The Effects and Determinants of Coercive Economic Statecraft, Commodity Certification Programs, and Sanctions

[SECS-P/01]

William Hutchins Seitz
Matr. n.: R08493

PhD Advisor:
  Prof. Alessandro Missale

PhD Coordinator:
  Prof. Michele Santoni

Contents

Introduction

The Effects and Determinants of Coercive Economic Statecraft, Commodity Certification Programs, and Sanctions

The practice of using coercive economic leverage to influence behavior and policies in foreign countries has a long history, but recent years have seen a burst of innovation in the area. Countries and multilateral organizations increasingly apply economic sanctions and similar constraints against business, people and even governments, for purposes as varied as supporting human rights and contesting trade practices.

A popular subject of academic research in the wake of sanction programs against Rhodesia and Apartheid South Africa, the effectiveness of economic sanctions has been a central policy question for decades. In most cases, researchers have found that sanctions are not particularly effective in modifying the behavior of states, or even individuals. Despite a few notable exceptions, researchers as diverse as Knorr (1975), Hufbaur, Schott and Elliott (1990), Pape (1997), Kaempher (1987), Baldwin (1985) and many others, find that sanctions rarely have the impact that sending countries claim to be seeking, and at times such actions are even counterproductive.

There is a great deal of diversity in the implementation of sanction programs however, and there can be little doubt that regulations do have the potential to influence behavior in some circumstances. Using an event study approach, DellaVigna and La Ferrara (2010) for instance show that arms trading companies in well-regulated markets do indeed react to news about trade embargoes put in place by the United Nations. Indeed, the authors show that reactions are sufficiently large, and their approach sufficiently sensitive, to permit the identification of individual organizations and companies that evade restrictions. Depending on the goals of the institution using economic leverage however, industry reactions to sanctions can work either for, or against, the intent of the restrictions in place.

Other current research is less concerned with the effectiveness of sanctions, and focuses instead on the extent to which such economic controls cause collateral damage against people who are not targeted. The findings of these investigations have helped to limit the use of sanctions in some circumstances, as it has become increasingly apparent that

sanctions can be severely damaging. Petrescu (2007) for instance, shows that infants exposed to economic sanctions in utero weigh less than the ones that were not, and that children born in the first two years of sanctions episodes are more likely to die before their third birthdays (among other harmful effects). Barry (2000) shows that US sanctions against Cuba have also significantly impacted health outcomes, while other researchers have shown large declines in employment, consumption and other livelihood indicators in targeted countries due to sanction programs.

In the first chapter of this dissertation, I consider one recent program crafted in the United States that attempted a balance between these two considerations – both the adverse impacts of using economic leverage, and the effectiveness of regulations against the interests of targets. The effort was designed to undermine violent groups operating in the Democratic Republic of the Congo (DRC) by requiring companies to account for the sources of minerals that could be linked to violent conflict. The US Congress's stated ambition was to constrain commerce that supported violence in the DRC, while allowing legitimate production of the regulated minerals to continue.

Many observers were skeptical that such a balance could be struck, and claimed that the rules were a de facto ban on mineral exports from the DRC. I show however that market responses to changes in legislation were not consistent with the view that the US banned the use of regulated minerals from the DRC completely. Because the returns for companies in the US remained responsive to rules issued by the DRC's Minister of Mines, it is more likely the case that investors expected at least some trade in the regulated minerals to continue.

In the second chapter of this dissertation, I consider a similar but distinct question. Focusing on the importance of the Kimberley Process Certification Scheme (KPCS) – which regulates diamond production and trade in many countries – I investigate regulations and important events relating to the global diamond industry. Like the minerals regulation in the United States, the KPCS was seen by many as a compromise, which avoided harsher export and import controls. The regime was also seen by many as a more appealing alternative to ad hoc systems created on a country-by-country basis. That industry actors participated in the development of the regulatory system caused considerable controversy however, and many critics of the KPCS claimed that it did not go far enough to undermine violence in diamond producing countries.

The results I present in the second chapter of this dissertation support the point of view that regulations and events relating to the KPCS had (and may continue to have) a significant impact on diamond markets, but also call into question common descriptions of the diamond industry, and the industry's relationship to the KPCS. Although it is often argued in the literature that the creation of the KPCS benefited large diamond mining companies, I show that reactions in financial markets were inconsistent with this point of view. Diamond mining companies experienced abnormally low returns on their shares coinciding with the implementation of rules on the global diamond industry, and it is difficult to argue that the regime could have been construed as net "good news" for most diamond mining companies around the world.

I also provide evidence of an important nuance in the relationship between regulations and the diamond industry. Retail companies, including large-scale jewelry firms, experienced abnormally high returns coinciding with events that supported the credibility of the KPCS, while they experienced abnormally low returns for events that called that credibility into question. There was not such relationship for diamond mining companies however. This suggests that the companies that benefit from the credibility brought by the KPCS are mostly in the retail side of the business, and that such companies have incentives for the Process to at least appear effective in its mission.

These first two papers demonstrate that, although significant questions about the effects of using economic leverage against such targets remain, critiques of the two programs may have been at times overstated. The findings also suggest that the interests of industry actors may at times have been misrepresented, by both regulation supporters and detractors. The results show that both the KPCS and mineral regulations in the United States influenced the markets they proposed to regulate, which indicates that regulations were seen as credible, to at least some extent. Moreover, in many respects, responses in financial markets to regulatory events covered in the first two chapters of this dissertation are consistent with the stated goals of the regulators.

While the first two chapters focus on specific programs, in the final chapter I turn to the broader question of what factors predict a country using sanctions against another country. I focus on the extent to which variation in the economic leverage one country has over another leaves a pair of countries more, or less likely to use sanctions. In that framework, I analyze several questions that have been posed in the recent literature, and identify a

number of characteristics of sending and receiving countries that are strongly predictive of sanction use.

I show that large economies dominate among countries that use and threaten to use sanctions, and that smaller economies rarely initiate sanctions against others. The results also show that countries that are poorer are more often targeted with sanctions, and that an ongoing conflict in either the sending or the target country predicts sanction use. The last chapter also shows that many indicators of economic vulnerability, and particularly issues of trade concentration and diversity, play a crucial role in the decision to initiate or refrain from using sanctions.

These three chapters taken together provide an empirical investigation into the effects and determinants of sanctions and other forms of coercive economic statecraft. The results contribute to the ongoing discussion over how best to understand economic sanctions and similar programs in the current policy environment.

References

Baldwin, D. (1985). *Economic Statecraft.* Princeton, NJ: Princeton University Press.

Galtung, J. (1967). On the Effects of International Economic Sanctions, with Examples from the Case of Rhodesia. *World Politics*, 378-416.

Gleditsch, K. S. (2012, October 10). *Distance Between Capital Cities.* Retrieved from essex.ac.uk: http://privatewww.essex.ac.uk/~ksg/data-5.html

Hufbauer, G., Schott, J., & Elliott, K. A. (1990). *Economic Sanctions Reconsidered: History and Current Policy.* Washington, DC: Institute for International Economics.

Kaempfer, W. H. (1987). Divestment, Investment Sanctions, and Disinvestment: An Evaluation of Anti-Apartheid Policy Instruments. *International Organization*, 457-73.

Knorr, K. (1975). *The Power of Nations: The Political Economy of International Relations.* New York: Basic Books.

La Ferrara, E., & Della Vigna, S. (2010). Detecting Illegal Arms Trade. *American Economic Journal: Economic Policy*, 26-57.

Pape, R. A. (1997). Why Economic Sanctions Do Not Work. *International Security*, 90-136.

Petrescu, I. M. (2007). The Humanitarian Impact of Economic Sanctions. *Job Market Paper*, 1-25.

Chapter I

Trade Restrictions and Conflict Commodities: Market Reactions to Regulations on Conflict Minerals from the Democratic Republic of the Congo

In this chapter, I use an event study approach to investigate the claim that conflict minerals legislation in the United States (US) led to a ban on some mining exports from the Democratic Republic of the Congo (DRC), and that the passage of US regulation caused a ban on both production and trade by regulators in the DRC several months later. I also consider the assertion that conflict minerals legislation imposed severe costs for companies that report to the Securities and Exchange Commission in the US.

I find that returns for some companies traded on US stock exchanges were sensitive to changes in production in the DRC after the proposed legislation became law in the US. This either suggests that some financial market participants did not expect an immediate full embargo on newly-regulated Congolese mining and trading activities, or that market participants did not expect trade to be halted indefinitely. Reactions to a DRC-imposed ban on production were statistically significant; indicating that additional reductions in trade were not fully anticipated by financial market participants after regulations became law in the US.

I also find that among metal and gold mining companies traded on US exchanges, returns were abnormally high when conflict mineral legislation became more probable. Electronic communication manufacturing firms, which as a group were a target for many supporters of conflict mineral regulations, experienced no systematically abnormal returns corresponding to important dates in the US legislative process that I consider, but experienced abnormally positive returns coinciding with the ban on mining in the eastern DRC.

1.1   Introduction

Central Africa, and specifically the Democratic Republic of the Congo, is remarkably endowed with natural resources. Many groups, including colonial and post-colonial governments, armed rebels, foreign armies, and both local and international militias have sought to use this substantial natural resource wealth to their advantage.

The aftereffects of conflicts in central Africa left several violent organizations established in the eastern part of the DRC in the 2000s. Some grew out of conflicts in neighboring countries such as the 1994 genocide in Rwanda, as well as insurgencies in Burundi, Uganda, and the Central African Republic, while others originated in the DRC.

Alongside exploiting civilians, illicit taxation and looting, violent groups have often benefited from the region's mining potential to finance their operations. In 2009 and 2010, the *Forces démocratiques de libération du Rwanda* (FDLR), the remainder of the *Congrès national pour la défense du peuple* (CNDP), and the *Alliance des patriots pour un Congo libre et souverain* (APCLS) were some of the largest groups operating in the DRC. Smaller groups included the *Forces patriotiques pour la libération du Congo* (FPLC) and the *Forces républicaines federalists* (FRF) (Debelle, Diallo, Hege, Robarts, & Tarnawski, 2010). Members of the national military, the *Forces Armées de la République Démocratique du Congo* (FARDC), were also documented committing human rights violations and profiting from mining ventures in the eastern provinces of the DRC.[1]

In the spring of 2010, the US Congress passed legislation requiring that companies listed on US stock exchanges (or required to file with the Securities and Exchange Commission (SEC)) publicly disclose purchases or use of several mineral types sourced from the Democratic Republic of the Congo. The bill was signed into law as Section 1502 of the Dodd–Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank).

The Act directed several US government agencies to impose reporting requirements for tin,[2] tungsten,[3] tantalum[4] and gold.[5] In addition to affecting mining and smelting

---

[1] The Bisie mine in North Kivu produced 70% of the cassiterite mined in North Kivu in 2010 while under the control of former CNDP members serving as FARDC troops (Global Witness Limited, 2011).

[2] The DRC represented about 4% of global output in tin in 2009 (Carlin, 2009).

[3] In 2006, the mining of wolframite (tungsten ore) was the strongest growth sector in the mineral industry of North Kivu Province; wolframite was also mined in South Kivu Province. From 2002 to 2006, reported

operations, the regulations were also expected to impact electronics companies, as many of the regulated mineral types are necessary in the production of computers, mobile phones and similar goods. The wording of the bill also allowed for narrowing or expanding the precise definition of "conflict minerals" in light of unfolding events in the DRC and surrounding countries. Minerals that did not originate in central Africa were not subject to additional restrictions.

In September 2010, several months after the Act passed in the US, President Joseph Kabila of the DRC ordered a ban on mining or trading the same four minerals in three eastern provinces[6] during a visit to North Kivu, saying that he hoped to contain "criminal gangs" or "mafias". The DRC's Minister of Mines followed a day later with a similarly worded order implementing the President's declaration. Local markets reacted strongly to the announcement and prices for the targeted goods dropped steeply.

Some mining continued, but the activities were a fraction of previous production. The UN Group of Experts for the DRC reported that illegal trading began soon after President Kabila's announcement, but that the restrictions in place required smugglers to resort to extraordinary measures. The majority of mines closed legal production, and several large buying and smelting groups withdrew or significantly scaled back operations (Debelle, Diallo, Hege, Robarts, & Tarnawski, 2010).

1.1.2 Controversy Surrounding the Conflict Minerals Law

Even before the creation of the US conflict minerals law in 2010, a vocal group of regional experts, activists and commentators were skeptical of trade regulations on minerals from the DRC. Critics often argued that curtailing trade would at best do nothing to improve the situation in the region, and could easily harm thousands of artisanal miners and others linked to the mining industry. A general concern for both industry actors and other detractors of the law was that the legislation would close markets to companies operating in the United States but not in other countries.

---

wolframite exports from South Kivu Province increased to 574 t from 159 t, and those from North Kivu Province, to 401 t from 26 t (Yager, 2009) (Shedd, 2011)

[4] The DRC represented about 8-14% of global tantalite production in 2010

[5] Gold mines in the Fizi, the Kalehe, and the Mwenga Territories in Sud-Kivu Province were reportedly under the control of the FDLR in 2008-09, when illegal taxation of artisanal gold mining accounted for an estimated 75% of the FDLR's revenues (Yager, 2009)

[6] North Kivu, South Kivu and Maniema

The most vocal critics of the conflict minerals regulations in the US feared that the policy would seriously harm people working in the mining industry regardless of their relationship to violence in the region. Seay (2012) argues that: "[the conflict mineral legislation] has created a de facto ban on Congolese mineral exports, put anywhere from tens of thousands up to 2 million Congolese miners out of work in the eastern Congo, and, despite ending most of the trade in Congolese conflict minerals, done little to improve the security situation or the daily lives of most Congolese". In a presentation given to the House Subcommittee on International Monetary Policy and Trade on May 10, 2012, Seay added that Section 1502 was the *cause* of the ban issued by the DRC's Minister of Mines. (The United States House of Representatives Committee on Financial Services, 2012)

In the following sections, I show that although there can be little doubt that Section 1502 affected the target markets, the immediate reception of the legislation by market participants indicates that a full embargo was not anticipated in the near term, contradicting the point of view of some critics of the law. Furthermore, I show that the announcement by President Kabila coincided with abnormal returns for many companies traded on US exchanges, suggesting that the move came as a surprise to at least some market participants.

I also show that many companies required to report to the SEC experienced abnormally high returns corresponding to dates when legislation in the US became more likely. This result offers a puzzle, as many industry groups lobbied to lighten the requirements, or to implement them more gradually, and the later announcement of proposed specific SEC regulations coincided with negative returns for many companies. The data analyzed here do not provide sufficient information to fully answer the question of why some regulated companies were expected to benefit from the regulations at certain times (or perhaps, were expected to be harmed less than was previously expected), but a discussion of some possibilities is included in Section 1.5.

The next section briefly describes the event study methodology used in the empirical section of this paper. Section 1.3 describes the data used, and Section 1.4 describes the results, dividing the analysis by industry type and discussing each individually. Section 1.5 discusses possible interpretations of the results, and Section 1.6 concludes.

1.2 Event Study Methodology

Investigating regulated companies is one way to assess market expectations about the effects of regulations. In the following section, I report results using the event study approach to evaluate regulated companies. This method adds insight into whether, and in what direction, specific interventions affected targeted markets by examining the returns on the securities of regulated companies. In some cases, unusually large departures from expected returns indicate that new information led to a re-evaluation of a security's value.

In the literature on the economics of conflict and development, DellaVigna and La Ferrara (2010) use the event study approach to investigate the effects of arms embargos. They show that analysts can identify firms that evade restrictions by looking at the changes in expected returns attributable to violent events in countries subject to UN restrictions. In another study, Guidolin and La Ferrara (2007) use a similar methodology to assess the effects of conflict on returns for diamond mining companies in Angola.

In those papers, as in most event studies, the authors focus on the "event window" — the period of time during which investors learn about the event that is under study. In the following sections, I predict returns for securities during a given event window using estimates from an "estimation window"— an extended period prior to the event — using ordinary least squares regression.

The event study approach is based on the assumptions of the constant expected return model (CER)[7] that, as a regression model, is expressed:

$$r_{it} = \mu_i + \epsilon_{it}, \tag{1}$$

$$\{\epsilon_{it}\}_{t=1}^{T} \sim GWN(0, \sigma_i^2)$$

$$cov(\epsilon_{it}, \epsilon_{js}) = \begin{cases} \sigma_{ij} & t = s \\ 0 & t \neq s \end{cases}$$

The term r_{it} is the return on security i at time t, and μ_i is expected return. The error term ϵ_{it} in the expression is a Gaussian white noise (GWN) process.

As applied to event studies, a standard formulation of the regression model emphasizes the specific time period during which an event of interest took place, and that expected

---

[7](a) *Covariance stationary and ergodicity*: $\{r_{i1}, \dots, r_{iT}\} = \{r_{it}\}_{t=1}^{T}$ is a covariance stationary and ergodic stochastic process with $E[r_{it}] = \mu_i$, $var(r_{it}) = \sigma_i^2$, $cov(r_{it}, r_{jt}) = \sigma_{ij}$, and $cor(r_{it}, r_{jt}) = \rho_{ij}$
(b) *Normality*: $r_{it} \sim N(\mu_i, \sigma_i^2)$ for all i and t
(c) *No serial correlation*: $cov(r_{it}, r_{js}) = cor(r_{it}, r_{js}) = 0$ for $t \neq s$ and $i, j = 1, \dots, N$.

returns are related to market-wide returns. The regression model can therefore be adapted to read:

$$r_{it} = \alpha_i + \beta_i r_{mt} + \sum_{d=1}^{T_e} D_{itd} \gamma_{id} + \epsilon_{it}, \tag{2}$$

Where r_{it} is again the return on security i at time t and β_i is the systematic risk for security i. The term r_{mt} refers to the market return for the security exchange on which i trades,[8] and ϵ_{it} is again a stochastic error term with a mean equal to zero and variance σ_i^2. The dummy variable D_{itd} is equal to one during the event window and zero otherwise, and T_e is equal to the number of days of the event window. The term γ_{id} accounts for the difference between the actual return and the predicted return, which is usually referred to as the "abnormal return" in event studies.

In the following analysis, I look at an event window of several days because "news" or information about the value of a security does not circulate instantaneously for all market participants. The full effect of the event is a summation of the daily abnormal returns over the event window, which is referred to as the cumulative abnormal return or CAR:[9]

$$CAR_{ie} = \sum_{d=1}^{T_e} \hat{\gamma}_{id} \tag{3}$$

Under normal circumstances, the expected CAR should be equal to zero.[10] A statistically significant shift away from expected returns however, signifies that new information has caused a re-evaluation:

$$H_O: \sum_{i:i\in N} CAR_{ie} = 0 \tag{4a}$$

$$H_A: \sum_{i:i\in N} CAR_{ie} \neq 0 \tag{4b}$$

---

[8] Market returns can be considered in several forms; the standard reported in this paper is equally-weighted returns and the S&P 500 index. The reported results are robust to using value-weighted returns on specific exchanges unless otherwise noted.

[9] This is often expressed in the event study literature as simply the error term ϵ summed over the event window, rather than the defining the abnormal portion alongside a separate error term

[10] Implied by (1) $\epsilon_{it} = r_{it} - \mu_i = r_{it} - E[r_{it}]$, the term ϵ_{it} is defined as the deviation of the random return from its expected value

Most trade restrictions do not affect all companies in the same way, as regulations could be beneficial for some firms (leading to a positive CAR) and harmful for others (leading to a negative CAR). The two types could be defined as those companies that would be expected to benefit from regulations ($i \in P$), and those that would be expected to be harmed ($i \in G$) by regulations. Rewriting the null and alternate hypotheses, the approach is expressed:

$$H_O: \sum_{i:i \in P} CAR_{ie} = 0 \qquad (5a)$$

$$H_A: \sum_{i:i \in P} CAR_{ie} \begin{cases} > 0 \text{ if the event is positive} \\ < 0 \text{ if the event is negative} \end{cases} \qquad (5b)$$

And:

$$H_O: \sum_{i:i \in G} CAR_{ie} = 0 \qquad (6a)$$

$$H_A: \sum_{i:i \in G} CAR_{ie} \begin{cases} < 0 \text{ if the event is positive} \\ > 0 \text{ if the event is negative} \end{cases} \qquad (6b)$$

As in $(4a)$, both $(6a)$ and $(5a)$ state that the expected CAR=0. But in this more explicit statement of the null and alternate hypotheses, the same event could characterize opposite impacts depending on the company type.

1.3   Data and Event Dates

In the following section, I use the Center for Research in Security Prices' (CRSP) database on daily returns for securities that trade on any major US exchange, and market indices for the exchange on which each security trades.[11] In the following analysis, I calculate the abnormal returns over event windows of both three and five trading days for each event.[12] For both window lengths, I use an estimation window of 120 trading days.

To identify significant changes due to the legislation in the US is difficult, as there were public discussions of possible action over a long period. However, a strong candidate date is April 28, 2010, when the Conflict Minerals Trade Act passed unanimously out of a hearing of the House Foreign Affairs Committee.[13] The prospects of the bill becoming law were much

---

[11] Source: ©2011 CRSP®, Center for Research in Security Prices. Booth School of Business, the University of Chicago. Used with permission. All rights reserved. www.crsp.chicagobooth.edu

[12] As a robustness check, both are reported below

[13] The Conflict Minerals Trade Act: H.R. 4128

greater after such a show of support, and the Senate version gained four additional co-sponsors nearly simultaneously.[14] The language of the final bill came from a version proposed by Senator Sam Brownback, who added the measure to the Dodd-Frank financial reform effort on June 24, 2010. At that time, the negotiations over Dodd-Frank were nearly completed and the Act had broad bi-partisan support. Because the Act was widely expected to pass, the addition of Section 1502 to Dodd-Frank substantially increased the likelihood that conflict minerals legislation would become law.

