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International Compliance and the Mine Ban Treaty

Treaties play a significant role in international politics. They signal cooperation among states and a will to move forward. But treaties come with costs as well as benefits. They are time-consuming and costly and, in principle, require modifications to state behavior. The study of treaties and international compliance is essential in order to better understand our international political climate. One of the most pressing issues in international compliance is that of selection bias. As Downs, Rocke, and Barsoom (1996) ask, “Is the good news about compliance good news about cooperation?”¹ According to their theory, countries are more likely to sign treaties when it is easy for them to comply or, more specifically, when they are already in compliance. This effectively creates a codification of the status quo, and the treaty presumably does not influence states’ behavior. However, the Downs, Rocke, and Barsoom study, cushioned with anecdotal evidence, does not provide a thorough statistical investigation. This study is meant to evaluate the Downs, Rocke, and Barsoom argument with a statistical analysis of the Mine Ban Treaty. The study will consider the following issues: Is there a selection bias in which countries sign treaties? And do countries only agree to treaties with which they are already in compliance?

In this study, I explore these topics with a comprehensive and quantitative study of the 1997 Mine Ban Treaty. Using annual reports from the Landmine Monitor, I have created a survival time data set in order to record factors that might influence a state’s likelihood of signing. Taking into consideration political and economic factors, I have found that there is not selection bias towards states that are already in compliance. States do not sign treaties only when

¹ Downs, George, David Rocke, and Peter Barsoom. 1996. Is the Good News about Compliance Good News about Cooperation? *International Organization* 50 (3):379–407.

it is easy for them to comply, or, in this case, when they have low levels of landmines. Rather, many states with large levels of landmines have signed the treaty. There is a correlation between states signing on to the treaty, high landmine levels, and the amount of foreign aid received by that state. This correlation implies a scenario in which states with large landmine problems sign the treaty in order to receive foreign aid. The statistical analysis provided in this study shows that the argument that there is a selection bias in which states sign only “easy” treaties most likely does not inform compliance with the Mine Ban Treaty.

This study will begin with a brief overview of the Mine Ban Treaty and its history. This is followed by a discussion of relevant theory and as well as a description of the data and method used to carry out the analysis. Finally, I will conclude with the results of the analysis and possible interpretations of the data.

MINE BAN TREATY

The international civil society has spearheaded the effort to terminate the use of landmines. The issue first surfaced in the 1950s in organizations such as the International Committee of the Red Cross. However, it lay dormant until the 1990s when several non-governmental organizations (NGOs) became aware of the extent of devastation caused by the mines. In 1991, the NGOs Asia Watch and Physicians for Human Rights published a report, *A Coward's War: Landmines in Cambodia*, and launched the anti-landmine movement. Statistics began to circulate about the extreme pervasiveness of landmines throughout the world. Some estimates were so large as to state that there were over 100 million landmines implanted in the earth and that nearly 26,000 people each year become victims of the devices.

Even in its first year on the international scene, the anti-landmine movement had many supporters including Human Rights Watch-USA, Physicians for Human Rights, Handicap International, and Britain's Mines Advisory Group. These NGOs effectively began the International Campaign to Ban Landmines (ICBL). The beginnings of the movement were symptomatic of its entirety: it was comprised mostly of international NGOs and placed an emphasis on the human rights aspect of the landmine problem. The ICBL began a campaign with two focus points. The first was to push for public education on the deleterious effects of landmines. The NGOs involved in the movement provided education on the subject for their respective publics, and in turn garnered support for the cause. This allowed the public to join NGOs in pressuring governments to end the use of landmines. The second was to push governments to sign on to the existing United Nations framework of the Convention on Conventional Weapons (CCW), in order to minimize the use of landmines.

Support for the ICBL continued to strengthen. In 1993 the ICBL held its first annual NGO International Conference on Landmines in which participating NGOs resolved to increase public awareness and gain more support on a civil level. By the time the campaign met again in 1995, the ICBL felt that it had gained enough support and raised awareness to a sufficient level that the NGOs could begin to place greater pressure on national governments to sign on to an anti-mine agreement. By 1996, at the suggestion of Robert Lawson, a negotiator from the Canadian government, the ICBL supported a conference held in Ottawa that would provide an anti-landmine space apart from that of the UN and the CCW. Thus began the "Ottawa process" that would lead to the Mine Ban Treaty.

