A simple sanction model using gravity equations is shown here, for countries i and j and taking natural logarithms: $\ln(\text{Trade}_{ij}) = \alpha + \beta_1 \cdot \ln(\text{GDP}_i \times \text{GDP}_j) + \beta_2 \cdot \ln(\text{distance}_{ij}) + \beta_3 \cdot \text{Sanction}_{ij}$, where β_1 is expected to be positive and both β_2 and β_3 are expected to be negative. Financial flows and the effects of smart sanctions or other financial curtailments can be tested in similar ways. Askari et al. (2004, 123–90) provides an expansive look at gravity modeling and sanction efficacy.
5. Rose and Spiegel suggest that common borders are not a determining factor in the level of international financial flows between adjacent nations (2004, 55).
6. Using the exchange rate as the initial signal of sanction effects, as both this text and Sobel (1998) do, brings with it some possible empirical issues. First, the exchange rate must be floating at the time of the sanction to provide the necessary independent variation to make an econometric exercise worth doing. Second, we assume that the U.S. exchange rate with the target is simply a reflection of sanctions. If the

- United States is sanctioning a country, and therefore by choice changing specific balance of payments with the target, there may be exchange rate effects. Sobel (1998) does not attempt any impulse response estimations for the U.S. economy.
7. Sobel (1998) acknowledges the importance of this distinction, and suggests that whether the sanction causes permanent or temporary shocks to the exchange rate is important in assessing the effectiveness of sanctions. As a larger connection to our discussions in chapter four, Sobel claims that the lack of permanent effects on the exchange rate suggests that the United Nations was driven more by special interest groups, a la public choice theory, to ramp up sanctions against South Africa rather than trying to impose sanctions for human rights violations.
 8. In an autoregressive model with p lags, the lagged dependent variable represents feedback, or how much the past explains the dependent variable's contemporaneous outcomes. See Dickey and Fuller (1979) for the original unit root test methodology and Hamilton (1994, 501) for an advanced but general discussion.
 9. See Sims (1980). His idea was simple. Is there a way to forecast how a monetary shock, which may or may not be anticipated, affects certain macroeconomic variables? Using the past of each policy variable as the exogenous variables, multiple equations are used to connect a change in each variable to contemporaneous values. In the Sims model, the natural logarithm of the money supply and real GDP in the U.S. economy was used to show how a percentage change in money supply may affect real GDP growth. Sims also hypothesized a feedback loop, where real GDP growth may influence monetary policy. Engel and Granger (1987) is seen as the seminal article on cointegration and uses linear combinations of variables with similar time series properties to defeat potential unit root problems. Also see Studenmund (2003), chapter twelve, for a less technically intensive explanation.
 10. Drezner (2003) and Drury (2005) discuss the problems in the success score used by HSE (1990). However, it is important to note that the economic and political success scores, respectively, suffer from subjectivity problems, but no one can blame HSE for making logical claims with an ordinal variable.
 11. Bergin (2003) provides the latest work in econometrically testing the claims of the general NOEM framework. However, because of the VAR model's flexibility, it is possible to envision other models using the BOP directly, through the current and capital accounts. The terms of trade, as discussed at the end of chapter five, is also an important component of exchange-rate pass through measurement in NOEM models. Examining Gross Domestic Product (GDP) in per capita terms or in growth rates also may be illustrative of economic damage caused by sanctions. What any variation on this theme must do is link economic shocks to humanitarian and political effects from economic

- statecraft. Using the exchange rate, as shown in previous chapters and suggested by Sobel (1998, 6), encompasses a large amount of macro-economic information.
12. The impulse response idea takes previous information into account naturally through the autoregressive process.
 13. This is done by visualizing the autoregressive portion of the VAR as a relationship simply between the current values of the exchange rate and its lags. The estimated coefficients in this regression provide a weighting structure from each successive lag. For example, suppose Γ is the matrix of coefficient estimates from the autoregression. The weights are multiplied by the VAR coefficients to provide a moving average. In period one, the weight is full. In period two, the weight is distributed between the period one and period two coefficients. Since the autoregression is simply an error process, this error process is now weighted to distribute the amount of lagged period weights as a moving average.
 14. Mark (2001), chapter two, provides a great background on the transition from a VAR to an impulse response function. Greene (2003) provides a statistical theory breakdown that is somewhat less intuitive than Mark's summary.
 15. IASC 2004 discusses causal models at length. There are few, robust causal models in economics, as most relationships are correlative rather than causal due to endogeneity problems that cannot be easily resolved. This Handbook should be viewed as an empirical foundation of the smart sanction literature to come. See http://www.humanitarianinfo.org/sanctions/handbook/docs_handbook/iascsanchb.pdf for the handbook.
 16. See Garfield (2000) for another source beyond the IASC study concerned with measuring the sociopolitical and socioeconomic impacts of sanctions. Much of the IASC study is drawn from Garfield's work.
 17. Jorge Luis Borges, the famous Argentine poet and author, gave this quote as his assessment of the Falkland Islands war and subsequent embargoes of 1982 between the United Kingdom and Argentina. I cannot take credit for that beautiful description.
 18. The economic conditions are changed by the sanction shock. In IASC 2004, they recommend only one data set, "Proportion of households with access to secure tenure" (55), which was not available in the latest version of the *World Development Indicators* (2006) data.
 19. See IASC 2004 (55) for more, from which these labels are drawn directly. The data on the governance and education indicators, as shown in table 6.3, were few and far between. The final indicator is really the sum of the assessed changes in the first four indicators.
 20. The *World Development Indicators* (2006) data did not list Taiwan separately from mainland China or at all. Since these sanctions last only one year, it seems unlikely there would be much change in social conditions unless anomalous. In this way, short-term sanctions can be