The date of interest for the DRC is more straightforward, as the mining ban discussed previously was announced by President Kabila suddenly over the 9th- 10th of September, 2010.

On December 15, 2010, the SEC unanimously voted to propose rules for disclosure of the use of conflict minerals, and included all companies that file with the Commission under the Exchange Act. The Commission proposed requiring that all companies for which regulated minerals were "necessary to the functionality or production" of the company's products report to the SEC on the issue, using a broader definition than many observers had expected. This date is also included in the analysis below.

The results in the following sections focus on several activity types that were directly targeted by the legislation, including the operations of mining, smelting, and electronics manufacturing companies.[15] After dropping companies with insufficient observations, the data include 91 metal mining companies,[16] 40 smelting/casting companies, and 475 electronics manufacturing companies. The most interesting subset of electronic manufacturing companies is communication equipment manufacturers, which includes many companies that produce mobile phones. That category contains between 93 and 98 companies.

I use several market indices as robustness checks and report results using the S&P 500 index as well as an equally weighted index. Finding only one index for which results are non-significant is usually sufficient to assume that returns were not abnormal.

---

[14]The Senate Version: S. 891

[15] Electronic manufacturing firms were the largest buyers of several of the raw materials which were regulated, and electronic manufacturing trade groups lobbied extensively concerning the implementation of the legislation.

[16] Although I also provide results for "all mining companies" below, using a much broader definition

Table 1.1

Name	Date	Description
Pass Committee	April 28, 2010	The measure passes unanimously out of a hearing of the House Foreign Affairs Committee
Added to Dodd-Frank	June 24, 2010	The measure is added to the Dodd-Frank financial reform effort
Kabila Announce	September 9-10, 2010	President Joseph Kabila outlaws all artisanal mining activities in three eastern provinces
SEC Reg Announce	December 15, 2010	The SEC unanimously votes to propose rules for disclosure

1.4   Results

The primary finding of this study is that many regulated US-listed companies experienced abnormal returns on the 9th of September, 2010 when President Joseph Kabila ordered the ban on conflict minerals and when planned US regulations became more explicit on December 15th, 2010. Because at this time the US legislation on conflict minerals had already passed, I interpret markets being sensitive to events in the region as evidence that some companies were still exposed to changes in regulated Congolese mineral production. This suggests that some market participants expected trade and/or production of the regulated minerals in the region to continue, or start again at some point in the future.[17] It also indicates that the ban instituted by President Kabila in the DRC was sufficiently unanticipated by market participants to lead to abnormal returns for companies traded on US markets.

I also find that shares of US-listed mining companies experienced abnormally high returns when the probability of trade restrictions in the US increased. Some companies were also valued at an abnormally high level when the DRC experienced a large decrease in mineral production due to the government-imposed ban.

---

[17] One interpretation of this result is that some firms (including many that remained un-regulated by the SEC) were intending to continue legally sourcing minerals from the region. One way to do so could have been through an OECD-spearheaded certification scheme, and if this were true, it would have been a victory for advocates of the legislation. Alternatively, the results could indicate that investors expected unregulated trade to continue.

Returns for US-listed electronics manufacturers displayed the most interesting response to the legislation and the ban in the DRC. There appears to have been no abnormal returns around the dates for the US legislation becoming more likely. For the dates of Kabila's announcement of the mining ban however, there were positive abnormal returns specifically for US-listed communications equipment manufacturing firms, which were a main target of advocacy groups leading up to the US legislation, and large consumers of the regulated mineral types.

1.4.1 Mining Companies

Figure 1.1

Cumulative Abnormal Returns for Metal Mining Compaines on All Event Dates
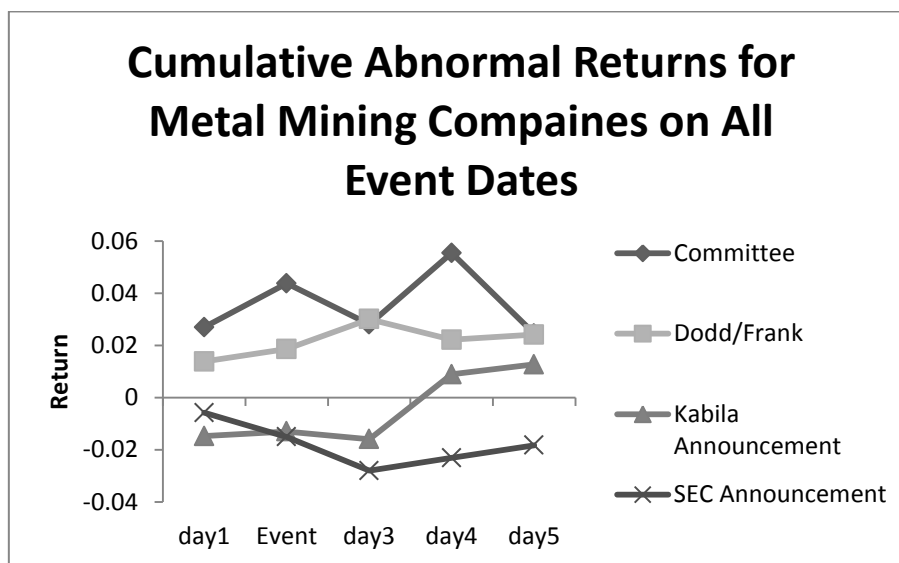
Table 1.2

All Mining	Avg. Cum. Abnormal (5 day %)		Avg. Cum. Abnormal (3 day %)	
	Equal-Weight	S&P 500	Equal-Weight	S&P 500
Pass Committee	0.0089 *	0.0034	0.0036	0.0007
N=331	(.0038)	(.0038)	(.0031)	(.0031)
Added to Dodd-Frank	0.0024	0.0057	0.0057	0.0197 ***
N=330	(.0042)	(.0042)	(.0034)	(.0034)
Kabila Announce	-0.0044	-0.0062	-0.0085 *	-0.0064
N=330	(.0046)	(.0046)	(.0037)	(.0037)
SEC Reg Announce	-0.0149 ***	-0.0145 ***	-0.0225 ***	-0.0228 ***
N=337	(.0034)	(.0034)	(.0025)	(.0025)

* p<0.05; ** p<0.01; *** p<0.001   (Robust Standard Errors)

Table 1.3

Metal Mining		Avg. Cum. Abnormal (5 day %)		Avg. Cum. Abnormal (3 day %)	
		Equal-Weight	S&P 500	Equal-Weight	S&P 500
Pass Committee		0.0245 **	0.0184 *	0.0280 ***	0.0248 ***
	N=91	(0.0081)	(.0081)	(.0055)	(.0055)
Added to Dodd-Frank		0.0242 ***	0.0277 ***	0.0301 ***	0.0433 ***
	N=91	(.0071)	(.0071)	(.0059)	(.0057)
Kabila Announce		0.0127	0.0120	-0.0159 ***	-0.0135 ***
	N=90	(.0074)	(.0074)	(.0041)	(.0041)
SEC Reg Announce		-0.0183 *	-0.0179 *	-0.0280 ***	-0.0284 ***
	N=93	(0.0078)	(.0078)	(.0057)	(.0057)

* $p<0.05$; ** $p<0.01$; *** $p<0.001$ (Robust Standard Errors)

Table 1.4

Gold Mining		Avg. Cum. Abnormal (5 day %)		Avg. Cum. Abnormal (3 day %)	
		Equal-Weight	S&P 500	Equal-Weight	S&P 500
Pass Committee		0.0357 ***	0.0298 **	0.0369 ***	0.0338 ***
	N=61	(.0092)	(.0092)	(.0065)	(.0065)
Added to Dodd-Frank		0.0272 ***	0.0299 ***	0.0335 ***	0.0450 ***
	N=61	(.006)	(.0061)	(.0045)	(.0045)
Kabila Announce		0.0144	0.0143	-0.0159 **	-0.0134 *
	N=59	(.01)	(.01)	(.0054)	(.0054)
SEC Reg Announce		0.0144	-0.0081	-0.0264 ***	-0.0267 ***
	N=60	(.01)	(.011)	(.0078)	(.0078)

* $p<0.05$; ** $p<0.01$; *** $p<0.001$ (Robust Standard Errors)

Metal and gold mining companies traded on US exchanges had positive abnormal returns during the event windows for both the date coinciding with approval of the bill in committee proceedings, and the legislation's addition to Dodd-Frank. This is in contrast to mining companies taken as a group, which, over both dates, did not experience systematically abnormal returns. For the date coinciding with the addition of Section 1502 to Dodd-Frank there was greater sensitivity to the timing of the event window for mining companies in general, but not for metal mining companies specifically — thus metal mining companies likely experienced a stronger reaction to the legislation than was the case for their industry defined more broadly.

The effect of President Kabila's announcement was ambiguous on metal and gold mining companies. Over the three-day window, both company types experienced lower than expected returns, but over the longer event window the returns change direction. The positive returns over the five-day window approach significance for metal mining firms.

Taken as a group, all mining companies experienced abnormally lower returns when the SEC announced its rule implementation intentions on December 15th, 2011. For metal and gold mining companies however, negative returns were significant only over the shorter event window.

Metal mining companies also experienced abnormally low returns during and after the SEC announcement, but in contrast to other event dates, returns for gold mining companies did not follow those of metal mining companies. Over the shorter event window, gold mining companies had lower than expected returns, but by the fifth day abnormal returns were positive and not significantly different from expectations.

Table 1.5

Production in DRC	Avg. Cum. Abnormal (5 day %)		Avg. Cum. Abnormal (3 day %)	
	Equal-Weight	S&P 500	Equal-Weight	S&P 500
Pass Committee	0.0060	0.0010	0.0130	0.0103
N=5	(.0316)	(.0314)	(.0192)	(.0191)
Added to Dodd-Frank	0.0494	0.0549	0.0405 *	0.0550 **
N=5	(.0246)	(.0226)	(.0118)	(.0119)
Kabila Announce	0.0029	0.0008	-0.0073	-0.0059
N=5	(.0187)	(.0195)	(.0121)	(.0124)
SEC Reg Announce	-0.0483 *	-0.0478 *	-0.0322 **	-0.0325 **
N=5	(.0156)	(.0155)	(.0048)	(.0048)

* p<0.05; ** p<0.01; *** p<0.001   (Robust Standard Errors)

Among mining companies with rights to mine in the DRC, both Anglogold Ashanti and Rubicon Metals Corp. had high returns over the five-day period coinciding with US legislation becoming more likely on April 28th, 2010, although US-regulated mining companies operating in the DRC as a whole did not have statistically significant abnormal returns over that event date. The Securities and Exchange Commission's announcement of proposed regulations coincided with statistically significant negative returns for mining companies with operations in the DRC.

1.4.2 Smelting and Casting

Table 1.6

Smelting		Avg. Cum. Abnormal (5 day %)		Avg. Cum. Abnormal (3 day %)	
		Equal-Weight	S&P 500	Equal-Weight	S&P 500
Pass Committee		-0.0212 **	-0.0269 ***	-0.0137 **	-0.0168 ***
	N=44	(.0058)	(.0059)	(.0045)	(.0046)
Added to Dodd-Frank		0.0058	0.0062	0.0007	0.0170 ***
	N=44	(.0048)	(.005)	(.0044)	(.0048)
Kabila Announce		-0.0181 **	-0.0214 ***	-0.0061	-0.0048
	N=43	(.0061)	(.0061)	0.0039	(.0039)
SEC Reg Announce		0.0122	0.0127	0.0058	0.0055
	N=44	(.0067)	(.0067)	(.0052)	(.0052)

* p<0.05; ** p<0.01; *** p<0.001   (Robust Standard Errors)

During the "pass committee" event window around April 28, 2010, smelting companies experienced abnormally negative returns at a statistically significant level. Returns were also lower than expected for the window corresponding to President Kabila's announcement, although the abnormal returns were only significant over the longer event window.

In 2010, most of the smelting companies that sourced raw materials in the Democratic Republic of the Congo were based in Asia and South America[18] and were not traded on US exchanges.

1.4.3 Electronics Firms

Table 1.7

Electronics Mnf		Avg. Cum. Abnormal (5 day %)		Avg. Cum. Abnormal (3 day %)	
		Equal-Weight	S&P 500	Equal-Weight	S&P 500
Pass Committee		0.0008	-0.0033	0.0041	0.0019
	N=478	(.0037)	(.0037)	(.0029)	(.0029)
Added to Dodd-Frank		-0.0019	0.0003	-0.0042 *	0.0068 ***
	N=478	(.0026)	(.0026)	(.002)	(.0021)
Kabila Announce		0.0084 *	0.0070 *	-0.0004	0.0016
	N=476	(.0035)	(.0035)	(.003)	(.003)
SEC Reg Announce		-0.0063 *	-0.0059 *	-0.0052 *	-0.0054 *
	N=475	(.0029)	(.0029)	(.0022)	(.0022)

* p<0.05; ** p<0.01; *** p<0.001   (Robust Standard Errors)

---

[18] The largest tin smelters during the period covered in this study (according to ITRI) were : Yunnan Tin (China) PT Timah (Indonesia); Malaysia Smelting Corp (Malaysia); Minsur (Peru); Thaisarco (Thailand); Yunnan Chengfeng (China);EM Vinto (Bolivia); Liuzhou China Tin (China); Metallo Chimique (Belgium); PT Koba Tin (Indonesia); Gejiu Zi-Li (China); Gold Bell Group (China); OMSA (Bolivia); Taboca/Paranapanema (Brazil)

Electronic companies as a group did not have abnormal returns when the Conflict Minerals Trade Act passed in a hearing of the House Foreign Affairs Committee, and only the three-day window was significant (with small coefficients of opposite directions for the two indexes) when regulators appended the measures to Dodd-Frank. President Kabila's announcement coincided with significantly positive returns for electronics firms in general, but only over the five-day window. The SEC announcement however coincided with significantly negative abnormal returns for both window lengths.

Table 1.8

Communications Mnf	Avg. Cum. Abnormal (5 day %)		Avg. Cum. Abnormal (3 day %)	
	Equal-Weight	S&P 500	Equal-Weight	S&P 500
Pass Committee	0.0035	-0.0003	-0.0031	-0.0052
N=93	(.0093)	(.0093)	(.0052)	(.0052)
Added to Dodd-Frank	-0.0078	-0.0064	-0.0110 *	-0.0013
N=94	(.0071)	(.0072)	(.0053)	(.0054)
Kabila Announce	0.0233 ***	0.0221 ***	0.0143 ***	0.0161 ***
N=94	(.0056)	(.0056)	(.0043)	(.0043)
SEC Reg Announce	-0.0079	-0.0075	-0.0088	-0.0090
N=98	(.0081)	(.0082)	(.0054)	(.0054)

* $p<0.05$; ** $p<0.01$; *** $p<0.001$ (Robust Standard Errors)

Communications equipment manufacturers were a specific target of many advocacy groups during the debate over legislation in 2009 and 2010. As was the case for other electronics manufacturing companies, it does not appear as though US legislation sparked a substantial re-evaluation of communication equipment manufacturers. However, the Kabila announcement coincided with a significant increase in returns for communications firms, while such an effect was apparent for other electronics manufacturers only over the five-day event window and at a lower level of significance.

The positive abnormal returns for communications equipment manufacturing during the Kabila announcement window are striking – across both indexes and for both window lengths, the returns were high around September 9th 2010.

Figure 1.2

Cumulative Abnormal Returns for Communication Equipment Manufacturers on All Event Dates
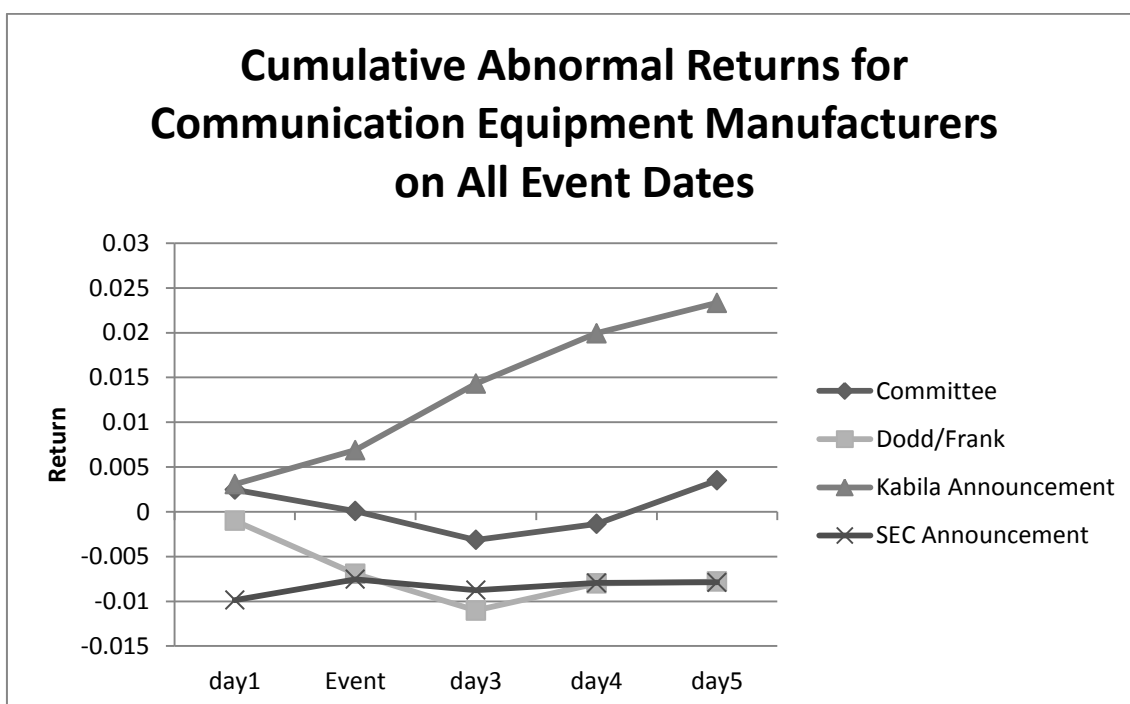
1.5   Discussion

US-listed companies continued to be sensitive to changes in production of minerals in the DRC after Dodd-Frank became law, indicating that the direst concerns about a full embargo were not realized in the period immediately following the Act's development and passage. However, the fact that some trade was expected to exist at some point after Dodd-Frank does not mean that the regulation accomplished its main goals of reducing revenue to militant groups, nor does it mean that the law was successful in avoiding harm to workers and market participants not involved in illegal activity.

Because regulations over conflict mineral trading were scheduled to be implemented by the Securities and Exchange Commission some months after the conflict minerals provision was passed in the United States, there are several non-exclusive interpretations of market sensitivity to an additional ban in the DRC. Market participants could have expected trade to continue via regulated companies, or that trade would continue via companies outside of the SEC's jurisdiction. Another explanation could be that trade was only expected to continue until conflict minerals rules were implemented by the SEC, or that the SEC rules were not expected to last long.

The generally positive returns for many companies that coincide with regulatory events in this study are a puzzle. One possible explanation however, is that regulation provides protection from competition for incumbent companies.

Communication equipment manufacturing companies traded on US exchanges were under pressure to change their sourcing for some time prior to US legislation, and several of the larger companies making up that list claimed to have already removed DRC-sourced minerals from their supply chains. If true, the results reported here may reflect a leveling of the playing field between US-traded firms that were unable or unwilling to purchase minerals from the DRC, and those companies that, prior to reduced production in the DRC, were not under such pressure.

The fact that advocacy was only effective in this way for a single subsector raises questions about this interpretation, however, and it is unclear why computer manufacturing companies did not have similar abnormal returns while occupying a similar place in the electronics market. While mobile devices were certainly a target for advocacy groups, it would be surprising if these efforts affected the market in such a narrow way.

1.6   Conclusion

Using an event study approach, I show that even after US legislation, some companies listed on US-exchanges were sensitive to production changes that occurred in the eastern Democratic Republic of the Congo. Such sensitivity likely indicates that some companies and market participants (whether required to report to the SEC or not) expected continued minerals trade with the region in the period after the US law was developed and passed, and before President Kabila issued a ban on conflict mineral production in the eastern DRC. Such an expectation suggests that the feared US-imposed ban on minerals from the eastern DRC did not occur in the period immediately following the successful passage of Dodd-Frank.

The results of the event study also show that in specific cases, an increased likelihood of US legislation had a detectible positive effect on companies listed on US exchanges. Companies in the mining and electronic communications manufacturing sectors experienced abnormal returns as the legislation became more likely around April 28, 2010, and most of these abnormal returns were positive.

1.7   References

Askari, H., Forrer, J., Yang, J., & Hachem, T. (2005). Measuring Vulnerability to U.S. Foreign Economic Sanctions. *Business Economics*, 41-55.

Barber, J. (1979). Economic Sanctions as a Policy Instrument. *International Affairs*, 367-384.

Billon, P. L. (2001). The political ecology of war: natural resources and armed conflicts. *Political Geography*, 561–584.

Chan, S. a. (2000). *Sanctions as Economic Statecraft: Theory and Practice.* London: Macmillan.

Collier, P., & Hoeffler, A. (2004). Greed and Grievance in Civil War. *Oxford Economic Papers*.

Crawford, B. (1993). *Economic Vulnerability in International Relations: East-West Trade, Investment and Finance.* New York: Columbia University Press.

Deaton, A. (1999). Commodity Prices and Growth in Africa. *The Journal of Economic Perspectives*, 23-40.

Debelle, R., Diallo, M. K., Hege, S., Robarts, F., & Tarnawski, P. (2010). *the final report of the Group prepared pursuant to paragraph 6 of Security Council resolution 1896.* Security Council Committee, United Nations.