The years 1996 and 1997 proved most eventful for the ICBL. In 1996 NGOs involved in the movement held meetings all over the world and urged governments to sign on to the new

treaty proposed by the Ottawa process to do away with landmines. In October of 1997 the ICBL won the Nobel Peace Prize for its exceptional accomplishments in the way of human rights. However, the campaign's most crucial moment was yet to come. On December 3, 1997 the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction, also known as the Mine Ban Treaty, opened for signing. The first day of the treaty was a great success: 121 countries signed.²

Article 1 of the Mine Ban Treaty prohibits signatory states from employing, producing, and trading landmines. It also demands that all participating states destroy their stockpiles; however Article 3 allows a minimum amount of landmines to be retained "for the development of and training in mine detection, mine clearance, or mine destruction techniques..." As per Article 7, all State Parties must report to the UN Secretary-General regarding the state's level of compliance. States are required by Article 9 to "take all appropriate legal, administrative and other measures...to prevent and suppress any activity prohibited to a State Party under this Convention..." In the case that State Parties do not comply, the extent of enforcement of the treaty is the implementation of fact-finding missions and recommendations of "appropriate measures" as outlined in Article 8. Furthermore, Article 6 provides that "each State Party has the right to seek and receive assistance, where feasible, from other States Parties to the extent possible."³

² Matthew, Richard A. Human Security and the Mine Ban Movement I: Introduction. *Landmines and Human Security : International Politics and War's Hidden Legacy*. Ed. Richard A. Matthew, Bryan McDonald, and Kenneth R. Rutherford. Albany: State University of New York P, 2004. 5-9.

³ "Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction." 02 June 2004. *International Campaign to Ban Landmines*. 28 Jan. 2007 <<http://www.icbl.org/treaty/text/english>>.

THEORY

Simmons (1998) classifies the theory on international compliance into four broad categories.⁴ The first is the realist school which focuses, not on international laws, but on power politics. She quotes Morgenthau (1985) in explaining countries' perspectives on international compliance: countries "are always anxious to shake off the restraining influence that international law might have upon their foreign policies, to use international law instead for the promotion of their national interests."⁵ Simmons refers to the "cynicism" of realists who claim that international law has little effect on the actions of a country since countries will always act in their own interest, especially when an international law is not particularly enforceable. Downs, Locke, and Barsoom fall into this realist category as they believe that a high level of international compliance does not necessarily signal a high level of cooperation, or departure from present behavior. They claim that international law is not strong enough to affect the actions of participating states. The second category, "compliance and rationalist functionalism" is similar to realism in that they are both "interest-driven approaches in which incentives play a crucial role."⁶ However, functionalists are not seen as cynics trying to manipulate the international sphere, they are viewed as "engineers" who make a sincere effort to build a cooperative international society through such efforts as the creation of institutions. The domestic consideration of compliance is Simmons' third group. This category finds that domestic regimes influence international compliance, particularly in the case of democracies. This may be so because democracies, which rely on a domestic rule of law, easily identify with

⁴ Simmons, Beth A. 1998. Compliance with International Agreements. *Annual Review of Political Science* 1998 (1): 75-93.

⁵ Morgenthau, HJ. 1985. *Politics Among Nations: The Struggle for Power and Peace*. New York: Knopf. 6th ed. 688 pp.

⁶ Simmons, 80.

and participate in the structures of international law. Furthermore, democracies often internalize international law, increasing compliance. Finally, the normative school is more subjective in nature. It relies on concepts such as legitimacy, social constructions, and perceptions. While the normative aspect of international issues can be informative, it is difficult to measure its arguments and concepts, and as such it is not within the scope of this study.