- seen as “effective” in maintaining human conditions. The only case that has all missing data is Taiwan, which has a final result of zero.
21. The logit and probit models of discrete choice analysis are predicated upon the same basic idea: defeat the pitfalls of the linear probability model predicting values outside the bounds of probability space. The small differences are concerned with the assumption that the error term is normally distributed (probit) versus logistically distributed (logit). In each regression, the data have been adjusted to eliminate heteroskedasticity, or potential non-constancy of the error term’s variance, which leads to inconsistent estimators. See Studenmund (2003), chapter nine, for an accessible explanation of heteroskedasticity. See Greene (2003), chapter sixteen, for more advanced details or Studenmund (2003), chapter thirteen, for an accessible approach for the non-statistician on probit and logit models of ordered choice.
 22. IASC 2004 makes some strange choices concerning defining causality. See Studenmund (2003) for a simple causality explanation linked to VAR analysis.
 23. In ordered probit models such as this, the global statistic of choice is the likelihood ratio, which is the family of statistics concerned with “goodness-of-fit” in regression. The F-statistic and R² summarize the global properties of linear regression, analysis-of-variance (ANOVA) results. When we leave linear models behind, as in the ordered probit, classic ANOVA no longer is summarized by the F-stat and R², and is replaced by likelihood ratio (LR) statistic. For more on these issues, see Kennedy (2004).
 24. Others, such as Drury (2005), Martin (1992, 1993), and Drezner (1999, 2003), use either the same dependent variable or an ordinal (multinomial) measure instead. The major difference is a probability prediction of a specific level of effectiveness among ordinal values, rather than a binary prediction of either success or failure. Lam (1990) suggest that HSE (1990) has selection bias within the success variable as well as arbitrariness. However, the HSE (1990) data is still as good a data set as this literature is likely to ever see concerning sanction episodes to 1990.
 25. These results are free of heteroskedasticity. Specification tests provided evidence to use the probit initially and the logit for the cumulative model using the AIC.

Chapter 7 Conclusions and Policy Recommendations

1. Fidel Castro has been out of the public eye in 2006 due to an illness. Many speculated that his condition was worse than the Cuban government was willing to divulge and has reportedly worsened. This began a flurry of reports about sanction’s end with his death and “new” government, likely run by Fidel’s brother, Raul.

Appendix 1 Brief Cases Histories of Selected Sanction Episodes

1. Some cases stated here have not been written yet by HSE, though their third edition is to be released in 2007. I have tried, using their previous methodology and tendencies, to forecast what they would conclude about each case they have yet to publish. Many thanks go to them in readily supplying newly identified cases before they were published at the Institute for International Economics (IIE) website in the past: *www.iie.com*.
2. This is HSE (1990) case 50-1, a case that has been downplayed in the literature for the most part, but is likely to get a lot more attention in the years to come.
3. The United States was politically opposed to military rule in Brazil; unfortunately, that is exactly what America received after Goulart was overthrown.
4. The Hickenlooper Amendment effectively made sanctions mandatory for any country that attempted to expropriate American assets.
5. See <http://www.treas.gov/offices/enforcement/ofac/programs/cuba/cuba.shtml> for the latest statement of U.S. restrictions on trade, financial and travel restrictions with Cuba. Recent events in Cuba may lead to the end of sanctions, as Fidel's health is reportedly waning. Until a plebiscite takes place in Cuba, regardless of her leader, the sanctions are likely to stay put.
6. In many sanction cases involving human rights abuses, the United States and United Nations imposed sanctions due to pressure from international lobby groups, such as Amnesty International. When these groups brought reports of changes in human rights, the United States and United Nations historically reacted by ending or reducing sanctions.
7. The Haitian sanctions were UN devised and pursued, with America as the key sender economy. This is a recurring theme in cases involving the United Nations.
8. These numbers are comparable to the U.S. growth and inflation numbers of the mid-1990s.
9. Meghan O'Sullivan (2003) assembled exhaustive case studies on Iran, Iraq, Libya, and the Sudan. Her analyses are among the best to date.
10. HSE (1990) claim that the movements in the oil price at the end of the 1970s helped Libya over the initial problems, and Libya's economy is directly related to oil price movements. The United States abstained from the 2004 UN vote on lifting these measures.
11. HSE (1990) cites a similar sanction case in Poland in 1981. Martial law seemed to be the only reason for the sanction's imposition.
12. Military problems and nuclear threats have continued between Pakistan and India since the mid-1970s, and look nowhere near resolution as of 2006.

13. This is, however, an atypical case. HSE gave the sanctions an overall score of four, which derived from a political result of four (Noriega's regime crumbling) and an economic success score of one (economically, the sanctions contributed very little). See HSE (1990, v. 2, 249–67) for details.
14. South Africa is the focus of many public choice studies on sanctions. See Kaempfer and Lowenberg (1986) for the first explicit study linking South African sanctions and interest groups within South Africa and the United States.
15. This amount of aid was 1/1000 of GDP in military aid in 1975 according to HSE (1990).
16. For an expansive case study of the U.S. grain embargo, see Lundborg (1987).

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