Deese, D. (1983). The Vulnerability of Modern Nations: Economic Diplomacy in East-West Relations. In e. M. Nincic and P. Wallensteen, *Dilemmas of Economic Coercion: Sanctions in World Politics* (pp. 155-182). New York: Praeger.

Fearon, J. D. (2003). Ethnicity, Insurgency, and Civil War. *American Political Science Review*.

Galtung, J. (1967). On the Effects of International Economic Sanctions, with Examples from the Case of Rhodesia. *World Politics*, 378-416.

George, A. (1993). *Bridging the Gap: Theory and Practice in Foreign Policy.* Washington, DC: United States Institute for Peace.

Global Witness Limited. (2011). *Congo's minerals trade in the balanCe.* London.

Green, J. (1983). Strategies for Evading Economic Sanctions. In M. a. Nincic, *Dilemmas of Economic Coercion: Sanctions in World Politics* (pp. 61-85). New York: Praeger.

Guidolin, M., & La Ferrara, E. (2007). Diamonds Are Forever, Wars Are Not: Is Conflict Bad for Private Firms? *The American Economic Review*, 1978-1993.

Gylfason, T., & Zoega, G. (2002). Inequality and Economic Growth: Do Natural Resources Matter? *CESifo Working Paper Series*.

Haufler, V. (2009). Sanctions and Private Self-Regulation. *APSA 2009 Toronto Meeting Paper* , 1-16.

Hufbauer, G. &. (1985). *Economic Sanctions Reconsidered History and Current Policy.* Washington, DC: Institute for International Economics.

Hufbauer, G., & Elliott, J. S. (1990). *Economic Sanctions Reconsidered: History and Current Policy.* Washington, DC: Institute for International Economics.

Kaempfer, W. H. (1987). Divestment, Investment Sanctions, and Disinvestment: An Evaluation of Anti-Apartheid Policy Instruments. *International Organization*, 457-73.

Kaempfer, W., & Lowenberg, A. (1992). *International Economic Sanctions: A Public Choice Perspective.* Boulder: Westview Press.

Kirshner, J. (1997). The Microfoundations of Economic Sanctions. *Security Studies*, 32–64.

La Ferrara, E., & Della Vigna, S. (2010). Detecting Illegal Arms Trade. *American Economic Journal: Economic Policy*, 26-57.

Lektzian, D., & Souva, M. (2007). An Institutional Theory of Sanctions Onset and Success. *Journal of Conflict Resolution*, 848-869.

Li, C.-p. (1993). The Effectiveness of Sanction Linkages: Issues and Actors. *International Studies Quarterly*, 349-370.

Lundborg, P. (1987). *The Economics of Export Embargoes: The Case of the US-Soviet Grain Suspension.* London: Croom Helm.

Marshall, M. G., Jaggers, K., & Gurr, T. R. (2012, October 10). *Polity IV Project*. Retrieved from Center for Systemic Peace: http://www.systemicpeace.org/inscr/inscr.htm

Martin, L. L. (1992). *Coercive Cooperation: Explaining Multilateral Economic Sanctions.* Princeton, NJ: Princeton University Press.

Massimo, G., & La Ferrara, E. (2007). Diamonds Are Forever, Wars Are Not: Is Conflict Bad for Private Firms? *The American Economic Review*, 1978-1993.

Nincic, M. &. (1983). *Dilemmas of Economic Coercion: Sanctions in World Politics.* New York: Praeger.

Nossal, K. R. (1989). International Sanctions as International Punishment. *International Organization*, 301-322.

Olson, R. S. (1979). Economic Coercion in World Politics: With a Focus on North-South Relations. *World Politics*, 471-494.

Pape, R. A. (1997). Why Economic Sanctions Do Not Work. *International Security*, 90-136.

Rodman, K. A. (1995). Sanctions at Bay? Hegemonic Decline, Multinational Corporations, and the US Economic Sanctions Since the Pipeline Case. *International Organization*, 105-138.

Seay, L. E. (2012). *What's Wrong with DoddFrank 1502?:Conflict Minerals, Civilian Livelihoods, and the Unintended Consequences of Western Advocacy.* Washington, DC : Center for Global Development.

The United States House of Representatives Committee on Financial Services. (2012, 09 18). *Uploaded Files.* Retrieved from The Committee on Financial Services: http://financialservices.house.gov/uploadedfiles/hhrg-112-ba20-wstate-lseay-20120510.pdf

UN Panel of Experts. (2000). *Report of the Panel of Experts on Violations of Security Council Sanctions Against UNITA.* United Nations Security Council.

Whang, T. (2010). Structural estimation of economic sanctions: From initiation to outcomes. *Journal of Peace Research*, 561-573.

Yager, T. R. (2009). *The Mineral Industry of Congo (Kinshasa).* U.S. Geological Survey.

1.8.1 Appendix A: Industry Groups which submitted implementation suggestions to the SEC on conflict mineral regulations

1. Advanced Medical Technology Association (AdvaMed)
2. Aerospace Industries Association (AIA)
3. Akin Gump Strauss Hauer & Feld LLP
4. American Apparel & Footwear Association
5. American Association of Exporters and Importers (AAEI)
6. American Automotive Policy Council (AAPC)
7. American Gem Society
8. American Tin Trade Association
9. AngloGold Ashanti Limited
10. AT&T Inc.
11. AxamTrade
12. Bario-Neal Jewelry
13. Barrick Gold Corporation
14. BC Investment Management Corporation
15. Business Alliance for Customs Modernization (BACM)
16. Business Roundtable
17. Calvert Asset Management Company, Inc.
18. Center for Capital Markets Competitiveness
19. Cleary Gottlieb Steen & Hamilton LLP
20. Communications and Information Network Association of Japan
21. Competitive Enterprise Institute
22. Consumer Electronics Association
23. Consumer Electronics Retailers Coalition
24. Copper & Brass Fabricators Council, Inc.
25. CTIA-The Wireless Association
26. Deloitte & Touche LLP
27. Electronics TakeBack Coalition
28. Emergency Committee for American Trade
29. Information Technology Industry Council
30. Ernst & Young LLP
31. Ethical Metalsmiths
32. Fair Jewelry Action
33. Fair Jewelry Action USA
34. Fashion Jewelry and Accessories Trade Association
35. Federation des Enterprises du Congo
36. Ford Motor Company
37. Générale des Coopératives Minières du Sud Kivu (GECOMISKI)
38. Global Tungsten & Powders Corp.
39. Grant Thornton LLP
40. Hacker Jewelers, Designers & Goldsmiths, Inc.
41. Hoover & Strong Inc.
42. International Precious Metals Institute
43. International Trade Retail Industry Leaders Association
44. Association Connecting Electronics Industries Joint Industry Group (JIG)
45. ITRI Ltd
46. Japan Auto Parts Industries Association
47. Japan Business Machine and Information System Industries Association
48. Japan Electronics and Information Technology Industries Association
49. Japan Machinery Center for Trade and Investment
50. Jewelers of America
51. Jewelers Vigilance Committee
52. Joint Industry Group
53. KPMG LLP
54. London Bullion Market Association
55. Malaysia Smelting Corporation
56. Manufacturing Jewelers & Suppliers of America
57. Materials Management Corp.

58. Medtronic, Inc.
59. Metal Solutions Corporation
60. Metalor Technologies USA
61. Mining Industry Associations of Southern Africa
62. Minister of Energy and Minerals, United Republic of Tanzania
63. Minister of Energy and Mines, Republic of Burundi
64. Ministre des Mines, République Démocratique du Congo
65. MJB Consulting
66. Moore & Van Allen PLLC
67. National Association of Manufacturers (NAM)
68. National Electrical Manufacturers Association (NEMA)
69. National Foreign Trade Council (NFTC)
70. National Mining Association
71. National Oilwell Varco
72. National Retail Federation (NRF)
73. National Stone, Sand Gravel Association
74. NEI Investments
75. Newmont Mining Corporation
76. Niotan, Inc.
77. North Kivu Artisanal Mining Cooperatives
78. Ohio Precious Metals LLC
79. Personal Care Products Council
80. Plexus
81. Refractory Metals Association
82. Responsible Jewellery Council
83. Retail Industry Leaders Association (RILA)
84. Rockefeller Financial Asset Management
85. Semiconductor Equipment and Materials International (SEMI)
86. Semiconductor Industry Association
87. Specialty Steel Industry of North America
88. Taiwan Semiconductor Manufacturing Company, Ltd.

89. Tantalum-Niobium International Study Center
90. Tanzanian Chamber of Minerals and Energy
91. TechAmerica
92. The Elm Consulting Group International LLC
93. The Japan Electrical Manufacturers' Association
94. The Kuala Lumpur Tin Market
95. TIAA-CREF
96. Tiffany & Co.
97. TriQuint Semiconductor
98. U.S. Chamber of Commerce
99. United States Steel Corporation United States Telecom Association
100. USA Engage
101. Vale S.A.
102. Verizon Communications
103. World Gold Council

Chapter II

Stock Market Reactions to Conflict Diamond Trading Restrictions and Controversies

In this study, I explore the reactions of financial market participants to news relating to the Kimberley Process Certification Scheme (KPCS), a body that regulates aspects of global diamond production and trade. I use an event study approach with data on the returns for shares of leading global mining and jewelry retail companies over the period from 1999 to 2011.

I show that the most influential dates related to the KPCS for diamond mining companies were associated with regulatory actions in the early 2000s taken by the United Nations and the United States. These events were associated with lower returns for diamond mining companies. After 2004, jewelry companies experienced abnormal returns coinciding with KPCS-related events, while mining firms appear rarely affected by events during this time. The majority of returns for jewelry companies were negative for events which called into question the ability of the KPCS to ensure conflict-free diamond production and trade. Expanded legal diamond production in some cases coincided with positive returns for jewelry retail companies over the time period I consider.

These results are consistent with the expectation that jewelry companies, which often market directly to consumers, are more sensitive to public perception concerning the KPCS and its credibility. The results are inconsistent with the point of view that the creation of the KPCS was seen by financial market participants as "good news" overall for diamond mining companies. The results also suggest that once trade restrictions were in place, mining companies were less affected by controversies surrounding the credibility of the KPCS.

2.1 Introduction

In 1998, the non-governmental organization (NGO) Global Witness launched an awareness campaign against "blood diamonds", publicizing the link between diamond production and armed conflict. Not long after, Robert Fowler and a UN panel of experts submitted a report to the UN Security Council detailing the ways in which armed groups evaded sanctions in Angola – which was at that time embroiled in a long-running civil war (UN Panel of Experts, 2000). The report discussed the role of diamonds in funding the armed group *Uniao Nacional Para a Independencia Total de Angola* (UNITA), and provided evidence of actors in the diamond mining and jewelry industries evading UN sanctions.

Also bringing attention to illicit diamond trading in the late 1990s were the brutal tactics of the Revolutionary United Front (RUF) during the civil war in Sierra Leone, which drew global condemnation and resulted in a United Nations Security Council ban on the trade of all diamonds originating in that country.[19]

Later that year, the UN Security Council passed a resolution supporting the creation of a global certification procedure for diamonds.[20] The ultimate multinational response brought about the Kimberley Process Certification Scheme (KPCS), a control and certification body that came into force in 2003 in Interlaken, Switzerland. The KPCS guidelines left individual state members to draft and pass the requisite legislation, and to monitor companies and individuals operating within their jurisdictions.

The KPCS grew to cover 76 represented countries by early 2012 (Kimberley Process, 2012). This group included all major diamond producing countries (covering 99.8% of global rough diamond production), and involved the majority of large national consumer markets. Also represented in KPCS were advocacy and industry observers, including Global Witness and De Beers, the world's largest diamond mining company. Member states agreed to trade diamonds solely with other member countries, and to halt trade with members who were suspended for violating KPCS rules. The Kimberley Process also required that a KPCS certificate accompany every compliant diamond sold on the international market.

---

[19] Resolution 1306 on 5 July, 2000

[20] UN Resolution 56/263

Industry actors participated in the development and promulgation of KPCS-recommended policies, as well as many aspects of the scheme's implementation. This industry involvement proved to be a contentious issue among academics, politicians, business leaders and advocacy organizations, but many KPCS advocates eventually saw the involvement as a means of providing incentives for companies to comply with KPCS regulations. Many saw the system as benefiting the diamond industry by protecting its reputation against charges of supporting violence in diamond producing countries.

The World Diamond Council, a global industry body formed in 2000 to address regulatory drives against conflict diamonds, eventually voted to support the creation of the Kimberley Process. The move prompted many to claim that trade restrictions against violent groups in smaller countries would benefit large-scale diamond mining companies, and that the primary motivation of companies for supporting the initiative was to gain advantages in the market:

> "…this new international system restricts supply and enhances the power of big, established players. It keeps the warlords and the small diggers and the shady traders out of the acceptable stream of commerce. It also imposes costs (for tagging, monitoring and auditing) that make it even more difficult for new or smaller players to enter the global market." (Spar, 2006)

Haufler (2009) proposes that the majority of industries targeted by advocacy groups in recent years are not as ideal for KPCS-type regulations because the diamond industry is more concentrated than other industries. Haufler claims that benefits do indeed accrue to mining and retail jewelry companies in the diamond industry, but argues that these are peculiarities of the industry, rather than a guide for future efforts. The literature on sanctions, including the most commonly cited theoretical model from Kaempher and Lowenberg (1992)[21], also suggests that restrictions are more likely when there is industry support in the sending country due to local benefits from regulations.

If the KPCS were mostly beneficial for incumbent companies as these, and other scholars have argued, we should expect investors and other market participants to have re-evaluated companies in a positive light due to new information about the likelihood of regulations. If the

---

[21] Please see Appendix A for a discussion of the Kaempher and Lowenberg (1992) model.

companies were publicly traded, we would also expect that the returns on securities of these companies would increase if there were good news about the prospects of the industry.

Using such an approach in another context however, La Ferrara and Guidolin (2007) show that in some cases, violent conflicts can benefit diamond mining companies. La Ferrara and Guidolin use micro-level data to demonstrate that the exogenous shock of the death of the rebel leader in Angola (and subsequent end of the conflict there) was interpreted as "bad news" for diamond mining companies with activities in the country, corresponding with a 4 per cent decrease in abnormal returns. The authors interpret this result as indicating that aspects of armed conflicts such as the weakening of state power and the increase in barriers to entry can benefit some stakeholders. Insofar as incumbent companies did in fact benefit from conflict situations, we should expect that credible regulations to ensure that diamonds produced in conflict environments do not reach markets would harm some mining interests.

Taking this debate as a starting point for the analysis of the effects of the near-global regulations on companies in the diamond industry, there are several critical questions that have not been conclusively answered in the literature:

1) Did the KPCS have real effects on the diamond industry?
2) If so, do events and policy decisions related to the KPCS continue to be relevant?
3) Again if the KPCS has measurable effects on the diamond industry, what was the direction of these effects and did the regulations benefit specific segments of the industry?

To anticipate the findings in this study, I show that the development and implementation of the KPCS had significant impacts on the returns on shares for companies in the diamond industry. I also show that the majority of abnormal returns related to the creation of the KPCS were negative for mining companies globally. Moreover, I show that some retail jewelry companies appear to have been negatively impacted by events which called into question the credibility of the Process. These results suggest that the KPCS was expected to have substantial effects on mining companies that were not unconditionally beneficial for them, and that

regulation likely created incentives for retail jewelry companies to maintain the credibility of the Process.

I proceed as follows: Section 2.2 describes the event study methodology I employ. Section 2.3 describes the data I use in the analysis, and Section 2.4 describes the results. Having established that returns were indeed significantly abnormal, in Section 2.5 I turn to a discussion and interpretation of the main findings. Section 2.6 concludes.

2.2   Event Study Methodology

Event studies focus on the "event window" — the period of time during which investors learn about the event that is under study. In the following sections, I predict returns for securities during a given event window using estimates from an "estimation window" — an extended period prior to the event — using ordinary least squares regression. I then compare the predicted returns to actual returns to measure the degree to which returns during the event window were abnormal in comparison the expected performance of the security.

The event study approach is based on the assumptions of the constant expected return model (CER)[22] that, as a regression model, is expressed:

$$r_{it} = \mu_i + \epsilon_{it}, \tag{1}$$

$$\{\epsilon_{it}\}_{t=1}^T \sim GWN(0, \sigma_i^2)$$

$$cov(\epsilon_{it}, \epsilon_{js}) = \begin{cases} \sigma_{ij} & t = s \\ 0 & t \neq s \end{cases}$$

The term r_{it} is the return on security i at time t, and μ_i is expected return. The error term ϵ_{it} in the expression is a Gaussian white noise (GWN) process.

As applied to event studies, a standard formulation of the regression model emphasizes the specific time period during which an event of interest took place, and that expected returns are related to market-wide returns. The regression model can therefore be adapted to read:

---

[22](a) *Covariance stationary and ergodicity*: $\{r_{i1}, \dots, r_{iT}\} = \{r_{it}\}_{t=1}^T$ is a covariance stationary and ergodic stochastic process with $E[r_{it}] = \mu_i$, $var(r_{it}) = \sigma_i^2$, $cov(r_{it}, r_{jt}) = \sigma_{ij}$, and $cor(r_{it}, r_{jt}) = \rho_{ij}$
(b) *Normality*: $r_{it} \sim N(\mu_i, \sigma_i^2)$ for all i and t
(c) *No serial correlation*: $cov(r_{it}, r_{js}) = cor(r_{it}, r_{js}) = 0$ for $t \neq s$ and $i, j = 1, \dots, N$.

$$r_{it} = \alpha_i + \beta_i r_{mt} + \sum_{d=1}^{T_e} D_{itd}\, \gamma_{id} + \epsilon_{it}, \qquad\qquad (2)$$

Where r_{it} is again the return on security i at time t and β_i is the systematic risk for security i. The term r_{mt} refers to the market return for the security exchange on which i trades, and ϵ_{it} is again a stochastic error term with a mean equal to zero and variance σ_i^2. The dummy variable D_{itd} is equal to one during the event window and zero otherwise, and T_e is equal to the number of days of the event window. The term γ_{id} accounts for the difference between the actual return and the predicted return, which is usually referred to as the "abnormal return" in event studies.

In the following analysis, I look at an event window of several days because "news" or information about the value of a security does not circulate instantaneously for all market participants. The full effect of the event is a summation of the daily abnormal returns over the event window, which is referred to as the cumulative abnormal return or CAR:[23]

$$CAR_{ie} = \sum_{d=1}^{T_e} \hat{\gamma}_{id} \qquad\qquad (3)$$

Under normal circumstances, the expected CAR should be equal to zero.[24] A statistically significant shift away from expected returns however, signifies that new information has caused a re-evaluation:

$$H_O: \sum_{i:i\in N} CAR_{ie} = 0 \qquad\qquad (4a)$$

$$H_A: \sum_{i:i\in N} CAR_{ie} \neq 0 \qquad\qquad (4b)$$

Most trade restrictions do not affect all companies in the same way, as regulations could be beneficial for some companies (leading to a positive CAR) and harmful for others (leading to a

---

[23] This is often expressed in the event study literature as simply the error term ϵ summed over the event window, rather than the defining the abnormal portion alongside a separate error term

[24] Implied by (1) $\epsilon_{it} = r_{it} - \mu_i = r_{it} - E[r_{it}]$, the term ϵ_{it} is defined as the deviation of the random return from its expected value

negative CAR). The two types could be defined as those companies that would be expected to benefit from regulations ($i \in P$), and those that would be expected to be harmed ($i \in G$) by regulations. Rewriting the null and alternate hypotheses, the approach is expressed:

$$H_O: \sum_{i:i \in P} CAR_{ie} = 0 \qquad (5a)$$

$$H_A: \sum_{i:i \in P} CAR_{ie} \begin{cases} > 0 \text{ if the event is positive} \\ < 0 \text{ if the event is negative} \end{cases} \qquad (5b)$$

And:

$$H_O: \sum_{i:i \in G} CAR_{ie} = 0 \qquad (6a)$$

$$H_A: \sum_{i:i \in G} CAR_{ie} \begin{cases} < 0 \text{ if the event is positive} \\ > 0 \text{ if the event is negative} \end{cases} \qquad (6b)$$

As in $(4a)$, both $(6a)$ and $(5a)$ state that the expected CAR=0. But in this more explicit statement of the null and alternate hypotheses, the same event could characterize opposite impacts depending on the company type.

2.3   Data

The historical stock returns I use in the following analysis are publicly available. To compare performance, I pair stock returns with a national index from the country where the exchange is located. Table 2.1 lists the indexes I use in the following analysis.

Table 2.1

Index	Symbol	% total
India Stocks Total Return Index	TRINDSTM	14.73
Dow Jones Canada Stock Index	_CA1	31.12
Dow Jones Australian Index	_DJAU	10.13
Dow Jones U.S. Total Stock Market Total Return Index (Full-Cap)	_DWCTD	14.53
Dow Jones Europe Stock Index (Excl UK)	_E23	7.6
Ftse-100 Value Stock Index	_FTUKXVD	6.06
Dow Jones Hong Kong Stock Index	_HK1	8.3
Dow Jones New Zealand Stock Index USD	_NZ2	1.45
Dow Jones Singapore Stock Index	_SG1	6.09

To select diamond mining companies to evaluate, I use a full list of active publically traded diamond mining companies listed by miningfeeds.com, a popular mining industry website. For retail jewelry companies, I use a list of publically traded companies on major global stock exchanges from Yahoo Finance on April 24, 2012.[25]

In some respects, companies that sell diamonds have similar interests to upstream firms, such as diamond mining companies. Although both company types take part in some trade groups and joint lobbying, their concerns are not always identical, and in the following analysis, I provide results for jewelry and mining firms separately.