The Downs, Rocke, and Barsoom (1996) argument, categorized in Simmons' realist group, has provided a basis for this study.⁷ The authors would explain the widespread support of the Mine Ban Treaty in the 1990s by asserting that countries signed on because it would be easy for them to comply. They claim that there is a selection bias in which states sign treaties. States are more likely to sign treaties in which only a low level of compliance is required. Downs, Rocke, and Barsoom describe what they call the "depth of cooperation" of a treaty; that is the "extent to which [a treaty] requires states to depart from what they would have done in its absence."⁸ They argue that states will sign treaties that require shallow cooperation. In this sense, treaties can be viewed as a codification of the status quo. The authors provide anecdotal evidence such as the Montreal Protocol, a treaty instated to reduce chlorofluorocarbon emissions in all participating countries. To exemplify their point the authors claim that "most of the cutbacks in emissions preceded the ratification of the Montreal Protocol."⁹ While this example is adequate to demonstrate the authors' hypothesis, my study is meant to provide a quantitative analysis of the question.

⁷ Downs, George, David Rocke, and Peter Barsoom. 1996. Is the Good News about Compliance Good News about Cooperation? *International Organization* 50 (3):379–407.

⁸ Downs, Rocke, and Barsoom, 380.

⁹ Downs, Rocke, and Barsoom, 391.

Although Downs, Roche, and Barsoom believe that states mostly sign treaties that require shallow cooperation, this does not necessarily imply that treaties are ineffective. Simmons and Hopkins (2005) offer another point of view.¹⁰ They concede that there is an inherent selection bias in which states sign international treaties, but they insist that this bias does not render a treaty ineffective. They refute the suggestion that states' compliance prior to signing a treaty disproves the effectiveness of the treaty. Rather, a state's action to comply with the policy of a treaty before signing it may eliminate any uncertainty about its capability to comply and therefore reduce a country's "reputational costs of inconsistency."¹¹ Finally they argue that, all else equal, signatory states to a treaty would try harder to comply with it than non-signatory states, illustrating the constraining effects of that treaty.

Kelley (2005) and Meernik and Shairick (2005) consider other factors that might play a role in a state's decision to sign on to a treaty. In her study on the Rome Statute and the United States' "Article 98" agreements, Kelley found that powerful, democratic states with a strong rule of law norm were less likely to sign on.¹² Meernik and Shairick look at the role of foreign aid in treaties, finding that the countries that have signed on to the Rome Statute receive high levels of

¹⁰ Simmons, Beth A., and Danial J. Hopkins. 2005. The Constraining Power of International Treaties: Theory and Methods. *American Political Science Review* 99 (4): 623-631.

¹¹ Simmons and Hopkins, 624.

¹² Kelley, Judith. 2005. The Role of Material and Non-material Factors in State Behavior: Article 98 Agreements as a Quasi-Experiment. Paper prepared for the Vanderbilt Law School International Law Roundtable on International Criminal Law and International Human Rights Law, Nashville, Tenn., January. See also: Gilligan, Michael. 2006. Is Enforcement Necessary for Effectiveness? A Model of the International Criminal Regime. *International Organization* 60 (4): 935-967.

foreign aid and have large amounts of foreign debt. Meernik and Shairick suppose that wealthier, more powerful states are persuading smaller, more economically-weak states to sign.¹³

For an alternative analysis of compliance, what has been dubbed the managerial school maintains that states, having agreed to an international treaty, will not purposefully and continuously defect from that treaty. They claim that compliance problems are caused, not by a state's deliberate decision to undermine an international treaty, but by three other factors. These factors include the ambiguity inherent in any treaty, a country's temporary inability to comply, and the amount of time needed between signing and treaty and implementing it in policy.¹⁴

As Simmons outlines, domestic considerations also play an important role in a state's ability to comply. Dai (2005) presents a domestic constituency model that explains compliance from the perspective of domestic politics.¹⁵ As governing powers within a country rely on their constituencies to remain in power, they must act according to the wishes of that constituency. The government must cater to competing internal factions, often to the factions with the most electoral leverage and to the most well-informed. Dai's model reminds us of the importance of internal politics in international agreements, however its narrow scope does not account for the role that domestic politics plays in forms of government other than democracy.

Constructivists, those in Simmons' "normative" category, point to different reasons for cooperation all together. They believe that countries are likely to sign on to treaties for normative reasons. Among them, Price (1998) argues that moral persuasion, non-governmental

¹³ Meernik, James, and Jamie Shairick. 2005. Promoting International Humanitarian Law: Strong States and the Ratification of the ICC Treaty. Mimeo, University of North Texas, Denton. See also: Gilligan (2006)

¹⁴ Chayes, Abram, and Antonia Handler Chayes. 1993. On Compliance. *International Organization* 47(1):147-64.