The event dates included in the analysis through the year 2007 are based on a list created by diamondfacts.org, a website sponsored by the World Diamond Council (World Diamond Coucil, 2012). I supplement this list for dates after 2007 with important actions regarding the KPCS which were recorded in major newspapers and news services, including the *New York Times* and *Reuters*.[26]

2.4 Results

Below I list event dates with at least one event window showing significant abnormal returns. Although there are many ambiguous dates (where statistical significance depends on the length of the event window), several are clearly significant over both event window lengths and immediately stand out.

On the 5th of July, 2000, the UN Security Council imposed a worldwide ban on diamonds from Sierra Leone. Although fewer large-scale producers were involved in the primarily alluvial diamond mining operations present in Sierra Leone at that time, mining companies posted abnormally negative returns coinciding with the Security Council ban, and while smaller, the dip in returns for jewelry firms nears statistical significance over the three-day event window.

In the United States, the Act of Congress that brought the country into compliance with the KPCS was considered in several forms before a final version passed. The first version, H.R.1584, was proposed in the US House of Representatives on March 7th, 2001. The abnormal returns for

---

[25] A full list of companies used in the following analysis is included in Appendix B.
[26] A full list of dates used in the following analysis is included in Appendix C.

diamond mining and jewelry companies during the event windows corresponding to this date were insignificantly different from zero. The introduction of a second version on April 3rd, 2003 similarly did not provoke a significant reaction in stock markets. When the Clean Diamonds Act passed in the US Senate on April 10th of 2003, however, returns on securities for diamond mining companies significantly declined over both the three- and five-day event windows. Likewise, when US President George W. Bush signed the Clean Diamond Trade Act[27] into law on the 24th of April, 2003, and formally brought the United States into KPCS compliance, mining firms recorded statistically significant negative returns over both the three- and five-day event windows.

The UN Security Council banned diamonds from Côte d'Ivoire on the 15th of December, 2005, in response to violence in that country.[28] Jewelry companies had abnormally negative returns over the three- and five-day event windows coinciding with this event, while mining companies showed no statistically significant change. When Ian Smillie, a leading conflict diamond expert and prominent designer of the KPCS, quit the Kimberley Process in a strongly worded letter on the 10th of June, 2009, mining companies appeared to have no statistically significant abnormal returns while jewelry companies recorded significantly negative returns over both event window lengths.

On the 10th of December, 2010, newspapers in Europe and North America first reported Wikileaks cables that detailed human rights violations in the Marange diamond fields in eastern Zimbabwe. Although diamond mining companies had no statistically significant change in returns around this time, jewelry companies again saw strongly negative returns over both event window lengths. A few months later on the 21st of March, 2011, the Democratic Republic of the Congo's chairperson Mathieu Yamba Lapfa Lambang unilaterally authorized diamond exports from Zimbabwe, despite vocal opposition from other members, including the US, several EU member states, and Canada. Jewelry companies had significantly positive returns during the windows coinciding with this event, while mining companies saw no statistically significant deviation from predicted returns.

---

[27] H.R. 1584 (108th)

[28] Resolution 1643 (2005) Adopted by the Security Council at its 5327th meeting

Table 2.2

Jewelry Companies

Event Date	Description	N	3-day		5-day	
03-Oct-99	Major press release published	4	0.012		0.030	**
			(0.010)		(0.008)	
05-Jul-00	UNSC votes to impose world-wide ban on diamonds from Sierra Leone	8	-0.044		-0.035	
			(0.025)		(0.031)	
16-Jul-00	29th World Diamond Congress meets the 16th to the 19th of July, creates World Diamond Council	8	0.036		0.006	
			(0.025)		(0.012)	
04-Sep-00	A meeting of 50 delegates from all major diamond producing & importing countries	8	-0.054		-0.066	
			(0.058)		(0.059)	
14-Feb-01	70 US-based NGOs launched the Campaign to Eliminate Conflict Diamonds	8	-0.034		-0.033	
			(0.044)		(0.046)	
20-Feb-01	Israeli diamond banks issue notice to clients	8	0.054	**	0.049	**
			(0.023)		(0.020)	
11-Sep-01	Participant meeting in UK	8	-0.014		-0.039	*
			(0.012)		(0.019)	
18-Mar-02	Kimberly Process meeting in Canada	10	-0.007		-0.043	
			(0.040)		(0.054)	
13-Feb-03	UK diamond office opened	14	-0.025	*	-0.027	*
			(0.013)		(0.013)	
10-Apr-03	Senate Passes Clean Diamonds Act	24	0.014		0.014	
			(0.016)		(0.016)	
24-Apr-03	Bush signs HR 1584, making US KP compliant	23	-0.036		-0.037	
			(0.027)		(0.027)	
01-Jan-04	Canada Appointed chair of KP	25	0.001		-0.006	
			(0.021)		(0.021)	
29-Oct-04	The participants of the Kimberley Process met in Plenary in Gatineau, Quebec	27	-0.021	*	-0.023	*
			(0.010)		(0.012)	
15-Dec-05	UNSC votes to impose global ban on Ivory Coast	28	-0.022	***	-0.022	***
			(0.006)		(0.006)	
10-Mar-06	Report on Brazil, claiming roughly half of diamond exports are not accounted for	29	-0.002		-0.003	
			(0.007)		(0.007)	
22-May-07	The WDC accuses Zimbabwe and Venezuala for failing to cooperate with KPCS	31	-0.017	**	-0.009	
			(0.007)		(0.006)	
10-Dec-08	The World Diamond Council (WDC) calls for crack down on Zimbabwe	39	0.008		0.025	**
			(0.010)		(0.012)	
16-Mar-09	High-level envoy visit by KP chair to Zimbabwe	38	-0.020		0.037	**
			(0.019)		(0.017)	
10-Jun-09	Ian Smillie quits Kimberley Process	40	-0.032	***	-0.050	***
			(0.012)		(0.014)	
03-Jun-10	Arrest of Farai Maguwu for investigating human rights violations	41	0.017	*	0.014	
			(0.009)		(0.009)	
10-Dec-10	Wikileaks information on atrocities in Zimbabwe fields reported	43	-0.034	***	-0.023	*
			(0.011)		(0.013)	
21-Mar-11	Mathieu Lapfa unilaterally authorizes Zimbabwe exports	43	0.013	*	0.023	*
			(0.006)		(0.012)	

***$p<0.01$, **$p<0.05$, *$p<0.1$, (Robust Standard Errors)

Table 2.3

Mining Companies

Event Date	description	N	3-day		5-day	
03-Oct-99	Major press release published	12	0.056		0.099	
			(0.057)		(0.068)	
05-Jul-00	UNSC votes to impose world-wide ban on diamonds from Sierra Leone	12	-0.069	***	-0.097	***
			(0.021)		(0.027)	
16-Jul-00	29th World Diamond Congress creates World Diamond Council	13	-0.024	*	-0.018	
			(0.013)		(0.035)	
04-Sep-00	A meeting of 50 delegates from all major diamond producing & importing countries	13	-0.020		-0.053	**
			(0.013)		(0.019)	
14-Feb-01	70 US-based NGOs launched the Campaign to Eliminate Conflict Diamonds	13	0.052	*	0.049	
			(0.025)		(0.027)	
20-Feb-01	Israeli diamond banks issue notice to clients	13	-0.033		-0.037	
			(0.034)		(0.025)	
11-Sep-01	Participant meeting in UK	14	0.008		-0.048	
			(0.018)		(0.033)	
18-Mar-02	Kimberly Process meeting in Canada	14	0.003		-0.036	*
			(0.022)		(0.019)	
13-Feb-03	UK diamond office opened	15	0.072		0.064	
			(0.062)		(0.063)	
10-Apr-03	Senate Passes Clean Diamonds Act	18	-0.020	*	-0.027	*
			(0.011)		(0.016)	
24-Apr-03	Bush signs HR 1584, making US KP compliant	18	-0.030	*	-0.036	*
			(0.016)		(0.017)	
01-Jan-04	Canada Appointed chair of KP	18	-0.026		-0.033	*
			(0.018)		(0.017)	
29-Oct-04	The participants of the Kimberley Process met in Plenary in Gatineau, Quebec	19	-0.016		-0.002	
			(0.014)		(0.015)	
15-Dec-05	UNSC votes to impose global ban on Ivory Coast	19	-0.015		-0.016	
			(0.014)		(0.014)	
10-Mar-06	Report on Brazil, claiming roughly half of diamond exports are not accounted for	19	-0.025		-0.043	**
			(0.014)		(0.019)	
22-May-07	The WDC accuses Zimbabwe and Venezuala for failing to cooperate with KPCS	22	-0.014		-0.017	
			(0.014)		(0.020)	
10-Dec-08	The World Diamond Council (WDC) calls for crack down on Zimbabwe	27	0.069		0.022	
			(0.044)		(0.044)	
16-Mar-09	High-level envoy visit by KP chair to Zimbabwe	27	-0.039		-0.023	
			(0.063)		(0.055)	
10-Jun-09	Ian Smillie quits Kimberley Process	27	0.043		0.048	
			(0.038)		(0.043)	
03-Jun-10	Arrest of Farai Maguwu for investigating human rights violations	27	-0.018		-0.035	
			(0.021)		(0.026)	
10-Dec-10	Wikileaks information on atrocities in Zimbabwe fields reported	27	-0.005		0.009	
			(0.013)		(0.020)	
21-Mar-11	Mathieu Lapfa unilaterally authorizes Zimbabwe exports	30	0.002		0.012	
			(0.010)		(0.018)	

***p<0.01, **p<0.05, *p<0.1, (Robust Standard Errors)

2.5   Analysis

None of the statistically significant events studied in this analysis affected both jewelry and diamond mining companies at the same time and in the same direction, which suggests that the interests of the two company types with respect to regulations and markets were more separate over the issues investigated here than expected.

The events that most affected diamond mining companies appear to be related to regulations at the national or UN-level.[29] Both the Security Council decision to ban diamonds exported from Sierra Leone and the events corresponding to United States ratification of KPCS-compliant legislation drove down returns for diamond mining companies. Over the three-day event window for the ban on Sierra Leone, cumulative returns for mining companies were nearly 7% below expected performance, and nearly 9% below over the five-day window. Passage of the Act from the US Senate corresponded with a 2.4% lower than expected return over the three-day window, 2.7% over the five-day window. Final US ratification corresponded with returns that were 3.2% lower than expected over a three-day window and 3.8% lower than expected over the five-day window.

These results suggest that overall the KPCS was not expected to help diamond mining companies, as some analysts suggest. This does not preclude the possibility that protection from competition benefited some firms in some respects, but as a whole the regulations were not looked as "good news" for diamond mining companies.

---

[29] One event that may coincide with a report on the failure of the KPCS in Brazil approaches significance over the 3-day window and is significant over the 5-day window. The results are in large part driven by a single company however, Mountain Lake Resources Inc., which did not have any diamond production in Brazil.

Figure 2.1
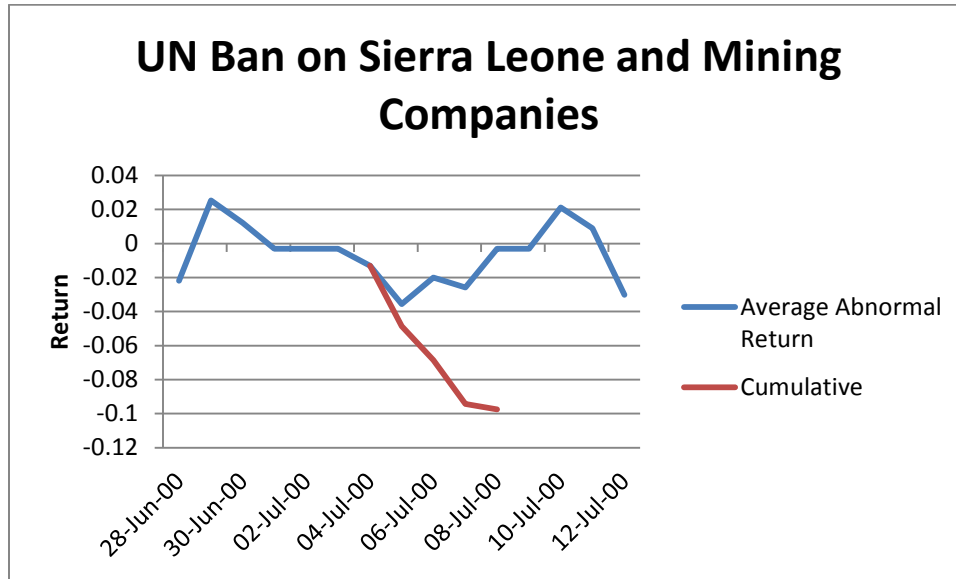
This result could arise due to several factors, or a combination of them. The KPCS regulations could entail a high cost of implementation, and the laws could have been expected to place higher cost on companies operating in developed countries (which are more likely to be traded on exchanges) than in less-developed economies. Another possibility is that some diamond mining companies did well by operating in the circumstances surrounding armed conflicts, as La Ferrara and Guidolin (2007) suggest was the case in Angola.

Retail jewelry companies however were more sensitive to events that could impact the retail demand for diamonds. Although not all such events were significant for jewelry companies, those events that were significant and positive were most often those that supported the credibility of the KPCS, whereas those which were negative undermined that credibility. For example, when Ian Smillie left the KPCS, jewelry retail companies experienced significantly lower than expected returns. Likewise, when Wikileaks cables revealed that diamonds that were certified as conflict-free had in fact been sourced in an area experiencing armed conflict, jewelry retailers again experienced lower than expected returns. These are the results one would expect were jewelry companies expected to benefit more from a KPCS program that was seen as credible.

Figure 2.2

Marange Revelations and Jewelry Companies
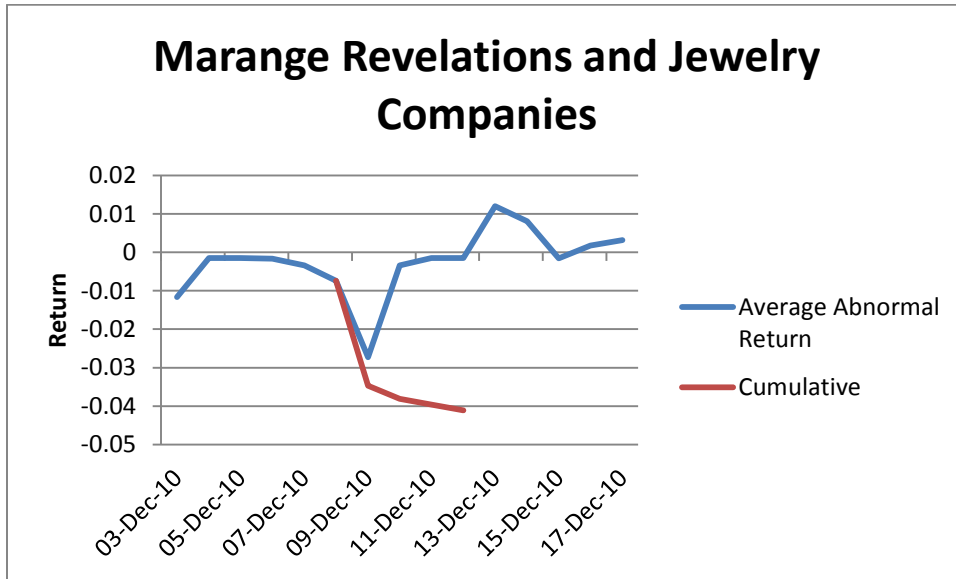
Other cases which seemed to benefit jewelry retail companies were events which opened competition in the market for diamond production and vice versa. When the UN Security Council banned diamonds from Côte d'Ivoire, returns were abnormally low for jewelry retailers, perhaps reflecting the reduction of competition in diamond production.

Figure 2.3

UN Ban on Ivory Coast and Jewelry Companies
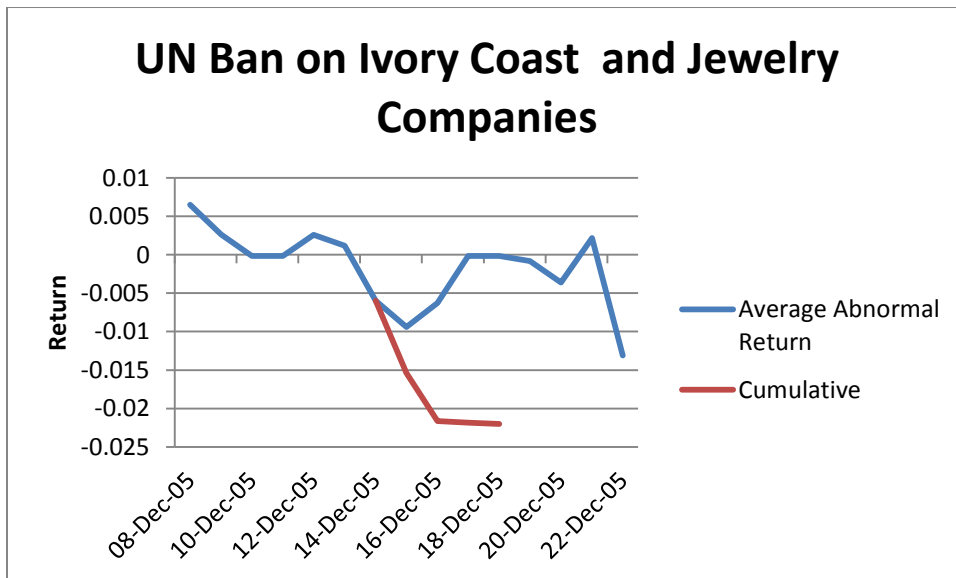
When Mathieu Yamba Lapfa Lambang, Chair of the KPCS in 2011, unilaterally opened up Zimbabwe diamond exports, jewelry retailers appear to have benefited from this unanticipated event. Both over the shorter and longer event windows, abnormal returns were positive and statistically significant. This may reflect the increased bargaining power retailers were expected to have with more producers entering the market.

2.6   Conclusion

For mining companies, the most influential dates on returns related to governmental and regulatory actions in the early 2000s from both the UN and US. Trade restrictions on diamonds appear to have negatively affected mining companies in ways not felt in the rest of the diamond industry. After 2004, jewelry companies, a group that in general is much closer to end consumers on the supply chain, felt the effects of KPCS-related events much more than mining companies, which appear hardly affected by KPCS-related events during this time. This may indicate that the more image-driven portion of the market was more sensitive to the perceptions of consumers surrounding the KPCS and its implementation.

The results also indicate that although diamond-mining companies appear less likely to be affected by KPCS-related events, jewelry companies experienced statistically significant abnormal returns as recently as 2011. Although the KPCS has been criticized as no longer significant, it appears that in some circumstances the organization's reputation and decisions matter for companies in the industry.

Mining and jewelry companies worked together to form the World Diamond Council and other bodies during the initial implementation of KPCS rules, and the two company types were represented in KPCS proceedings thereafter. This analysis shows, however, that the interests of the two company types are not always, or even usually, coincidental. Although there are no examples reported here where abnormal returns for jewelry firms can be shown to significantly move in the opposite direction as those of diamond mining companies, there were no examples of significantly positive (or negative) abnormal returns for both company types at the same time.

2.7 References

Baldwin, D. (1985). *Economic Statecraft.* Princeton, NJ: Princeton University Press.

Barber, J. (1979). Economic Sanctions as a Policy Instrument. *International Affairs*, 367-384.

Billon, P. L. (2001). The political ecology of war: natural resources and armed conflicts. *Political Geography*, 561–584.

Chan, S. a. (2000). *Sanctions as Economic Statecraft: Theory and Practice.* London: Macmillan.

Collier, P., & Hoeffler, A. (2004). Greed and Grievance in Civil War. *Oxford Economic Papers*.

Cortright, D. a. (2000). *The Sanctions Decade: Assessing UN Strategies in the 1990s.* Boulder: Lynne Rienner.

Cortright, D. a. (2002). *Sanctions and the Search for Security: Challenges to UN Action.* Boulder: Lynne

Deaton, A. (1999). Commodity Prices and Growth in Africa. *The Journal of Economic Perspectives*, 23-40.

Doxey, M. P. (1980). *Economic Sanctions and International Enforcement.* London: Oxford University Press.

Doxey, M. P. (1980). *International Sanctions in Contemporary Perspective.* London: Oxford University Press.

Fearon, J. D. (2003). Ethnicity, Insurgency, and Civil War. *American Political Science Review*.

Gary Clyde Hufbauer, J. S. (1985). *Economic Sanctions Reconsidered: History and Current Policy.* Washington D.C.: Institute for International Economics.

Green, J. (1983). Strategies for Evading Economic Sanctions. In M. a. Nincic, *Dilemmas of Economic Coercion: Sanctions in World Politics* (pp. 61-85). New York: Praeger.

Guidolin, M., & La Ferrara, E. (2007). Diamonds Are Forever, Wars Are Not: Is Conflict Bad for Private Firms? *The American Economic Review*, 1978-1993.

Gylfason, T., & Zoega, G. (2002). Inequality and Economic Growth: Do Natural Resources Matter? *CESifo Working Paper Series*.

Haufler, V. (2009). Sanctions and Private Self-Regulation. *APSA 2009 Toronto Meeting Paper*, 1-16.

Hufbauer, G. &. (1985). *Economic Sanctions Reconsidered History and Current Policy.* Washington, DC: Institute for International Economics.

Hufbauer, G., & Elliott, J. S. (1990). *Economic Sanctions Reconsidered: History and Current Policy.* Washington, DC: Institute for International Economics.

Hufbauer, G., & Elliott, J. S. (1990). *Economic Sanctions Reconsidered: Supplemental Case Histories.* Washington, DC: Institute for International Economics.

Kaempfer, W. H. (1987). Divestment, Investment Sanctions, and Disinvestment: An Evaluation of Anti-Apartheid Policy Instruments. *International Organization*, 457-73.