¹⁵ Dai, Xinyuan. 2005. Why Comply? The Domestic Constituency Mechanism. *International Organization* 59 (2):363-98.

organizations' activity in the international political process, and comparing the use landmines with established norms of behavior led to the establishment of a norm against landmines.¹⁶ This norm in turn led many countries to sign the treaty. Similarly, in his study of the role of norms in international agreements, Hawkins (2004) claims that, because of universal norms, human rights treaties are more likely to come to fruition if they pertain to bodily harm, especially that of innocent individuals.¹⁷ This is a trend that applies to the ban on landmines. While the persuasiveness of a norm's argument takes a central role in his model, Hawkins also acknowledges the importance of states' preferences. In this way he intertwines the rationalist model with the constructivist model to create a more realistic view of the acceptance of international norms.

Clearly all of the above issues play a role in compliance with international treaties. However, none of them alone can explain the entirety of the phenomenon. I have chosen to focus on the selection bias inherent in treaty compliance as discussed by Downs, Rocke, and Barsoom and Simmons and Hopkins, and to evaluate the argument by providing a statistical study of a single treaty. I will evaluate the Downs, Rocke, and Barsoom argument within the specific case of the Mine Ban Treaty by testing whether states with a larger number of landmines have a lower propensity to sign the treaty.

¹⁶ Price, Richard. 1998. Reversing the Gun Sights: Transnational Civil Society Targets Land Mines. *International Organization* 52 (3):613-44.

¹⁷ Hawkins, Darren. 2004. Explaining costly international institutions: Persuasion and enforceable human rights norms. *International Studies Quarterly* 48:779-804.

DATA AND METHOD

The data for this study has been taken from the Landmine Monitor, a reporting agency created and managed by the ICBL that oversees the progress of signatory and non-signatory states.¹⁸ Only the 99 countries included in the September 2006 report have been used in this study. According to Jackie Hansen, the Landmine Monitor Project Manager, the reporting covers both signatory and non-signatory states because the Landmine Monitor is concerned with “mine-affected countries, those with outstanding treaty obligations, and those that have not signed the treaty.”¹⁹ Of the 99 countries used in the data, 63 have acceded to the treaty and 36 have not. While the selection of the countries used in this study is influenced by the extent of the landmine problem in the countries, with 99 states, two-thirds of which have signed the treaty, the data set has ample opportunity to validate or contradict the Downs, Rocke, and Barsoom hypothesis.

Following the logic of Box-Steffensmeier and Jones, I have created a survival time data set.²⁰ Since the treaty remains open for signing, the data may be right-censored as we do not know which countries will sign in the future and when they might do so. For this reason, treating these countries as “non-failures” could produce biased results. Furthermore, simply creating a dichotomous variable for whether or not a country signed would not fully address the question since the amount time it took a nation to sign is important in understanding the totality of the situation. To create the survival time set, I have taken the date of signing of each of the 99 countries from the Landmine Monitor. The data reports the amount of time that passed between

¹⁸ "Landmine Monitor." Landmine Monitor Report 2006: Toward a Mine-Free World. International Campaign to Ban Landmines. 30 Sept. 2006 <<http://www.icbl.org/lm>>.

¹⁹ Hansen, Jackie. "LM Report countries." E-mail to Ashley Skiles. 28 Jan. 2007.

²⁰ Box-Steffensmeier, Janet M. and Bradford S. Jones. 1997. Time is of the Essence: Event History Models in Political Science. *American Journal of Political Science* 41 (4): 1414-1461.

the day the Mine Ban Treaty opened for signing, December 3, 1997, and the date each country signed the treaty. I have specifically used the Cox proportional hazard model which is non-parametric and is able to take into account several categorical variables. This model provides hazard rates describing a country's likelihood of signing the treaty while taking into account several independent variables.

The Downs, Roche, and Barsoom argument demands that we determine the extent of the landmine problem of each country prior to signing the treaty. From the Landmine Monitor, I have calculated the extent of the problem for each country by adding the number of landmines destroyed since signing the treaty to the number of landmines remaining in each country and the number of landmines retained for training. This number signifies the amount of landmines each country possessed in 1998, the year before the Landmine Monitor began its reporting. The Downs, Roche, and Barsoom argument contends that the higher the level of landmines a country had in 1998, the lower the hazard rate, and the less likely a state is to sign.

According to the Downs, Roche, and Barsoom hypothesis, the above factor should play a large role in a country's decision to sign, however I have analyzed other factors as well. I have gathered from the Landmine Monitor information on production, under the assumption that a country that does not produce landmines is more likely to sign. I have taken into account the form of government, the amount of foreign aid per capita, and the level of development measured by GDP per capita. I have also taken into account the size of each country in terms of area, under the assumption that larger countries require more landmines in order to secure their territory. Finally, I controlled for violence within the country's borders that might increase the use of landmines. For this I recorded whether signatory countries had undergone civil war within

the ten years prior to signing and whether non-signatory countries had undergone civil war within the ten years prior to the present, specifically between 1996 and 2006.

RESULTS

One advantage of using a Cox proportional hazard model is that we can view countries' probabilities of signing on a time scale. Figure 1 shows the survival time in terms of probability. On the opening day of the treaty, the survival rate dropped to nearly 76% signifying that countries were about 24% likely to sign on the first day. After 2000 days, or about five-and-a-half years, the survival rate dropped to nearly 60%. By 3000 days, or a little over eight years, the survival rate falls below 50%. Figure 2 and Figure 3 show alternative interpretations of the survival rate. Figure 2 displays the survival rate as a function of civil war. The graph shows that countries that had engaged in civil war a decade prior to signing were at first more reluctant to sign than those who hadn't. However, after about three years, countries with civil war became more likely to sign and remained more likely to sign. Soon after 2000 days, the survival estimate of countries having undergone civil war fell below 50%, signifying that they were more than 50% likely to sign. Figure 3 divides the data by government regime, showing that democracies were much more likely to sign on the first day of the treaty and remained more likely to sign. After nearly eight years mine-affected democracies were about 60% likely to sign the treaty, while mine-affected dictatorships were only 40% likely to sign. While these graphs have interesting results in terms of what type of country was likely to sign the treaty and when, it is important to take into account that neither civil war nor the type of government was statistically significant in determining how quickly a country would sign the treaty.

The results of the survival time analysis are displayed in hazard rates in Table 1, signifying how likely a country is to sign the treaty. In Table 2, they are displayed in coefficients in order to more clearly show the relationship between the variables and likelihood of signing.

The results show that the three most significant factors in whether a country is likely to sign the treaty are the amount of foreign aid the country receives, the country's land area, and the number of landmines the country possessed in 1998. Democracy proved to be neither significant nor influential in the results. With a hazard ratio of nearly one, even if democracy had been statistically significant, it would still have had no effect on whether countries would sign the treaty. Whether or not a country engaged in civil war is surprisingly not significant. Another surprising result is that the fact that a country never used landmines is not significant. According to the Downs, Rocke, and Barsoom argument civil war and, especially, never having used landmines should play a large role in a country's decision to sign. Countries that have not engaged in civil war would theoretically have fewer landmines and be more likely to sign. Not only is civil war not statistically significant in the analysis, but its hazard rates and coefficients suggest the opposite relationship from that described by Downs, Rocke, and Barsoom. Likewise, according to the Downs, Rocke, and Barsoom theory, countries that have never used landmines would surely sign, a phenomenon not supported by the data.

In the initial statistical analysis the production of landmines was included as a variable. The Mine Ban Treaty requires countries to refrain from producing landmines, and, as per the selection-bias argument, countries that did not produce landmines prior to 1997 would be more likely to sign. However, as there are so few countries that produce landmines, the results were inconclusive.

Of the results that were conclusive, the number of landmines countries possessed in 1998, close to the time that the treaty opened for signing, was the most statistically significant. The logarithm of this number was used in the analysis in order to correct for outliers and to build decreasing marginal returns into the model. The number of landmines was most often significant at one percent, and in the case of the models six and seven, it was significant at five percent. The positive coefficients and the hazard rates, which are greater than one, show that the more landmines a country possessed in 1998, the sooner it signed the treaty. However, it is important to take into account the exact number displayed by the hazard ratios and coefficient which are very close to one and zero respectively. This shows that while the number of landmines possessed did increase the likelihood of signing, that this impact was not terribly influential.