Kaempfer, W., & Lowenberg, A. (1992). *International Economic Sanctions: A Public Choice Perspective.* Boulder: Westview Press.

Keohane, R. O. (1977). *Power and Interdependence: World Politics in Transition.* Boston, MA: Brown & Company.

Kimberley Process. (2012, 06 13). *KP Basics*. Retrieved from http://www.kimberleyprocess.com: http://www.kimberleyprocess.com/web/kimberley-process/kp-basics

Kirshner, J. (1997). The Microfoundations of Economic Sanctions. *Security Studies*, 32–64.

Knorr, K. (1975). *The Power of Nations: The Political Economy of International Relations.* New York: Basic Books.

La Ferrara, E., & Della Vigna, S. (2010). Detecting Illegal Arms Trade. *American Economic Journal: Economic Policy*, 26-57.

Lektzian, D., & Souva, M. (2007). An Institutional Theory of Sanctions Onset and Success. *Journal of Conflict Resolution*, 848-869.

Lundborg, P. (1987). *The Economics of Export Embargoes: The Case of the US-Soviet Grain Suspension.* London: Croom Helm.

Martin, L. L. (1992). *Coercive Cooperation: Explaining Multilateral Economic Sanctions.* Princeton, NJ: Princeton University Press.

Massimo, G., & La Ferrara, E. (2007). Diamonds Are Forever, Wars Are Not: Is Conflict Bad for Private Firms? *The American Economic Review*, 1978-1993.

Morgan, T. C. (1995). Clinton's Chinese Puzzle: Domestic Politics and the Effectiveness of Economic Sanctions. *Issues and Studies*, 19-45.

Morgan, T. C. (1997). Fools Suffer Gladly: The Use of Economic Sanctions in International Crises. *International Studies Quarterly*, 27-50.

Nincic, M. &. (1983). *Dilemmas of Economic Coercion: Sanctions in World Politics.* New York: Praeger.

Nossal, K. R. (1989). International Sanctions as International Punishment. *International Organization*, 301-322.

Pape, R. A. (1997). Why Economic Sanctions Do Not Work. *International Security*, 90-136.

Rodman, K. A. (1995). Sanctions at Bay? Hegemonic Decline, Multinational Corporations, and the US Economic Sanctions Since the Pipeline Case. *International Organization*, 105-138.

Spar, D. L. (2006). Markets: Continuity and Change in the International Diamond Market. *Journal of Economic Perspectives*, 195–208.

UN Panel of Experts. (2000). *Report of the Panel of Experts on Violations of Security Council Sanctions Against UNITA.* United Nations Security Council.

World Diamond Coucil. (2012, 06 13). *Facts*. Retrieved from http://diamondfacts.org: http://diamondfacts.org/index.php?option=com_content&view=article&id=107&Itemid=150&lang=en

World Diamond Council. (2012, 06 13). *Facts*. Retrieved from http://diamondfacts.org: http://diamondfacts.org/index.php?option=com_content&view=article&id=107&Itemid=150&lang=en

Wright, C. (Winter 2004). Tackling Conflict Diamonds: The Kimberley Process Certification Scheme. *International Peacekeeping, Vol.11, No.4,* , 697–708.

2.8.1 Appendix A: Interest Groups and the Kaempher and Lowenberg model

In the Kaempher and Lowenberg (1992) model, interest groups are formed based upon common interests, and the perspective of a group can be considered as a single utility-maximizing unit. Individual i is a member of population I and maximizes utility according to:

$$\max U^i = U^i(Y^i, S) \text{, where } U_1^i > 0 \text{, and } U_{11}^i < 0$$

$$\text{subject to } Y^i = Y^i(S) \text{, and } Y^i(0) = E^i$$

Income for individual i is Y^i, and E^i is the individual's initial endowment. The term S is a non-negative and continuous variable which describes the level of sanctions that are applied to another state or group of economic actors. The model assumes that individuals maximize utility, which is a function of their income, but also a function of sanctions.

Kaempher and Lowenberg proceed by splitting the population into three types $I = \{J, K, L\}$, and considering representatives of each of these groups($j, k, l \in J, K, L$). Each member is assumed to have a different reaction to the costs of sanctions; $Y_1^j > 0$, $Y_1^k < 0$ and $Y_1^l = 0$ so that for j income increases with sanctions against another country, for k income decreases with sanctions against another country, and for l income is unaffected.

Because the interests of the J's and the K's are opposed, the two groups are assumed to be willing to pay for additional (or reduced) sanctions in the bargaining process, up until the point that paying more will leave their group with less utility than the sanction being implemented (or not implemented):

$$P_s = D^j(S) = \sum_j \partial U^j / \partial s$$

$$= \sum_j U_1^j \cdot Y_1^j, \qquad D_1^j < 0$$

And

$$P_s = D^k(S) = -\sum_k \partial U^k / \partial s$$

$$= -\sum_k U_1^k \cdot Y_1^k, \qquad D_1^k > 0$$

Equating the two clears the political market for sanctions if, by assumption, there are no deadweight losses in the initial bargaining process,[30] and for small changes around $S = 0$ the marginal utilities of all individuals, regardless of their groups, are identical. The term P_S is the unit price of sanctions, which are relevant to both the J's and the K's. The J's are willing to pay some price to have sanctions put into place, and the K's are willing to pay some price to keep sanctions from increasing.[31] The market for sanctions then depends on the degree to which the individuals of each group are willing to pay in their support of or opposition to sanctions.

Crucially, group L can shift the equilibrium point, and has more utility in the case that sanctions are put in place but not due to income effects. This implies that alliances between Ls (such as NGOs), and Js (such as un-sanctioned firms) could overwhelm sanction detractors or targets, causing redistribution away from the no sanction equilibrium and towards benefiting non-sanctioned producers.

---

[30] Meaning that the sum of all incomes is exactly the same regardless of bargaining outcome

[31] To consider free riding problems we could include: Another feature of this type of competition is free riding, as everybody of the same type has an incentive to signal a lower willingness to pay than they actually have. $P_S = j(S, E^j), J_1 < 0, J_2 < 0 \; ; \; P_S = K(S, E^K), K_1 < 0, K_2 < 0$

E^j And E^K are shift parameters which are meant to reflect the free riding that will occur in both of the groups.

2.8.2   Appendix B

Firms		
Company	ticker	Index
Stornoway Diamond Corp.	SWY.TO	_CA1
BHP Billiton plc	BLT.L	_FTUKXVD
Rio Tinto Ltd.	RIO.AX	_DJAU
Anglo American plc	AAL.L	_FTUKXVD
Harry Winston Diamond Corp.	HW.TO	_CA1
Mountain Province Diamonds Inc.	MPV.TO	_CA1
Lucara Diamond Corp.	LUCRF.PK	_DWCTD
Gem Diamonds Limited	GEMD.L	_FTUKXVD
Shore Gold Inc.	SGF.TO	_CA1
Peregrine Diamonds Ltd.	PGD.TO	_CA1
Firestone Diamonds plc	FRDIF.PK	_DWCTD
Northern Superior Resources Inc.	SUP.V	_CA1
Olivut Resources Ltd.	OLV.V	_CA1
Mwana Africa PLC	MWNAF.PK	_DWCTD
Williams Creek Gold Limited	WCX.V	_CA1
Tawana Resources NL	TAW.AX	_DJAU
North Australian Diamonds Ltd.	NAD.AX	_DJAU
Metalex Ventures Ltd.	MTX.V	_CA1
Tsodilo Resources Ltd.	TSD.V	_CA1
Diamcor Mining Inc.	DMI.V	_CA1
Vaaldiam Mining Inc.	VAA.TO	_CA1
Rimfire Pacific Mining NL	RIM.AX	_DJAU
Integra Gold Corp.	KALRF.PK	_DWCTD
Rockwell Diamonds Inc.	RDI.TO	_CA1
True North Gems Inc.	TGX.V	_CA1
Paramount Mining Corp.	PCP.AX	_DJAU

Firms Continued		
Company	ticker	Index
Lonrho Mining Limited	LOM.AX	_DJAU
Mountain Lake Resources Inc.	MOA.V	_CA1
Venus Metals Corp. Limited	VMC.AX	_DJAU
Shear Diamonds Ltd.	SRM.V	_CA1
Aspial Corporation Limited	A30.SI	_SG1
Birks & Mayors Inc.	BMJ	_DWCTD
Blue Nile Inc.	NILE	_DWCTD
Cash Converters	CCVU.L	_FTUKXVD
Charles & Colvard Ltd.	CTHR	_DWCTD
Chow Sang Sang Holdings	0116.HK	_HK1
Christian Dior SA	CDI.PA	_E23
Coach, Inc.	COY.BE	_E23
Compagnie Financiere	RITB.DE	_E23
Continental Holdings Ltd.	0513.HK	_HK1
Cortina Holdings Limted	C41.SI	_SG1
Damiani	DMN.MI	_E23
DGSE Companies Inc.	DGSE	_DWCTD
Dickson Concepts	0113.HK	_HK1
Emperor Watch & Jewellery	0887.HK	_HK1
Fuqi International, Inc.	3F6A.DE	_E23
Gems TV Holdings Limited	AM3.SI	_SG1
Gitanjali Gems Ltd.	GITANJALI.BO	TRINDSTM
Goldiam International Ltd.	GOLDIAM.NS	TRINDSTM
Hermes International	RMS.PA	_E23
Hour Glass Limited	E5P.SI	_SG1
Joyas International	E9L.SI	_SG1

Firms Continued		
Company	ticker	Index
Larry Jewelry	8351.HK	_HK1
Laser Diamonds Ltd	LADIAMO.BO	TRINDSTM
LVMH Moet Hennessy Louis	LVMH.MI	_E23
Michael Hill Interna	MHI.NZ	_NZ2
Ming Fung Jewellery Group Ltd.	0860.HK	_HK1
Noble Jewelry Holdings Ltd.	0475.HK	_HK1
Nuvel Holdings, Inc.	NUVL.OB	_DWCTD
Parekh Platinum Ltd.	PAREKHPLA.NS	TRINDSTM
PPR	PP.MI	_E23
Rajesh Exports Ltd.	RAJESHEXP.NS	TRINDSTM
RCG Corporation Limited	RCG.AX	_DJAU
Renaissance Jewellery Ltd.	RJL.BO	TRINDSTM
Second Chance Properties	528.SI	_SG1
Shrenuj & Company Ltd.	SHRENUJ.NS	TRINDSTM
Signet Jewelers Limited	SIG	_DWCTD
Suashish Diamonds Ltd.	SUASHDIM.BO	TRINDSTM
Sunraj Diamond Exports Ltd.	SUNRAJDI.BO	TRINDSTM
Surana Corporation Ltd	SURANACOR.NS	TRINDSTM
Swarnsarita Gems Ltd	SHYAMST.BO	TRINDSTM
Thangamayil Jewellery Ltd	THANGAMAY.NS	TRINDSTM
Tiffany & Co.	TIF	_DWCTD
Titan Industries Ltd.	TITAN.BO	TRINDSTM
Tse Sui Luen Jewellery	0417.HK	_HK1
Vaibhav Gems Ltd.	VAIBHAVG.BO	TRINDSTM
Zale Corporation	ZLC	_DWCTD

2.8.3 Appendix C

Full Candidate Event List

Event Description	Event Date
Major press release published	03-Oct-99
First meeting to organize KP	11-May-00
UN Security Council votes to impose world-wide ban on diamonds from Sierra Leone	05-Jul-00
29th World Diamond Congress meets , creates World Diamond Council	16-Jul-00
A meeting of over 50 delegates	04-Sep-00
First meeting of the WDC, mandate to curtail conflict diamonds	07-Sep-00
Seventy US-based NGOs launch the Campaign to Eliminate Conflict Diamonds	14-Feb-01
Israeli diamond banks issue notice to clients	20-Feb-01
First Version of Clean Diamonds Act	07-Mar-01
Kimberley Process intergovernmental group meets	25-Apr-01
UN Resolution 1343 Regarding Liberia automatically goes into effect	07-May-01
Participants meet in Moscow, propose minimum standarts	03-Jul-01
Participant meeting in UK	11-Sep-01
Participants meet in Luanda, Angola	30-Oct-01
Kimberley Process meets in Gaborone, Botswana, agree to minimum standards	26-Nov-01
WDC adopts system of warranties in Milan	13-Mar-02
Kimberly Process meeting in Canada	18-Mar-02

Full Candidate Event List Continued

Event Description	Event Date
European Commission releases 1st draft of Council regulation on implementing KPCS	18-Jul-02
Adoption the international certification scheme	04-Nov-02
KPCS enters force, US and UK issued grace period; South Africa appointed chair of KP	01-Jan-03
UK diamond office opened	13-Feb-03
Second Version of Clean Diamonds Act	03-Apr-03
Senate Passes Clean Diamonds Act	10-Apr-03
Bush signs HR 1584, making USA KP compliant	24-Apr-03
The Kimberley Process convened for a plenary meeting in Johannesburg	30-Apr-03
full implementation, only compliant countries can trade with one another	01-May-03
UN lifts restriction on exports of diamonds from Sierra Leone	04-Jun-03
Monitoring meeting	20-Oct-03
Canada Appointed chair of KP	01-Jan-04
Republic of Congo Suspended	09-Jul-04
The participants of the Kimberley Process meet in Gatineau, Quebec	29-Oct-04
Russia appointed chair	01-Jan-05
Ivory Coast suspended	17-Nov-05

Full Candidate Event List Continued

Event Description	Event Date
UN Security Council votes to impose world-wide ban on diamonds from Ivory Coast	15-Dec-05
Botswana assumes chair	01-Jan-06
Report on Brazil, claiming roughly half of diamond exports are not accounted for	10-Mar-06
The WDC accuses Zimbabwe and Venezuala of failing to cooperate with the KP	22-May-07
The WDC calls for cracking down on the trade of illegal diamonds from Zimbabwe	10-Dec-08
KP chair visits Zimbabwe	16-Mar-09
Ian Smillie quits Kimberley Process	10-Jun-09
Zimbabwe reported as set to receive approval	28-May-10
Farai Maguwu, human rights violations investigator, arrested in Zimbabwe	03-Jun-10
Farai Maguwu freed	12-Jul-10
Meeting in St. Petersberg allows sales of diamonds from Marange, Zimbabwe	15-Jul-10
Zimbabwe began selling diamonds mined from an area where soldiers are accused of human rights violations	11-Aug-10
Second public diamond auction in Zimbabwe	11-Sep-10
Wikileaks information on atrocities in Zimbabwe fields reported	10-Dec-10
Mathieu Lapfa unilaterally authorizes Zimbabwe exports	21-Mar-11
Global Witness pulls out of KPCS	05-Dec-11

Chapter III

The Determinants of Sanction Threats and the Use of Coercive Economic Statecraft

Despite being rare historically, economic sanctions are increasingly popular. The characteristics of sending and target countries that predict sanction events remain poorly understood however. In this paper, I investigate several determinants of the use of sanctions by one country against another, using a pair of datasets that, to my knowledge, have not previously been employed for these purposes. Using two variations of logistic regression models corrected for the study of rare events, I identify several significant issues that contribute to, or detract from, the likelihood that a country will use or threaten to use economic sanctions against another country in a given year.

Specifically, I show that larger economies are substantially more likely to use sanctions than smaller economies. I also demonstrate that poorer countries are more often the targets of sanctions. Armed conflict in either a sending or a target country is predictive of sanction use, indicating that sanctions are often used to condemn conflict, compliment violent action, or influence the outcome of armed conflicts. Sanctions are more likely when a sending country's exports are more highly concentrated in a smaller number of goods (measured using a Herfindahl-Hirschmann index), while countries with a higher degree of international trade specialization in comparison to the global average (as measured by a Finger-Kreinin index) are less likely to be targeted with sanctions.

I also investigate a number of relationships discussed elsewhere in the recent literature, and find limited support for a number of explanations for the frequency of sanction events. Democratic countries are less likely to use sanctions against one another in some versions of the analysis; however, the result depends on the definition of sanctions used, the time period under investigation, and the covariates included in the regression model. Unemployment rates also provide little explanatory power after controlling for GDP per capita, in addition to other indicators.

3.1   Introduction

Sanctions and coercive economic statecraft of various forms are increasingly common on the international stage. Examples of countries that restrict trade, access to finance and other economic activities in hopes of influencing the behavior of foreign states or foreign nationals have proliferated since the end of the Cold War, and more targeted and sophisticated measures have become routine in some countries. Recent high-profile examples such as UN-backed sanctions against Iran join hundreds of other cases, including activities to control drug trafficking and programs against terrorism and nuclear weapons proliferation. In the following sections, I analyze several concepts that the literature on economic sanctions suggests are predictive of the use of sanctions and other forms of coercive economic statecraft.

There is no universally accepted definition of sanctions however, and throughout this study I use the term to refer to a broad group of actions that states take against one another. Specifically, I focus on actions taken by a "sender" state that limit economic linkages with a "target" state, which includes individuals living in the target state as well as companies that do business there.

This paper contributes to the discussion of economic factors that characterize and predict a country initiating or threatening the use of sanctions against another country, using two datasets which, to my knowledge, have not previously appeared for these purposes in the literature. I estimate the likelihood of the use or threat of sanctions during a given year using several variations of a logistic regression model, and include explanatory variables associated with trade vulnerability, trade volume, demographic factors, macroeconomic indicators and violent events.

I find that, despite fairly large differences in the composition of the two data sources, a number of characteristics of senders, targets, and the relationships between them are strongly predictive of sanction events. Several concepts relating to international trade, such the concentration and diversity of a country's imports and exports are important determinants of sanction threats and use, in addition to macroeconomic indicators. Larger economies are substantially more likely to use sanctions, while poorer countries are more often targets and rarely initiate sanctions. The presence of an on-going armed conflict in the target country is

predictive as well, indicating that sanctions are often used to support outside state interests or to condemn the use of force.

I also find an ambiguous relationship between democratic dyads and the use of sanctions, which is not fully consistent with the literature on this subject. Although it has been argued elsewhere that democratic countries less commonly use sanctions against one another, I show that for the data that I use, this result depends on the definition of sanctions being used, the period under investigation, and the covariates included in the regression model.

In the following section, I discuss issues raised in both the qualitative and quantitative literature and list seven hypotheses, reflecting the consensus in the literature on the importance of a number of variables of interest. In Section 3.3, I describe the sources of the data I use, and in Section 3.4 I discuss the empirical approach. I report the results and discuss the implications of these findings in Section 3.5. I conclude in Section 3.6.

3.2   Theory and Hypotheses

The sanctions discussed in this paper are actions taken by states to affect the behavior of other states. This usually occurs when the authority issuing sanctions in the sending country contends that the target country has broken a rule, norm, or poses a threat to the sender's interests.

Interpreting the underlying motivations of sending countries is challenging however, and an extensive literature questions the extent to which public statements about the motivations for sanctions are credible. As Baldwin (1985) shows, states that engage in overt sanctions usually give justifications related to the actions of the target, but the secondary or tertiary purposes of sanctions can be related to many other considerations, and even the stated primary goal of the sender is often suspect.

Baldwin provides an extensive list of examples where sanctions were undertaken to support the sender's position with respect to other states that were not targeted, the reputation that the sender hoped to cultivate, and the interest groups that played important roles in decision making in the sending country. Because the motivations of states are not always clear, I limit the scope of this paper to describing attributes of states that make threats or the use of

sanctions more likely, rather than focusing on the reasoning that states give for their actions, or the effectiveness of sanctions against specific types of targets.

While noting the questionable credibility of public claims, for completeness I include general descriptions of the motivations of sending countries in Table 3.1 for one version of the data I use in Section 3.5. Among the most common stated reasons for using sanctions are trade and economic ties, security, and domestic issues in the sending country.

Violations of trade rules are some of the most common transgressions cited by sending countries. Indeed, during the time period I investigate, responding to perceived trade abuses is the most common motivation, discussed 770 times (about 65% of the total for that version of the variable).[32] Such criticisms are often related to what are described as "unfair" trading practices by the sending country, or manipulative monetary policies. Trade that relates to goods that are banned in the sending country, including drugs and other commonly regulated goods, also fall in this category.

Issues relating to conflict and security are also common. In some cases, sending countries go so far as to call for regime change, using sanctions to support leadership transformation in a target state. Such actions are rare however. More common are sanctions designed to punish a country that has taken specific policy actions that are allegedly against the interests of the sending state. Examples include disputes over, and responses to, military aggression, weapons proliferation and the treatment of minority groups. Sending countries also often claim to be motivated by a desire to punish a target's choice of allies.

Although we can be relatively certain that sanctions are at times used for the purposes of affecting domestic markets or domestic political climates, examples of such are substantially more difficult to identify because they are seldom overtly discussed by the sender. Drury (2001) however, provides evidence of weak but important relationships with economic concerns in the sending country (the US in Drury (2001)), to which governments may respond by using sanctions against other countries.

---

[32] For one version of the data I use on events. The Morgan, Bapat and Krustev (2012) data is one of two datasets used for the dependant variable in Section 3.5. The data are described at greater length in Section 3.3. The second version of the dependent variable, which is derived from a dataset created by King and Lowe (2012) does not include descriptions of the sender's motivations.

Table 3.1

Description	Observations
Contain Political Influence	10
Contain Military Behavior	15
Destabilize Regime	15
Release Citizens, Property, or Material	15
Solve Territorial Dispute	0
Deny Strategic Materials	0
Retaliate for Alliance or Alignment Choice	85
Improve Human Rights	45
End Weapons/Materials Proliferation	60
Terminate Support of Non-State Actors	20
Deter or Punish Drug Trafficking Practices	65
Improve Environmental Policies	70
Trade Practices	770
Implement Economic Reform	25
Total	1195

3.2.1   Definitions and Classification

There is ample debate over precise definitions of sanction events in both the economic and international relations literature, and because in this study I depart from the definitions used elsewhere, a brief discussion of the differences between the usage that I adopt here and those used elsewhere in the literature is in order.