The second most statistically significant factor is the land area. The logarithm of the land area measured in squared kilometers was used. The results show that the greater land area a country possesses the less likely it is to sign the agreement. This factor seems to play a larger role in accounting for a country's decision when fewer factors are taken into consideration as seen in models six and seven. It is important to note that this variable in particular has three major outliers: the US, China, and Russia. These three countries have not signed the treaty, and as they all rank in the four largest countries by area, they significantly influence the analysis. Once these outliers are removed, the coefficients and hazard ratios change, in all but Model 7, to show that the larger a country is that more quickly it will sign. The result in Model 7 remained statistically significant at one percent, however four of the six other models were significant at least at five percent.

The amount of foreign aid received by countries is also statistically significant. Again, the logarithm of foreign aid was used to reduce the impact of outliers in the data and decrease

marginal affects. The results show that the more foreign aid a country receives, the more quickly it will sign the treaty. Foreign aid is statistically significant at five percent and ten percent, except in model four. The hazard ratios have a value of about 1.3 while the coefficients are between 0.2 and 0.3. These values show that there is a considerable influence of foreign aid on a countries likelihood of signing. Countries with more aid will sign about a third faster than countries that receive no aid.

The logarithm of countries' gross domestic product per capita was used to control for the level of development within the countries. This variable was only statistically significant in two of the models. In model five it is significant at ten percent and in model seven it is significant at one percent. The hazard ratios of 0.748 and 0.663 and the coefficients with values of -0.290 and -0.411 show that as GDP per capita increases in a nation, that nation is less likely to sign. While it seems that the US might be an outlier in this instance, once it is removed from the data, the results hardly change.

Taking into consideration the statistical significance of the variables used in this analysis, the most important factors are foreign aid and the number of landmines countries possessed in 1998. The numbers show a correlation between high levels of foreign aid received, large numbers of landmines possessed, and the celerity with which countries signed the treaty. This analysis clearly shows that, contrary to the Downs, Rocke, and Barsoom argument, countries with high numbers of landmines are not shying away from signing the treaty. While no firm causal story can be extrapolated from the statistics, one could speculate that the countries which receive large amounts of foreign aid and have larger landmine problems are more likely to sign the treaty and to do so sooner, possibly due to the aid those countries receive upon signing the Mine Ban Treaty. Perhaps, as argued in Meernik and Shairick (2005), larger, more powerful

nations are influencing weaker countries to sign the treaty. One could even see this as “buying policy,” in which wealthier countries provide aid to less powerful countries in order to gain policy change.

CONCLUSIONS

Downs, Rocke, and Barsoom argue that although compliance among nations is satisfactory, cooperation in international agreements may not be as satisfactory since states sign treaties when they know it will be easy for them to comply. Had the Mine Ban Treaty data conformed to the argument, countries that never used landmines would have been statistically significant, and there would have been a negative correlation between countries’ landmines problems in 1998 and the likelihood of signing.

The statistical investigation carried out in this study does not support the Downs, Rocke, and Barsoom theory. Rather, the analysis seems to follow the Meernik and Shairick example. The data shows that high levels of landmines in 1998 and high levels of foreign aid received by a country influenced that country to sign sooner. The results of this study describe a different phenomenon in the understanding of international cooperation and international compliance. Countries do not simply sign a treaty when they are already in compliance with it. The increased 1998 landmines levels show us that countries sign a treaty even when compliance is a difficult task. That signatory countries often receive large amounts of aid may imply a scenario in which wealthier countries are pushing those countries to sign in exchange for aid. It may also indicate that countries with many landmines that already receive aid are likely to sign in order to obtain more aid and further benefit their respective domestic situations. While the causal story between foreign aid and landmine numbers may not be definite, we can reject the Downs, Rocke, and

Barsoom hypothesis that, within this set of data, countries only signed the Mine Ban Treaty when compliance was easy.