Examples of detailed sanction classifications include Kirshner (1997), who writes that definitions and systems of classification are pivotal questions when considering how sanctions are implemented, and to what effect. One reason that these issues are given such attention is that, given the focus in the literature on what attributes make for a "successful" sanction, lacking an understanding the objectives of the sender will lead to erroneous conclusions about the efficacy of the sender's actions.

Other scholars however refer to sanctions as only those activities taken or approved at the level of a recognized international body, such as the United Nations Security Council. This type of classification focuses more on the intended effects of the action, rather than the mechanism used to put the sending country's policy into practice. In international law, multilaterally-approved sanctions are a separate category from unilateral actions taken on the part of states

without the support of an international body, and the latter are often referred to as "counter-measures" or "retorsions", depending on the objective of the action.[33]

Because the following analysis is not primarily concerned with the extent to which sanctions are successful however, I avoid the stricter definitions used elsewhere to reflect the way that the term "sanction" is popularly used to describe relationships between countries. The dependent variable I employ in Section 3.5 was generated electronically, using news articles that include terms like "sanction" or "embargo" to describe an event of international importance. The designation is substantially more expansive in comparison to other examples in the literature, which limits the comparability of the results discussed in Section 3.5 with investigations that use more conventional definitions.

To avoid confusion, I limit the empirical investigation to categories that involve threats or actions made by states, and I exclude multilateral or non-state actors, as these groups discuss sanctions in ways that are considerably different from one another and from countries. Non-governmental organizations also have much more variation in their credibility and undertake activities that are limited in scope in comparison to states.

Events that I discuss in this paper are either actions reported by news services as the use of sanctions by a country against individuals, organizations or governments of another country, or are cases in which a country threatened to use such actions. This means that if multilateral action is taken, only countries that are discussed in the news media as implementing or supporting sanctions are included.

Figures 3.1 and 3.2 provide general descriptions of events, displaying the number of actions by sending country in the two versions of the data used in this paper. Because sending events are so commonly initiated by the United States, I exclude that country from these figures, although the country is not excluded from the regression results. Figures 3.3 and 3.4 describe events by target country for the two datasets.

---

[33] This is a matter of some dispute. Almost all countries (except the United States) commonly voice their displeasure with unilateral sanctions, and many avoid the term sanctions for official actions. The most public forum of this argument has been in UN General Assembly, where the United States has found itself in isolated opposition to measures to eliminate or moderate the use of unilateral sanctions (UN Resolutions R/52/181; R/53/10; R/54/200; R/56/179; R/57/5; R/62/162; R/64/170). Despite this distinction in legal and academic literature, practitioners including the US Treasury Department and the Treasury of the United Kingdom, as well as many other countries and organizations, use the term sanctions to refer to unilateral as well as multilateral actions.
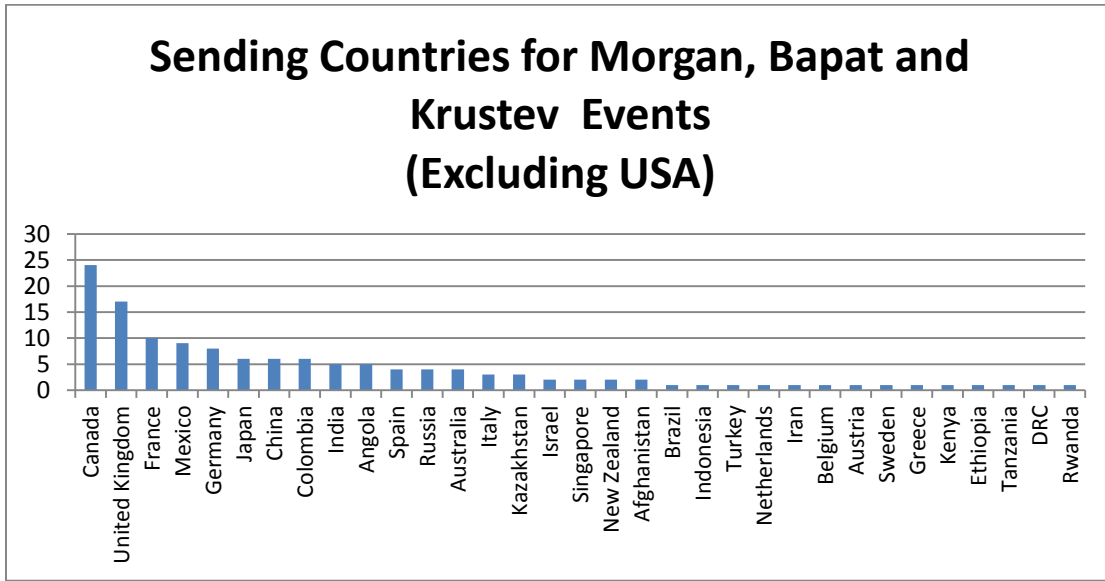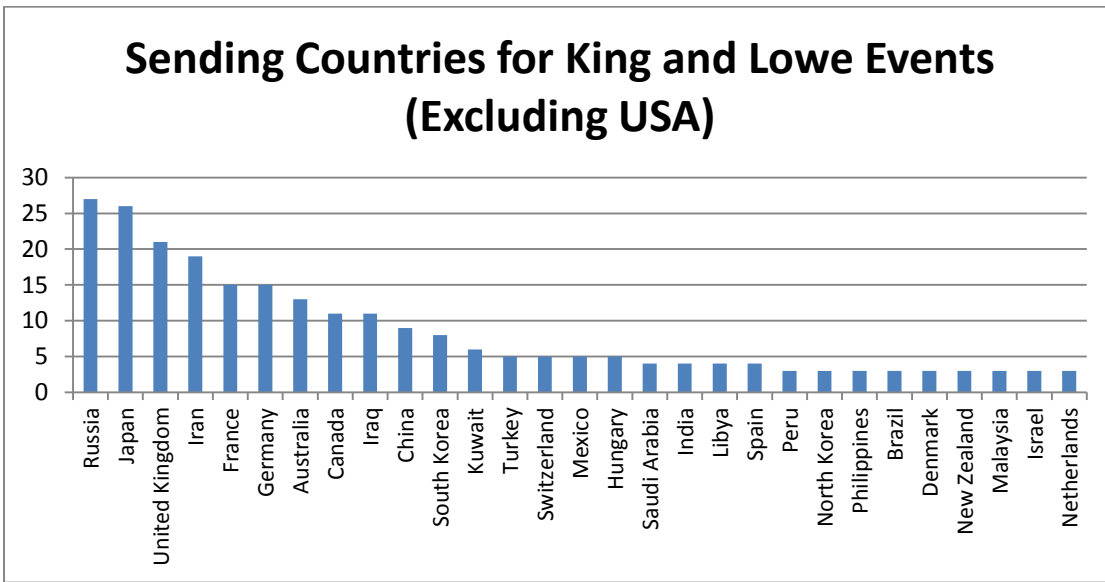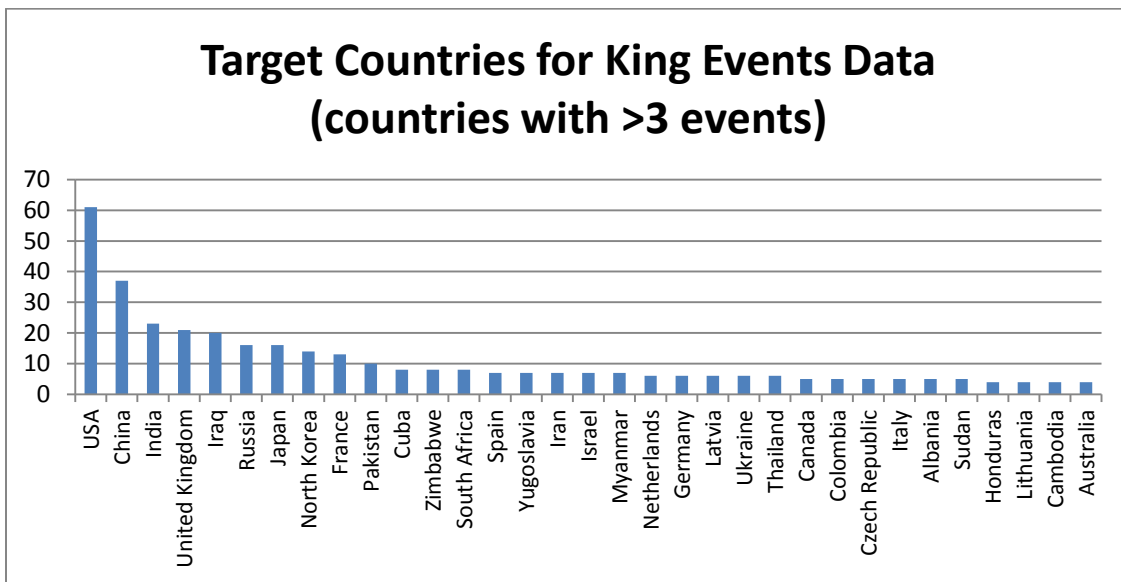
Figure 3.1

Sending Countries for Morgan, Bapat and Krustev Events (Excluding USA)

Figure 3.2

Sending Countries for King and Lowe Events (Excluding USA)

Figure 3.3

Target Countries for Ties Events (countries with >2 events)

Figure 3.4

Target Countries for King Events Data (countries with >3 events)

3.2.2 Explaining Sanction Use

The dominant perspective in the literature on sanctions holds that the sender's decision to take action is rational, and rooted in an analysis of the costs and benefits of taking action (Baldwin, 1985) (Hufbauer, Schott, & Elliott, 1990). Such strategies would take into account the likelihood and value of success, as well as the damage that sanctions could inflict on the sender's

economy. From the target's point of view, the decision to capitulate is a function of the cost of giving in to the demands of the sender, compared to the value of resisting demands. The extent to which costs can be levied against a country is often described as the country's "vulnerability" to sanctions.

Although the relationship is usually conditional, several empirical studies have shown that economic coercion is both more likely and more successful when the costs to the sender are low and the costs to the target are high. Hufbauer, Schott, and Elliott (1990); Lektzian and Souva (2007); Whang (2010) and Drezner (1999) for example, all consider the relative costs of sanctions to the sender and to the target as crucial factors in explaining the reasons that sanctions occur in some circumstances but not others, although such factors are not universally the most important ones in all of these analyses.

According to this perspective, countries that are more dependent on trading partners, all other things being equal, are more vulnerable to the use of sanctions, while those that are more self-reliant are less vulnerable, and are thus more likely to be senders. Assuming they do not provoke other countries with their own sanction measures, less vulnerable countries are also thought to be less commonly targeted. States that are more able to withstand sanctions offer a lower probability of success from the point of view of the sender, and reduce the expected benefits of engaging in sanctions against the target.[34]

Galtung (1967), also basing his claims on an analysis of costs and benefits for senders and targets, argues that a target's vulnerability to trade sanctions is a central consideration for sender countries when they decide whether to use sanctions. Using Rhodesia as a case study, Galtung maintains that dependence on foreign countries for critical goods and services increases the effectiveness of sanctions against a target. To measure the extent of this vulnerability, Galtung proposes methods of examining foreign trade as a percent of GNP, export type concentration, and export partner concentration. Using these measures, Galtung argues that Rhodesia was particularly vulnerable when sanctions were first brought against that country, which in his opinion, helped to explain sanction use in that context. Other measures of

---

[34] Economic interdependence need not take the form of trade specifically. The data used in this paper include examples of foreign economic aid reduction or state asset seizures as sanction events as well, provided that the event was described in the news media as such a coercive action.

opportunity costs include the subjective case study approach, and an indicator of the amount of trade between the sender and the target relative to each country's GDP, used for example by Lektzian and Souva (2007).

Sanctions may also be more effective against poor countries, as relative poverty may lower the cost for senders to obtain a given amount of economic hardship in the target country. Because poor countries usually have fewer resources available, in the event of sanctions, impoverished governments may be less able to offset the impact of sanctions on their populations. In cases where large shares of a target country's population have a low standard of living, relatively small reductions in income or consumption can have serious implications on livelihoods, characterizing much higher costs to the target population due to sanctions than would be the case for similar measures taken against a country with a smaller share of people with a low standard of living. Petrescu (2007) shows that such costs can be severe. In the data used in that study, children who were exposed to sanction episodes in utero have lower birth weights, are more likely to die before their third birthday, and are shorter than children who were not exposed. These concerns may be especially crucial in countries that are more dependent on economic aid, or are less able to provide for basic needs in times of crisis.

The cost and benefits for interest groups within both the target and sending countries have also been shown to increase or decrease the likelihood of sanction events. The Kaempfer and Lowenberg (1992) model embraces this point of view, and assumes that the size and composition of domestic lobbying groups determines the existence and severity of sanctions employed by sender countries.

Sanctions against a large oil producer are an example of this relationship. In the event of heavy restrictions placed on such a country, alternative sources of oil, perhaps even producers in the sanction-sending country, benefit from a reduction in competition and a higher price than that which would have otherwise prevailed on the global market. If oil producers were alone in voicing their interests, it could be expected that sanctions on the oil industry against the target country would be more likely. But there are rarely circumstances in which debate is so one-sided; oil consumers have just as much incentive to oppose sanctions, particularly if the higher cost of oil is passed on to them. The Kaempfer and Lowenberg model would suggest in

this scenario that the decision to use or refrain from using sanctions against the target oil producing country depends on the importance of the issue for the consumer interest group, and the importance of the issue for un-sanctioned producers, as well as the size of each group, and their willingness to pay to either have sanctions or to avoid them.

Drury (2001) considers the importance of interest groups and elite opinion by studying the effect of presidential popularity, election timing, the US dollar inflation rate, and unemployment on the President of the United States' decision to initiate or refrain from using sanctions on targeted countries. The author shows that although the US election cycle does not predict the decision to initiate sanctions, presidential popularity is marginally important. The author also shows that higher levels of unemployment increase the likelihood of sanction events in the United States, providing evidence that domestic conditions are indeed significant factors in some contexts because sanction use may be related to either undermining international competition (benefiting local producers and perhaps lowering the unemployment rate) and as a means to distract attention from domestic problems.

Another possible predictor of sanction events comes from Cox and Drury (2006), which, in an extension of the theory of "democratic peace", argues that democratic regimes are less likely to sanction one another, perhaps due to a lack of popular support within democracies for actions against other democracies.

3.2.3   Sanctions and Trade

When most people think of sanctions or embargoes, they think of trade. This is due in large part to the high visibility of modern sanction programs against states like Iran and North Korea, but is also grounded in the historical definition of sanctions, including the classic example of the Megarian decree, recounted by the Greek historian Thucydides. The prominence of trade-related actions is also related to the relative ease of implementing trade sanctions in comparison to more technically complex options, like financial sanctions and other similar measures.

The potential importance of trade relationships with respect to decisions about the use of sanctions is ambiguous however. From one point of view, it is clearly the case that high levels of

trade give states leverage to extract concessions or to punish what the sending country perceives as transgressions. Countries that trade more have more to lose and the targets of threats may be more willing to comply with a trading partner's demands when sending countries can more credibly threaten economic harm.

Yet high levels of trade also provide incentives to refrain from issuing sanctions, because, in all likelihood, senders receive some benefits from trading relationships as well. Although by no means universally true, severing trade ties usually bears costs for both senders and targets. Assuming that countries act rationally with respect to sanctioning decisions would suggest that senders compare such costs to the importance of the objective(s) they hope to achieve, eventually arriving at a decision about the wisdom of using sanctions.

The concept of vulnerability, discussed earlier as the extent to which a country can withstand the costs of sanctions used by a given country, is central to trade explanations of sanctions and similar actions. Scholars of sanctions have often argued that high degrees of specialization in exports, defined as goods and services that are less commonly traded internationally in comparison to all other countries, allow countries leverage to initiate sanctions (Askari, Forrer, Yang, & Hachem, 2005) (Crawford, 1993) (Porter, 1979). The logical extension of this idea is that although greater power on the part of buyers can generate leverage against a target, it can also be a threat to a country with fewer, more highly specialized imported goods and few alternative export sources. Countries with greater specialization in their exports are more vulnerable targets, but also have more leverage over importers if they are one of few exporters. In the empirical section of this paper, I use import and export diversity to consider the importance of the direction of trade flows, as well as measures of bilateral trade between senders and targets.

I measure the difference between global average trade and that of the target and sending country using a Finger-Kreinin index. The motivation for using this measure is that countries with more specialized exports in comparison to the rest of the world may have more leverage over importers, because importers have few alternative countries from which to choose. Alternatively, relying heavily on exports of goods that are less commonly exported by other countries can expose the exporter to the risk of import restrictions implemented by a sending

country on its own economy. If there are few alternative importers of the good, the importer has greater leverage over the exporter.

A similar but not identical relationship is import and export concentration, which I measure using a Herfindahl-Hirschmann index. Countries that import a small basket of goods that are widely available on the international market are often thought to be less vulnerable to sanctions, while exporters that have relatively few types of exports are thought to be more vulnerable.

3.2.4   Sanctions and Security

As early as the aftermath of World War I, supporters of the League of Nations proposed that sanctions developed by the body could be a non-violent alternative to armed confrontation. Although more recent research has shown that the health effects and the impact on livelihoods of sanctions can be severe (Petrescu, 2007) (Barry, 2000), sanctions provide a substitute or companion approach to engaging in violent conflict that does not require putting the sending country's military at risk, among other considerations. As I will demonstrate in the following sections, states often initiate and threaten sanctions to achieve military and strategic goals in on-going conflict situations, either instead of or alongside the use of violent force on the part of the sending country. In the midst of violent conflict states often also support restrictions, for example, to diminish the capacity for fighting in general.

An increasingly popular motivation for using sanctions in conflict situations has been to contain violent groups that the sender hopes to disadvantage relative to the opponents of the target. Such actions often encourage the target to engage in sanctions as well, as a form of reciprocation, or may encourage allies to strengthen trade ties with the target, and draw back from trade relationships with the sender.

Another common motivation for using sanctions relating to security is to undermine the capabilities of groups or states defined by the sender as hostile. At present, the United States is the most frequent sanction sender by a large margin. Most of these cases, including restrictions on Iraq, Iran, North Korea, Somalia and Libya, were and continue to be justified as attempts to undermine the capabilities of hostile parties in other states. Other common initiators include

the United Kingdom alongside fellow members of the European Union, as well as large economic powers such as Russia and China.

3.2.5   Hypotheses

The characteristics of senders, targets and inter-state relationships that make the use of sanctions more likely are diverse. In the following sections, I deal primarily with the following hypotheses as discussed in this section and distilled from the recent literature on the subject of sanctions:

H_1: *Larger economies are more often senders*

H_2: *Poorer economies are more often targets*

H_3: *Countries with a higher value on the import and export Finger-Kreinin index are more likely to be senders and targets.*

H_4: *Countries with high export and import concentration are more likely to be senders.*

H_5: *Countries with higher unemployment rates are more likely to initiate sanctions than countries with lower unemployment rates.*

H_6: *Pairs of democratic countries should sanction one another less often than if one of the countries in the pair is not ruled by a democratic regime.*

H_7: *Countries engaged in violent conflict are more often targets and senders.*

3.3   Data Description

I use two datasets to construct separate versions of a binary dependent variable describing the use or threat of sanctions. In both cases, an observation includes a target country, a sending country and the year. All countries with populations of more than 1 million people are included for all years covered in the analysis; including countries that have never or have not recently experienced sanctions.

The first version of the dependent variable I use in the following sections was created by Morgan, Bapat and Krustev (2012). The development of the Morgan, Bapat and Krustev dataset proceeded in two stages; a first "candidate" list was created primarily from *Lexis-Nexis*, *Facts on File*, and *Keesing's Record of Contemporary Events*, searching for terms such as "sanction", "embargo", "trade war", "blockade", and "foreign aid reduction", among others. The list was then supplemented by searches in both the *New York Times* and *London Times* indexes.

The data were then amended by a human coder to fit the definition set out by the authors; namely, that the events involve at least one sender state and a target state, and that actions were implemented or threatened by the sender in order to change the behavior of the target state. The dataset does not include events which were undertaken for purely domestic reasons, such as to benefit domestic producers. In the analysis below I restrict the dates for this dataset to 1995-2000 due to data availability considerations for the explanatory variables of interest. The resulting data include 258 events of sanctions use or threats, many of which count in multiple categories (Morgan, Krustev, & Bapat, 2012).

An alternate version of the data with similar characteristics can be extracted from a dataset generated by King and Lowe (2012), which I use as a separate version of the dependent variable in the regression models outlined below. The data were derived from a content analysis of *Reuters* reports and list all uses of the terms "sanctions", "embargoes", and related concepts (such as "withdrawal of economic aid"). Like the Morgan, Bapat and Krustev dataset, the King and Lowe data are not solely measures of the use of sanctions or embargoes, but include the discussion of possible economic coercion, or the use of threats of sanctions in the relationships between sender and target countries.[35]

---

[35] For a full list of countries included in these data please see Appendix A

The King and Lowe dataset covers the period between 1995 and 2004. I extract sanction event information according to the classifications provided in table 3.2.[36]

Table 3.2

Cases of "Threats or Use of Economic Statecraft" -- 1995-2004

Code	Description	Obs
TSAN	Threats of non-military, non-physical force social, economic and	33
TRSA	Threaten to reduce or stop the giving of aid.	3
TBOE	Threaten to boycott or impose embargoes, restrict normal	4
TRBR	Threaten to reduce or formally sever ties.	7
SANC	All sanctions not otherwise specified.	441
REDA	Reductions or terminations of aid not otherwise specified.	108
HECO	Decrease or terminate provision of economic aid.	7
HAID	Decrease or terminate provision of humanitarian aid.	50
HMIL	Decrease or terminate provision of military aid.	6
SEZR	Take control of positions or possessions.	145
SEIZ	All seizures not otherwise specified.	16
Total		**820**

For both datasets, a non-event indicates that at no point in a given year was it reported in the news services used that the sending country threatened or initiated a sanction against the target country. If multiple events are recorded over a given year, only a single observation appears in the data I use, per year. Each year is considered independently, so a previous sanction does not preclude an analysis of additional sanctions in later years. Including all country dyads, there are 211,424 country pairs for the Morgan, Bapat and Krustev data and 357,796 for the King and Lowe data.

The two datasets are dissimilar in several respects. The Morgan, Bapat and Krustev data include more trade-related sanctions, and human coders excluded cases when a sanction was being undertaken for the benefit of domestic industries or for domestic concerns, according to the interpretation of the coder. The King and Lowe data do not remove sanctions undertaken for the benefit of domestic industries, and trade-related issues were treated as a separate category in the King and Lowe data. The difference between the sources may also be an important consideration, as the news services used by the two sources did not overlap. Over the time period covered in the Morgan, Bapat and Krustev data, approximately 10% of sanction

---

[36] The Morgan, Bapat and Krustev data unfortunately do not allow disaggregation at the sanction type level.

events appear in both datasets, and 25% of the country pairs are the same (though with different years).

As discussed previously, trade is the most common consideration in analyses of the opportunity costs of sanctions. I use three types of explanatory variables related to aspects of trade for senders and targets. The first type is a Herfindahl-Hirschmann (HH) index of import and export concentration (where a value closer to 1 signifies greater concentration) which I use to test H_4 in the empirical section:

$$H_j = \frac{\sqrt{\sum_{i=1}^{n} \left(\frac{x_i}{X}\right)^2} - \sqrt{1/n}}{1 - \sqrt{1/n}} \tag{1}$$

Where H_j is the country index, n is the number of products at the SITC 3-digit group level, x_i is the value of exports for product i, and:

$$X = \sum_{i=1}^{n} x_i \tag{2}$$

The second type is a Finger-Kreinin (FK) measure of the difference of the country's exports from the global average, an index value closer to 1 signifies greater difference from the world average for that product:

$$s_j = \frac{\sum_i |h_{ij} - h_i|}{2} \tag{3}$$

Where h_{ij} is the share of product i in total exports or imports of country j and, h_i is the share of product i in total world exports or imports.

I use the FK index to test H_3 in the empirical section. Both this and the HH index come from the United Nations Conference on Trade and Development (2012). I also use the value of trade

(excluding services) between country pairs in millions of USD from Barbieri and Keshk (2012), which is distributed as a compliment to Correlates of War Project's datasets.

To investigate the importance of violent events and the use of sanctions, I use the PIRO Conflict Events Dataset (Gleditsch, et al., 2012), which includes 52,246 country pairings with a conflict in the target country for the years of interest in the King and Lowe dataset, and 32,769 for the Morgan, Bapat and Krustev dataset.

Although Drury (2001) finds that unemployment rates are significant only in specific circumstances in cases of US sanctions, I include unemployment rates reported by the International Labour Organization (2012) to consider this relationship for all countries in the combined dataset used to obtain the results in Section 3.5. I use this measure to test H_5.

Drury and Cox (2006) also find that although democracies sanction far more often than non-democracies, there are few cases of democracies using sanctions against one another. Because this relationship has not, to my knowledge, been analyzed using versions of the dependent variable that include threats as well as events, I include a similar measure of democracy using the Polity IV dataset (Marshall, Jaggers, & Gurr, 2012). To investigate H_6, I construct a binary variable which takes a value of 1 when both the sender and the target are democracies, which I define as a polity score of greater than or equal to 6. To investigate H_1 and H_2 I use total GDP and per capita GDP from the Penn World Tables (2012).

The distance between countries has been shown to be significant in some analyses, and I use distance between capitals from Gleditsch (2012) as a control.

3.4 Empirical Approach

3.4.1 Corrected Logistic Regression and Complimentary Log-Log Regression

In the following analysis,[37] I estimate the probability of "the use or threat of sanctions" $Y_i (i = 1, \dots, n)$, a binary outcome that follows a Bernoulli probability function taking a value of 1 with probability π_i and 0 with probability 1-π_i. The probability π_i varies over n as an inverse logistic function of a vector x_i that includes a constant term and $k - 1$ explanatory variables:

---

[37] The notation and explanation of the empirical strategy given here closely follows King and Zeng (2001)

$$Y_i \sim Bernoulli(Y_i|\pi_i) \qquad\qquad\qquad (4)$$

$$\pi_i = \frac{1}{1 - e^{-x_i\beta}}$$

The regression model is estimated using log-likelihood, which simplifies to:

$$\ln L(\beta|y) = \sum_{Y_i=1} \ln(\pi_i) + \sum_{Y_i=0} \ln(1 - \pi_i) \qquad\qquad (5a)$$

$$= -\sum_{i=1} \ln\left(1 + e^{(1-2Y_i)x_i\beta}\right) \qquad\qquad (5b)$$

The estimation procedure finds the value of β that gives the maximum value of $\ln L$.

The use of sanctions by one country against another is very rare, which complicates the empirical strategy. Very small values of π_i pose challenges for estimating what would be, in a balanced outcome context, a simple logistic regression problem.

The difficulty arises because, with a larger number of non-cases, the variance for positive cases will be smaller than for non-cases, as is demonstrated using Monte Carlo simulations in King and Zeng (2001). Additional positive event observations are therefore more informative than non-cases (Imbens, 1992). I use the procedure outlined by King and Zeng (2001) to correct for the underestimation of the coefficients.

As a robustness check, I run the same regressions using complimentary log-log regression, and report the results alongside the corrected logistic regressions below. The methodology is identical in most respects, and although the difference in results from a common logistic approach and a corrected logistic approach are in this case quite small, the corrected (or clog-log) approach is more accurate.

3.4.2   Rare Events and Relative Risk

In addition to the regression coefficients, I include information in the discussion section of this study concerning the absolute and relative risk of the use or threatened use of sanctions given

the explanatory variables, which is more often reported in studies of rare events and is more readily interpretable.

Absolute risk in this context is defined as the probability that an event occurs given certain values of the explanatory variables included in the regression model:

$$\Pr(Y = 1|X = x) \tag{6}$$

Relative risk is used to investigate the change in the probability of an event given some change in an explanatory variable, holding other variables at some specified level (which I always set at the mean values of all other variables in the analysis below). The measure similarly estimates the probability that an event occurs, but reports the fractional increase in risk rather than the direct probability of the event occurring, for example:

$$\frac{\Pr(Y = 1|X = 1)}{\Pr(Y = 1|X = 0)} {}^{38} \tag{7}$$

3.4.3 Temporal relation

An additional issue is that time-series cross-section data, when used to analyze a binary dependent variable, commonly violates the independence assumption of the ordinary logistic statistical model. Because outcomes can be temporally related, this may lead to misleading results if the baseline hazard function is not properly accounted for.

Temporal relation is a concern in the context of this paper, as it is reasonable to assume that the threat or use of sanctions between two countries depends to some extent on whether the two countries have a history of using sanctions against one another. Such a relationship leads to standard errors which systematically underestimate variability, invalidating a regression model that does not include dummy variables associated with the time passed since the last realization of an event ($Y = 1$).

---

[38] The weights, absolute risk, and relative risk estimates of the use of sanctions I report below were generated according to the recommendations of King and Zeng (2001) in the Stata package accompanying that paper.

Beck, Katz, and Tucker (1998) provide such a method using splines, which I include in the regression models discussed in Section 3.5.[39]

3.5   Results and Discussion

Tables 3.3 and 3.4 display regression coefficients for models that include levels of variables including trade, and indexes of trade concentration and diversity, while Tables 3.5 and 3.6 report a sensitivity analysis, moving from the 10th percentile of the variable to the 90th, while holding all variables other than that which under study at their mean values.

As expected, not all of the concepts I explore are statistically significant in both the Morgan, Bapat and Krustev and the King and Lowe datasets. This is due to the two data sources covering different time periods, and that the two use different source materials, in addition to differences in coding strategies discussed in Section 3.3. Finding that a relationship is strong in both datasets and across both regression types gives greater credibility to those findings for which they are present, but finding no relationship in one dataset while finding a statistically significant one in the other has ambiguous implications.

In most respects, the results I report above confirm the hypotheses discussed in Section 3.2 of this study, although there are several exceptions which I discuss at greater length below. In addition to the hypotheses however, there are several notable relationships arising in the results that deserve mention.

The results show that the most important determinates for use or threats of sanctions by states are the size of the target and sender economies, the per capita GDP of the target country, on-going armed conflict in the target country, and variables which measure import and export diversity and concentration.

---

[39] For the results reported below, I include cubic splines generated via the "btscs" Stata command accompanying that paper.

Table 3.3

Morgan, Krustev & Bapat (1995-2000)

	Corr-Logit	C-loglog
Distance between Capital Cities (km)	-0.044	-0.036
	(0.107)	(0.102)
Joint Democracy	-0.409	-0.341
	(0.314)	(0.317)
Value of Sndr's Imports from Trgt/ Sndr's Total Imports	-0.063	-0.07
	(0.062)	(0.063)
Value of Trgt's Imports from Sndr/ Trgt's Total Imports	0.320***	0.325***
	(0.088)	(0.085)
Sender's Import Concentration	0.301	0.201
	(0.222)	(0.209)
Senders Import Diversity	-0.524	0.117
	(0.635)	(0.62)
Sender's Export Concentration	1.116***	0.969**
	(0.336)	(0.324)
Senders Export Diversity	-1.399	-1.742*
	(0.84)	(0.815)
Target's Import Diversity	1.083**	0.990**
	(0.396)	(0.371)
Target's Export Diversity	-1.760***	-1.585***
	(0.428)	(0.403)
Sender Unemployment	0.183	0.326
	(0.218)	(0.21)
Armed Conflict Involving Sender Country	0.801**	0.779**
	(0.31)	(0.3)
Armed Conflict Involving Target Country	0.242	0.227
	(0.179)	(0.169)
Sender Total GDP	0.962***	0.909***
	(0.111)	(0.108)
Target Total GDP	0.543***	0.522***
	(0.087)	(0.087)
Target Per-Capita GDP	-0.244**	-0.202*
	(0.092)	(0.087)
Sender Per-Capita GDP	-0.04	-0.009
	(0.174)	(0.171)
Time since Last Event	-1.252***	-1.132***
	(0.328)	(0.311)
Spline 1	-0.322	-0.278
	(0.339)	(0.324)
Spline 2	0.161	0.14
	(0.294)	(0.282)
Spline 3	-0.036	-0.041
	(0.174)	(0.169)
Constant	-18.586***	-18.781***
	-3.114	-3.034
log_likelihood		-889.866
LR_chi_square		1140.999

Continuous Variables Logged
* p<0.05, ** p<0.01, *** p<0.001

Table 3.4

King and Lowe (1995-2004)

	Corr-Logit	C-loglog
Distance between Capital Cities (km)	-0.259*	-0.226*
	(0.11)	(0.108)
Joint Democracy	-0.101	-0.056
	(0.251)	(0.245)
Value of Sndr's Imports from Trgt/ Sndr's Total Imports	0.067	0.06
	(0.072)	(0.072)
Value of Trgt's Imports from Sndr/ Trgt's Total Imports	0.036	0.05
	(0.082)	(0.08)
Sender's Import Concentration	0.43	0.351
	(0.278)	(0.272)
Senders Import Diversity	-1.460*	-1.256*
	(0.606)	(0.577)
Sender's Export Concentration	0.778**	0.775**
	(0.251)	(0.244)
Senders Export Diversity	0.38	0.273
	(0.66)	(0.65)
Target's Import Diversity	0.409	0.315
	(0.42)	(0.408)
Target's Export Diversity	-1.140**	-1.025**
	(0.39)	(0.381)
Sender Unemployment	-0.298	-0.247
	(0.171)	(0.165)
Armed Conflict Involving Sender Country	0.591***	0.452**
	(0.174)	(0.168)
Armed Conflict Involving Target Country	0.637***	0.578***
	(0.152)	(0.146)
Sender Total GDP	0.917***	0.884***
	(0.111)	(0.109)
Target Total GDP	0.496***	0.473***
	(0.099)	(0.097)
Target Per-Capita GDP	-0.386***	-0.352***
	(0.101)	(0.099)
Sender Per-Capita GDP	0.184	0.149
	(0.129)	(0.125)
Time since Last Event	-0.914***	-0.840***
	(0.145)	(0.138)
Spline 1	-0.107**	-0.096*
	(0.04)	(0.038)
Spline 2	0.083	0.075
	(0.044)	(0.042)
Spline 3	-0.038	-0.034
	(0.032)	(0.031)
Constant	-16.759***	-16.495***
	(2.621)	(2.565)
log_likelihood		-1315.722
LR_chi_square		1528.02

Continuous Variables Logged
* p<0.05, ** p<0.01, *** p<0.001

Table 3.5

King and Lowe Relative Risk from 10th Perc. to 90th Perc.

Variable	RR	95% Conf. Int.
Distance between Capital Cities (km)	0.561	0.347 - 0.913
Sndr's Imports from Trgt/ Sndr's Total Imports	1.740	0.556 - 5.520
Trgt's Imports from Sndr/ Trgt's Total Imports	1.299	0.416 - 3.941
Sender's Import Concentration	1.557	0.859 - 2.617
Senders Import Diversity	0.294	0.102 - 0.806
Sender's Export Concentration	3.256	1.533 - 6.643
Senders Export Diversity	1.361	0.474 - 4.147
Target's Import Diversity	1.464	0.682 - 2.964
Target's Export Diversity	0.410	0.219 - 0.748
Sender Unemployment	0.630	0.366 - 1.056
Armed Conflict Involving Sender Country	1.823	1.333 - 2.502
Armed Conflict Involving Target Country	1.887	1.355 - 2.529
Sender Total GDP	49.587	18.874 - 121.151
Target Total GDP	11.473	4.355 - 29.269
Sender Per-Capita GDP	1.640	0.840 - 3.093
Target Per-Capita GDP	0.249	0.118 - 0.504

Table 3.6

Morgan, Krustev & Bapat Relative Risk from 10th Perc. to 90th Perc.

Variable	RR	95% Conf. Int.
Distance between Capital Cities (km)	0.902	0.573 - 1.456
Sndr's Imports from Trgt/ Sndr's Total Imports	0.593	0.234 - 1.652
Trgt's Imports from Sndr/ Trgt's Total Imports	8.207	2.639 - 23.957
Sender's Import Concentration	1.337	0.881 - 2.077
Senders Import Diversity	0.633	0.218 - 1.745
Sender's Export Concentration	5.747	1.922 - 15.838
Senders Export Diversity	0.327	0.081 - 1.314
Target's Import Diversity	2.596	1.321 - 5.305
Target's Export Diversity	0.253	0.135 - 0.472
Sender Unemployment	1.301	0.684 - 2.624
Armed Conflict Involving Sender Country	2.246	1.255 - 4.214
Armed Conflict Involving Target Country	1.271	0.898 - 1.779
Sender Total GDP	58.01	21.956 - 145.429
Target Total GDP	14.992	6.443 - 34.904
Sender Per-Capita GDP	0.890	0.378 - 2.158
Target Per-Capita GDP	0.415	0.222 - 0.794

Kilometer distance between a pair of countries' capitals is also significant, but only in the King and Lowe data. In this version of the analysis, distance is negatively associated with the use of sanctions and is statistically significant at the 1% level, signifying that countries that are farther from one another are less likely to use sanctions. Holding all other variables at their mean levels, a change in logged distance from the 90th percentile to the 10th percentile doubles the likelihood of a sanction-related event.

The value of goods traded between two countries is a significant predictor of sanction events, depending on the data used and the definition of the value of trade employed in the regression. Although the value of imports the sender receives (divided by the value of total imports in the sending country) is not statistically significant in any specification, a measure of the value of the target's imports from the sender (divided by the value of the target's total imports) is statistically significant and positive in the Morgan, Bapat and Krustev dataset. The result is consistent using both corrected logistic regression and complementary log-log regression. This result signifies that in some cases, sending countries are more likely to initiate sanctions when the sender's exports to the country make up a larger percentage of the target's total imports. Alternative specifications using the value of trade (rather than the value as a percentage of total trade for either the sender or target) show no statistically significant relationship after controlling for the other variables discussed in the analysis.

It is not clear why the value of trade is not a more important consideration in the decision of whether to engage in sanctions. One possibility is that the presence of a large amount of trade between two countries has an ambiguous effect on the decision to engage in sanctions, because sanctioning a trading partner can be both more costly to the sender, even as it can be more damaging to the target.

The relationship is broadly consistent with the point of view that vulnerability to sanctions is an important determinant of sanction events, but it is not clear why the link is only evident in the Morgan, Bapat and Krustev data and not also in the King and Lowe version of the dependent variable. It is unlikely that the discrepancy is due to the difference in time periods, as limiting the coverage in the King and Lowe dataset to match that of the Morgan, Bapat and Krustev dataset does not result in a significant coefficient for regression models using the

former. The discrepancy may arise due to dissimilar definitions of sanction events, or, despite a coefficient that is significant at the 0.1% level, a spurious result for the Morgan, Bapat and Krustev data.

H_1: *Larger economies are more often senders*

In all versions of the analysis, the size of both the sender and target economies is statistically significant with a positive coefficient, indicating that larger economies are more often both senders and targets. This finding corroborates the literature on the subject summarized by H_1, which suggests that larger economies use their clout to threaten and invoke sanctions more often on the international stage than is the case for smaller economies. In the King and Lowe data, a sending country in the 90th percentile of logged total GDP is almost 50 times more likely to initiate sanctions than a country in the 10th percentile. In the Morgan, Bapat and Krustev data, a country in the 90th percentile is 58 times more likely to initiate sanctions than a country in the 10th percentile.

In most cases, larger economies have broader and more varied geopolitical interests than do smaller economies, motivating more active economic and foreign policy. This would suggest that sanctions often occur when large economies use economic means to pursue political or relational objectives with the international community, and that smaller economies either do not engage in such activities, or that they more often use other means to do so.

There are several additional reasons that larger economies may be more often sanction targets and recipients, even after controlling for per capita GDP, trade relationships, and the other factors I discuss below. Larger economies are often more resistant to being sanctioned in retaliation, as they are usually more able to offset the effects of trade sanctions with local production. Retaliation in the form of aid reduction or asset seizures is also usually a smaller percentage of total economic activity for larger economies than for smaller ones.

H_2: *Poorer economies are more often targets*

For all versions of the regression models used in this analysis, countries that are poorer on a per capita basis are more likely to be targets than more wealthy countries. This result suggests that

large economies are more likely to use sanctions in general, but are also more likely to use sanctions against countries in which the sanctions have the greatest effect. In the Morgan, Bapat and Krustev data, a country in the 10th percentile of per captia GDP is almost 2.3 times more likely to be a target than a country in the 90th percentile. In the King and Lowe data, a poorer country is 4.4 times more likely to be a target.

This result supports the "vulnerability" point of view in the literature, and may indicate that countries more often use sanctions against targets that are less resistant to the effects of sanctions. Poorer countries are likely to suffer more under sanctions that richer ones, meaning that generating a given amount of harm might be less costly for sending countries when they target poor countries than when they target wealthier ones.

H_3: *Countries with a higher value on the import and export Finger-Kreinin index are more likely to be senders and targets.*

This study provides weak but statistically significant evidence in support of H_3. The results show that the coefficient for the target import diversity index is positive and significant at the 1% level for the Morgan, Bapat and Krustev dataset. This signifies that a higher value for the target's diversity index (or a "greater difference from the global average") predicts a greater likelihood of a sanction event.[40]

In the Morgan, Bapat and Krustev dataset, a country in the 90th percentile is 2.5 times more likely to be a target than a country in the 10th percentile, which is consistent with H_2. This suggests that countries that are more dependent on specific imports that are less commonly imported in other countries are more often targeted by sending countries.

The strongest relationship among the Finger-Kreinin indexes is the target's export diversity. The coefficient is negative and significant at the 1% or 0.1% level for both versions of the dependent variable and for both regression model types. In the King and Lowe data, a country

---

[40] The coefficient in the King and Lowe dataset is not significant statistically significant in the specifications listed here. Further analysis (available on request) shows that although similar results to the Morgan, Bapat and Krustev data are obtained in regressions that exclude per capita GDP, controlling for relative wealth diminishes the statistical significance of target import specialization for both data sources.

in the 10th percentile of the Finger-Kreinin index for export diversity is 2.4 times more likely to be the target of sanctions than a country in the 90th percentile.

Countries are also slightly less likely to initiate or threaten sanctions if their imported goods are more specialized, which supports the view that vulnerability to trade sanctions influences the decisions of states to initiate or threaten sanctions. In the King and Lowe data, a country in the 10th percentile in the logged import diversity index is 6.3 times more likely to initiate or threaten sanctions than a country in the 90th percentile.[41]

H_4: *Countries with high export and import concentration are more likely to be senders.*

The sender export concentration index is significant at the 0.1% level with a positive coefficient for the King and Lowe data, which means that sanctions are more likely when sending countries have a more specific group of goods that they trade. A country in that dataset is 3.2 times more likely to initiate or threaten sanctions if they are in the 90th percentile than if they are in the 10th percentile of the logged export concentration index. In the Morgan, Bapat and Krustev data, a country in the 90th percentile is 5.7 times more likely to threaten or initiate sanctions than a country in the 10th percentile.

Countries that export a smaller number of goods are more likely to use sanctions than countries with a broad basket of export goods. This may indicate that countries that export a small number of goods are more likely to use their market power in the specialties to extract foreign policy concessions.

H_5: *Countries with higher unemployment rates are more likely to initiate sanctions than countries with lower unemployment rates.*

The research motivating H_4 suggests that higher unemployment rates in the United States increase the probability the US will use or threaten sanctions. This result does not appear to hold for all countries in this analysis however. This may be due to several differences between

---

[41] The relationship is also apparent to a limited extent in the Morgan, Bapat and Krustev data, although the coefficient is not statistically significant. A country in the 10th percentile for in the logged import diversity index in that dataset is 1.9 times more likely to initiate or threaten sanctions than a country in the 90th percentile.

the approach used here and that used in Drury (2001), including the addition of sanction threats as well as the use of sanctions, analysis of other countries, and dissimilar time periods in the analysis.

The result does not lend greater credibility to the argument that domestic political factors are as large a concern as has been speculated, however, it is difficult to interpret a non-result in this context. Although unemployment rates may indeed be important in certain circumstances, domestic policies with respect to unemployment likely generate substantial heterogeneity among policy prescriptions in different countries.

H_6: *Pairs of democratic countries should sanction one another less often than if one of the countries in the pair is not ruled by a democratic regime.*

In the data I use, there does not appear to be a systematic relationship between sanction events and democratic dyads. This in itself is somewhat surprising, as a strong "democratic peace" result has been reported elsewhere in the literature.

The Morgan, Bapat and Krustev data in a negative coefficient significant at the 5% to 1% level if the analysis is undertaken using the *value* of trade between two countries, rather than the *percentage* of total trade a partner represents. The statistical significance disappears in an analysis that includes both per capita GDP and bilateral trade as a percentage of total trade.

These conflicting descriptions may indicate that evidence reported in the literature which supports the "democratic peace" interpretation with respect to sanctions hinges on the time period under consideration, the definition of sanction events, or the covariates included in the regression model. That the result is so sensitive in this analysis makes it difficult to interpret with any certainty.

H_7: *Countries engaged in violent conflict are more often targets and senders.*

Armed conflict is positively associated with the use of sanctions in both versions of the dependent variable. A dummy variable signifying that a sending country is engaged in armed

conflict is positive and statistically significant at the 1% to 0.1% level in both the Morgan, Bapat and Krustev data and the King and Lowe data.

Armed Conflict in a target country is also positively correlated with sanction onset in the King and Lowe data. This is not the case for Morgan, Bapat and Krustev data however, which excludes several wars that began after 2001, and falls somewhat short of statistical significance. The fact that the result is sensitive to the time period under study likely indicates that it is driven by a small number of examples. The United States is a far more active sender than any other single country (and is also a popular target), which means that the inclusion of that country specifically is a significant issue in the analysis.

A finding confirming that countries, and particularly the United States, often get involved in conflict situations through sanctions is not surprising. Particularly in cases where the outcome of conflict in a target has direct implications for the sending country, one would expect countries to take sides and support groups or parties that share their interests. The countries in conflict that drew events during periods of conflict are shown in Figure 3.5. Over the longer time period in the King and Lowe data as well, the relationship remains robust, as can be seen in Figure 3.6.
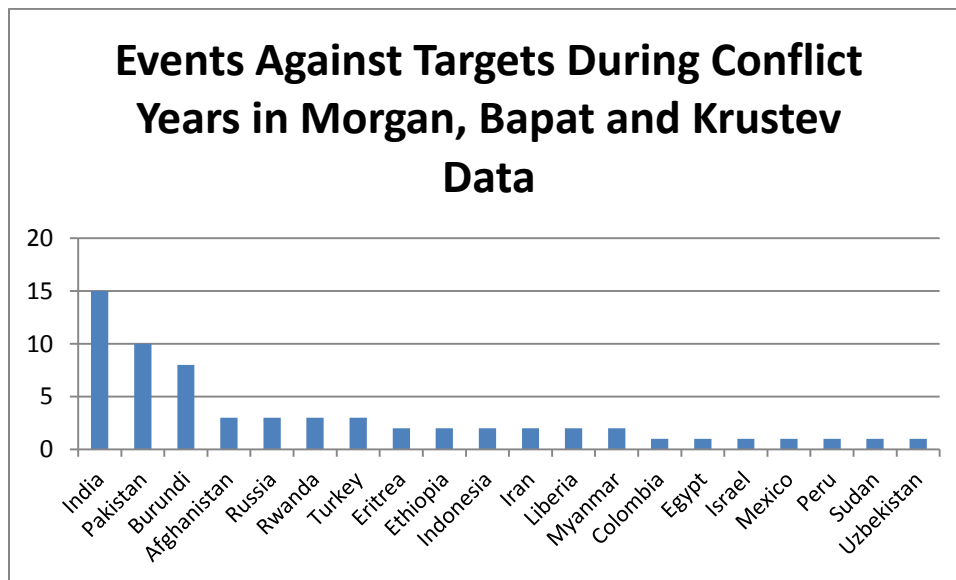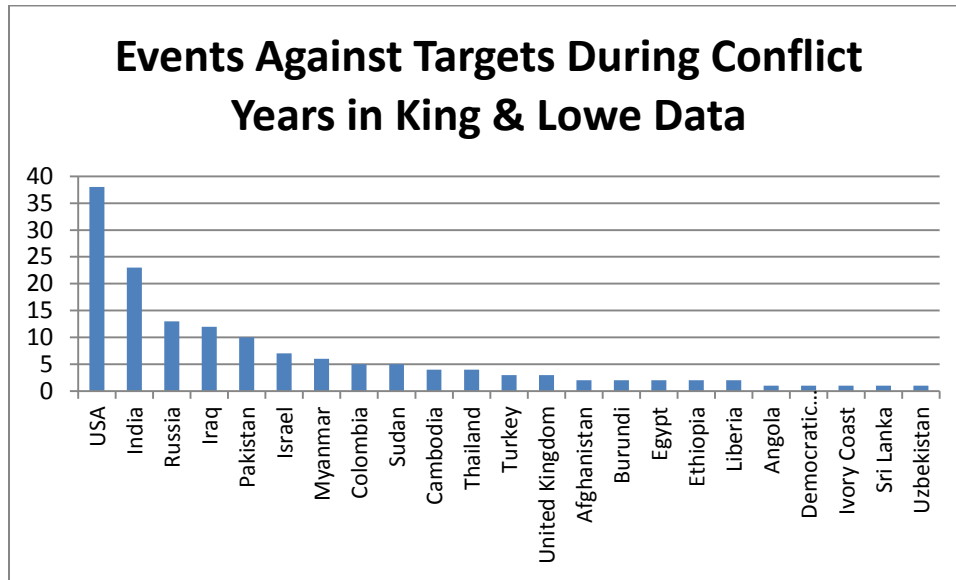
Figure 3.5

Figure 3.6

Events Against Targets During Conflict Years in King & Lowe Data

For several reasons, the versions of the regression model used in this paper likely underestimate the occurrence of sanctions used in the midst of conflict. One recent example of such a situation comes from Côte d'Ivoire, which suffered an extended period of conflict in the aftermath of elections in late 2010. Alassane Ouattara, the winner of the presidential election according to international observers, ordered a complete halt to trade of cocoa to undermine the position of Laurent Gbagbo, the former President who claimed that the election results were fraudulent. Such untargeted export bans are excluded from the type of analysis I use in this paper because they are not directed at an individual state.

Another issue is that during a conflict, states may support one side or another yet wish to do so clandestinely. Selectively imposing import bans on participants in a conflict in other contexts would be included in this paper as a sanction, yet due to the secretive nature of many such programs, they would not commonly be reported by news services and would therefore be excluded from an this analysis. These are only a few examples of ways in which embargoes and sanctions in conflict circumstances could fall outside of the definitions used in this paper.

3.6   Conclusion

Sanction use is on the rise throughout the world, yet the determinants and characteristics that predict events are relatively poorly understood. Threats and use of sanctions arise from innumerable contexts, but I have shown in this study that an empirical approach using references to sanctions in news media can shed light on some important characteristics of senders and targets that predict sanction events. The majority of these issues are related to aspects of economic power, trade relationships, and violent conflicts.

The degrees of concentration and diversity of a country's imports and exports are an important determinant of sanction threats and use. A higher value for the target's target import diversity index predicts a higher likelihood of a sanction event. A country in the 10th percentile in the logged export diversity index is between 3.2 and 3.4 times more likely to be a target than a country in the 90th percentile, if all other variables are held at their mean values. The sender's export concentration index is significant with a positive coefficient, meaning that sanctions are more likely when sending countries have a more specific group of goods that they trade. In one of the datasets used in this paper, a country in the 90th percentile of the export concentration index is 5.7 times more likely to threaten or initiate sanctions than a country in the 10th percentile.

Larger economies are substantially more likely to use sanctions. In one dataset used in this study, a country in the 90th percentile of total GDP is 58 times more likely to initiate sanctions than a country in the 10th percentile. As anticipated in the literature, poorer countries are more often targets, and very rarely initiate sanctions. Armed conflict in either the target or sending country is predictive as well, which indicates that sanctions are often used to support outside state interests during violent conflicts or to condemn actions by one or more party involved.

This study also finds an ambiguous relationship between democratic dyads and the use of sanctions, and raises questions about the importance of unemployment rates in explaining sanction events in a cross-country setting. Although elsewhere in the literature it has been reported that democratic countries less commonly use sanctions against one another, I was unable to find a companion result in this context, indicating that the result may depend on the definition of sanctions being used, the period under investigation, and the covariates included

in the regression model. Likewise, it has been reported in the literature that sanctions are more likely in the US when unemployment rates are higher, although this does not appear to hold with respect to other countries and in different time periods.

3.7 References

Askari, H., Forrer, J., Yang, J., & Hachem, T. (2005). Measuring Vulnerability to U.S. Foreign Economic Sanctions. *Business Economics*, 41-55.

Baldwin, D. (1985). *Economic Statecraft.* Princeton, NJ: Princeton University Press.

Barber, J. (1979). Economic Sanctions As a Policy Instrument. *International Affairs (Royal Institute of International Affairs 1944-)*, 367-384.

Barbieri, K., & Keshk, O. (2012, October 10). *International Trade, 1870-2009 (v3.0)*. Retrieved from Correlates of War: http://www.correlatesofwar.org/COW2%20Data/Trade/Trade.html

Barry, M. (2000). "Effect of the U.S. embargo and economic decline on health in Cuba. *Annals of Internal Medicine*, 151-154.

Beck, N., Katz, J. N., & Tucker, R. (1998). Taking Time Seriously: Time-Series-Cross-Section Analysis with a Binary Dependent Variable. *American Journal of Political Science*, 1260-1288.

Center for International Comparisons of Production, Income and Prices . (2012, October 10). Penn World Tables. Philadelphia, PA, USA.

Chan, S. a. (2000). *Sanctions as Economic Statecraft: Theory and Practice.* London: Macmillan.

Cortright, D. a. (1995). *Economic Sanctions: Panacea or Peacebuilding in a Post-Cold War World?* Boulder: Westview Press.

Cortright, D. a. (2000). *The Sanctions Decade: Assessing UN Strategies in the 1990s.* Boulder: Lynne Rienner.

Cortright, D. a. (2002). *Sanctions and the Search for Security: Challenges to UN Action.* Boulder: Lynne Rienner.

Cox, D. G., & Drury, A. C. (2006). Democratic Sanctions: Connecting the Democratic Peace and Economic Sanctions. *Journal of Peace Research*.

Crawford, B. (1993). *Economic Vulnerability in International Relations: East-West Trade, Investment and Finance.* New York: Columbia University Press.

Dashti-Gibson, J. P. (1997). On the Determinants of the Success of Economic Sanctions: an Empirical Analysis. *American Journal of Political Science*, 608-618.

Deese, D. (1983). The Vulnerability of Modern Nations: Economic Diplomacy in East-West Relations. In e. M. Nincic and P. Wallensteen, *Dilemmas of Economic Coercion: Sanctions in World Politics* (pp. 155-182). New York: Praeger.

Doxey, M. P. (1980). *Economic Sanctions and International Enforcement.* London: Oxford University Press.

Doxey, M. P. (1980). *International Sanctions in Contemporary Perspective.* London: Oxford University Press.

Drezner, D. (1997). Allies, Adversaries, and Economic Coercion: Russian Foreign Economics Policy since 1991. *Security Studies*, 65-111.

Drezner, D. (1999). Conflict Expectations and the Paradox of Economic Coercion. *International Studies Quarterly*, 709-731.

Drezner, D. (1999). *The Sanctions Paradox: Economic Statecraft and International Relations.* Cambridge, UK: Cambridge University Press.

Drury, A. C. (2001). Sanctions as Coercive Diplomacy: The U.S. President's Decision to Initiate Economic Sanctions. *Political Research Quarterly*, 485-508.

Eyler, R. (2007). *"Economic Sanctions International Policy and Po-.* New York: Palgrave Macmillian.

Galtung, J. (1967). On the Effects of International Economic Sanctions, with Examples from the Case of Rhodesia. *World Politics*, 378-416.

Gary Clyde Hufbauer, J. S. (1985). *Economic Sanctions Reconsidered: History and Current Policy.* Washington D.C.: Institute for International Economics.

George, A. (1993). *Bridging the Gap: Theory and Practice in Foreign Policy.* Washington, DC: United States Institute for Peace.

Gleditsch, K. S. (2012, October 10). *Distance Between Capital Cities.* Retrieved from essex.ac.uk: http://privatewww.essex.ac.uk/~ksg/data-5.html

Gleditsch, K. S., Harbom, L., Strand, H., Nygård, H. M., Wallensteen, P., Heldt, B., . . . Eriksson, M. (2012, October 10). *UCDP/PRIO Armed Conflict Dataset*. Retrieved from PRIO Network: http://www.prio.no/CSCW/Datasets/Armed-Conflict/UCDP-PRIO/

Green, J. (1983). Strategies for Evading Economic Sanctions. In M. a. Nincic, *Dilemmas of Economic Coercion: Sanctions in World Politics* (pp. 61-85). New York: Praeger.

Haufler, V. (2009). Sanctions and Private Self-Regulation. *APSA 2009 Toronto Meeting Paper* , 1-16.

Hufbauer, G. &. (1985). *Economic Sanctions Reconsidered History and Current Policy.* Washington, DC: Institute for International Economics.

Hufbauer, G., & Elliott, J. S. (1990). *Economic Sanctions Reconsidered: History and Current Policy.* Washington, DC: Institute for International Economics.

Hufbauer, G., & Elliott, J. S. (1990). *Economic Sanctions Reconsidered: Supplemental Case Histories.* Washington, DC: Institute for International Economics.

Imbens, G. (1992). An Efficient Method of Moments Estimator for Discrete Choice Models with Choice-Based. *Econometrica*, 1187–1214.

International Labour Organization. (2012, October 10). *Main Statistics Annual*. Retrieved from laborsta.ilo.org: http://laborsta.ilo.org/STP/guest

Jaleh Dashti-Gibson, P. D. (1997). On the Determinants of the Success of Economic Sanctions: An Empirical Analysis. *American Journal of Political Science*, 608-618.

Kaempfer, W. H. (1987). Divestment, Investment Sanctions, and Disinvestment: An Evaluation of Anti-Apartheid Policy Instruments. *International Organization*, 457-73.

Kaempfer, W., & Lowenberg, A. (1992). *International Economic Sanctions: A Public Choice Perspective.* Boulder: Westview Press.

Keohane, R. O. (1977). *Power and Interdependence: World Politics in Transition.* Boston, MA: Brown & Company.

King, G., & Lowe, W. (2012, October 10). *10 Million International Dyadic Events*. Retrieved from gking.harvard.edu: http://gking.harvard.edu/data?dvn_subpage=/faces/study/StudyPage.xhtml?globalId=hdl:1902.1/FYXLAWZRIA

King, G., & Zeng, L. (2001). Logistic Regression in Rare Events Data. *Society for Political Methodology*.

Kirshner, J. (1997). The Microfoundations of Economic Sanctions. *Security Studies*, 32–64.

Knorr, K. (1975). *The Power of Nations: The Political Economy of International Relations.* New York: Basic Books.

Lektzian, D., & Souva, M. (2007). An Institutional Theory of Sanctions Onset and Success. *Journal of Conflict Resolution*, 848-869.

Li, C.-p. (1993). The Effectiveness of Sanction Linkages: Issues and Actors. *International Studies Quarterly*, 349-370.

Losman, D. L. (1979). *International Economic Sanctions: The Cases of Cuba, Israel, and Rhodesia.* Albuquerque: University of New Mexico Press.

Lundborg, P. (1987). *The Economics of Export Embargoes: The Case of the US-Soviet Grain Suspension.* London: Croom Helm.

Marshall, M. G., Jaggers, K., & Gurr, T. R. (2012, October 10). *Polity IV Project*. Retrieved from Center for Systemic Peace: http://www.systemicpeace.org/inscr/inscr.htm

Martin, L. L. (1992). *Coercive Cooperation: Explaining Multilateral Economic Sanctions.* Princeton, NJ: Princeton University Press.

Morgan, C., Krustev, V., & Bapat, N. (2012, October 10). *Data Page.* Retrieved from Threat and Imposition of Sanctions: http://www.unc.edu/~bapat/TIES.htm

Morgan, T. C. (1995). Clinton's Chinese Puzzle: Domestic Politics and the Effectiveness of Economic Sanctions. *Issues and Studies*, 19-45.

Morgan, T. C. (1997). Fools Suffer Gladly: The Use of Economic Sanctions in International Crises. *International Studies Quarterly*, 27-50.

Nincic, M. &. (1983). *Dilemmas of Economic Coercion: Sanctions in World Politics.* New York: Praeger.

Nossal, K. R. (1989). International Sanctions as International Punishment. *International Organization*, 301-322.

Olson, R. S. (1979). Economic Coercion in World Politics: With a Focus on North-South Relations. *World Politics*, 471-494.

Pape, R. A. (1997). Why Economic Sanctions Do Not Work. *International Security*, 90-136.

Petrescu, I. M. (2007). The Humanitarian Impact of Economic Sanctions. *Job Market Paper*, 1-25.

Poeter, R. C. (1979). International Trade and Investment Sanctions: Potential Impact on the South African Economy. *Journal of Conflict Resolution*, 579-612.

Porter, R. C. (1979). International Trade and Investment Sanctions: Potential Impact on the South African Economy. *Journal of Conflict Resolution*.

Rodman, K. A. (1995). Sanctions at Bay? Hegemonic Decline, Multinational Corporations, and the US Economic Sanctions Since the Pipeline Case. *International Organization*, 105-138.

United Nations Conference on Trade and Development. (2012, September 01). *UNCTADStat.* Retrieved 09 01, 2012, from UNCTAD Statistics Website: http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx?sCS_referer=&sCS_ChosenLang=en

Whang, T. (2010). Structural estimation of economic sanctions: From initiation to outcomes. *Journal of Peace Research*, 561-573.

3.8   Appendix A

Countries Included in Study		
Afghanistan	Germany	Norway
Albania	Ghana	Oman
Algeria	Greece	Pakistan
Andorra	Grenada	Palau
Angola	Guatemala	Panama
Antigua & Barbuda	Guinea	Papua New Guinea
Argentina	Guinea-Bissau	Paraguay
Armenia	Guyana	Peru
Australia	Haiti	Philippines
Austria	Honduras	Poland
Azerbaijan	Hong Kong	Portugal
Bahamas	Hungary	Qatar
Bahrain	Iceland	Romania
Bangladesh	India	Russia
Barbados	Indonesia	Rwanda
Belarus	Iran	Samoa
Belgium	Iraq	San Marino
Belize	Ireland	Sao Tome and Principe
Benin	Israel	Saudi Arabia
Bhutan	Italy	Senegal
Bolivia	Ivory Coast	Seychelles
Bosnia and Herzegovina	Jamaica	Sierra Leone
Botswana	Japan	Singapore
Brazil	Jordan	Slovakia
Brunei	Kazakhstan	Slovenia
Bulgaria	Kenya	Solomon Islands
Burkina Faso	Kiribati	Somalia
Burundi	Kuwait	South Africa
Cambodia	Kyrgyzstan	South Korea
Cameroon	Laos	Spain
Canada	Latvia	Sri Lanka

Countries Included in Study (Cont.)		
Cape Verde	Lebanon	St. Kitts and Nevis
Central African Republic	Lesotho	St. Lucia
Chad	Liberia	St. Vincent and the Grenadines
Chile	Libya	Sudan
China	Liechtenstein	Suriname
Colombia	Lithuania	Swaziland
Comoros	Luxembourg	Sweden
Congo	Macedonia	Switzerland
Costa Rica	Madagascar	Syria
Croatia	Malawi	Taiwan
Cuba	Malaysia	Tajikistan
Cyprus	Maldives	Tanzania
Czech Republic	Mali	Thailand
Democratic Republic of the Congo	Malta	Togo
Denmark	Marshall Islands	Tonga
Djibouti	Mauritania	Trinidad and Tobago
Dominica	Mauritius	Tunisia
Dominican Republic	Mexico	Turkey
East Timor	Moldova	Turkmenistan
Ecuador	Monaco	Tuvalu
Egypt	Mongolia	Uganda
El Salvador	Morocco	Ukraine
Equatorial Guinea	Mozambique	United Arab Emirates
Eritrea	Myanmar	United Kingdom
Estonia	Namibia	United States of America
Ethiopia	Nauru	Uruguay
Federated States of Micronesia	Nepal	Uzbekistan
Fiji	Netherlands	Vanuatu
Finland	New Zealand	Venezuela
France	Nicaragua	Vietnam
Gabon	Niger	Yemen
Gambia	Nigeria	Yugoslavia
Georgia	North Korea	Zambia
		Zimbabwe