Figure 1: Survival Estimate

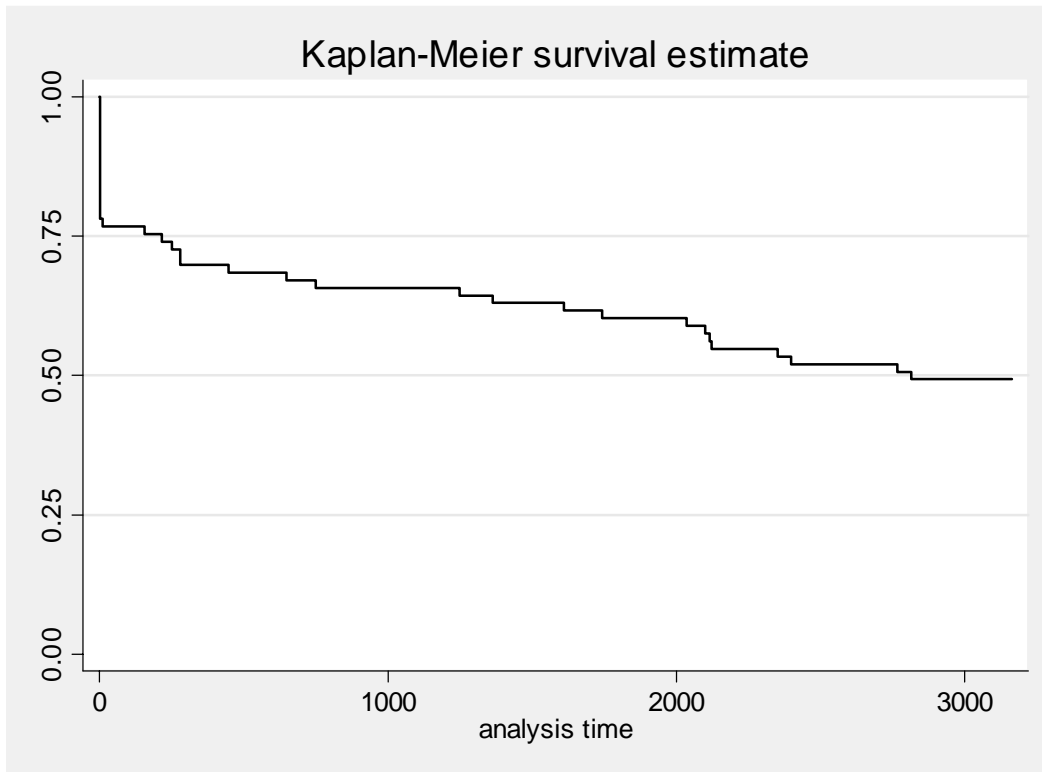


Figure 2: Survival Estimate by Civil War

Zero signifies no civil war, one signifies civil war

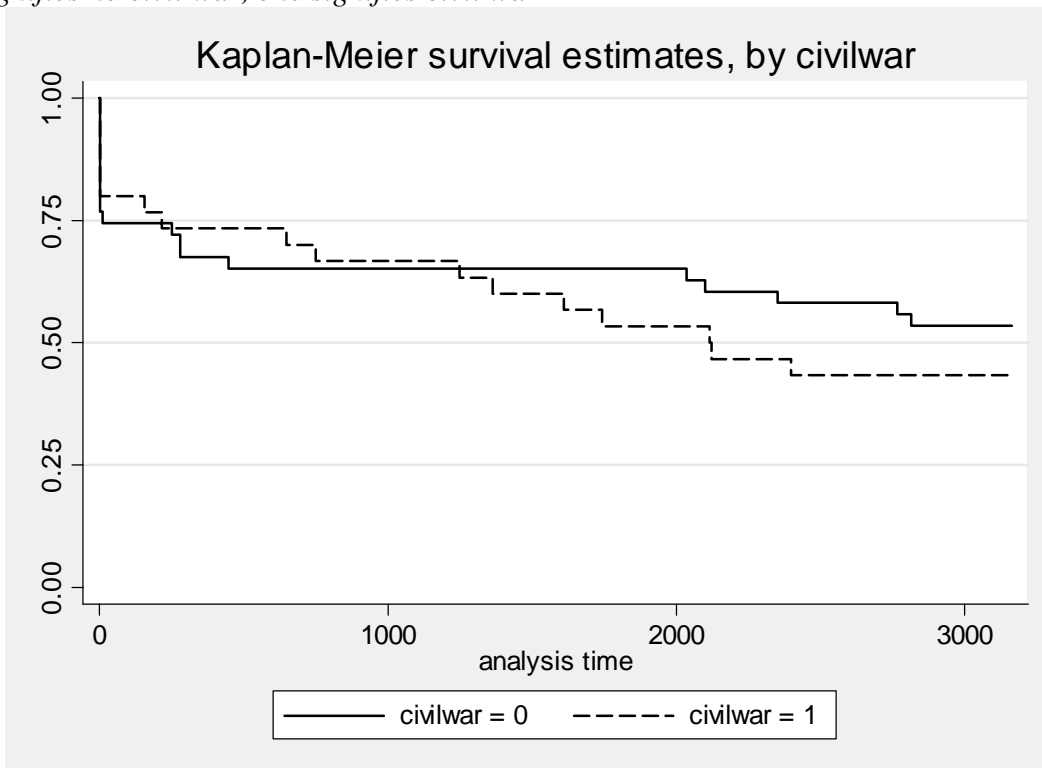
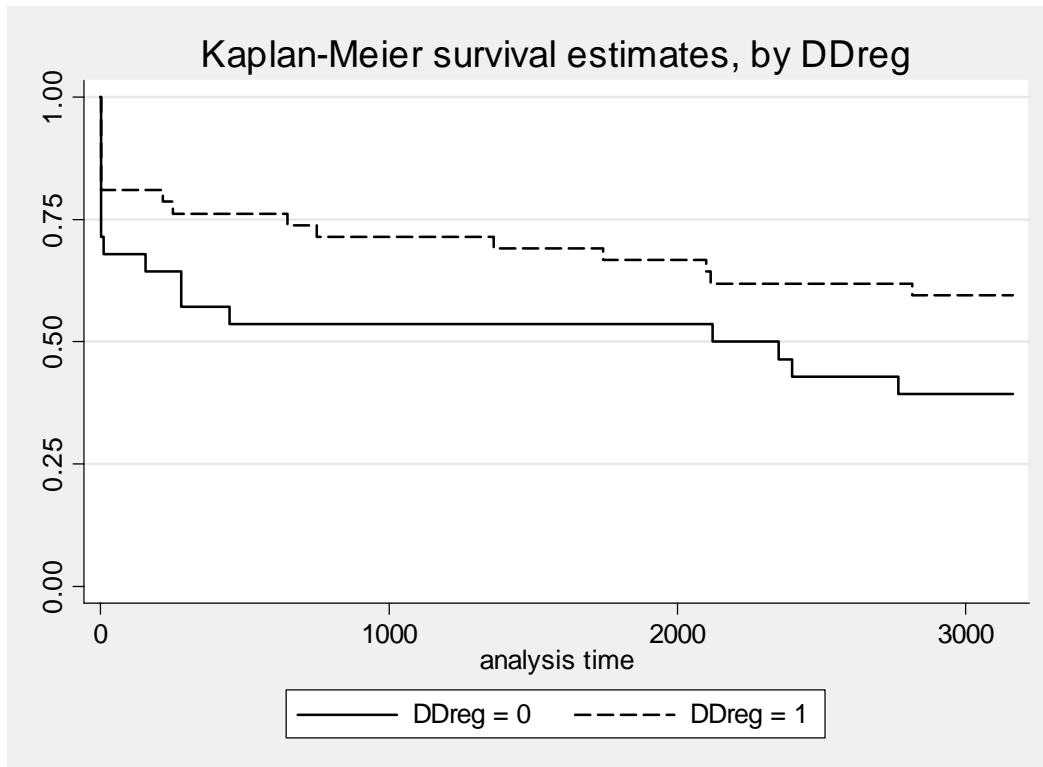


Figure 3: Survival Estimate by Regime
Zero signifies democracy, one signifies dictatorship



HAZARD RATES AND Z-SCORES

Table 1

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Auto/Dem	0.999		0.961				
	0.00		-0.11				
Foreign Aid	1.346*	1.332**	1.320*	1.311**	1.253	1.225**	
	1.88	2.07	1.86	2.13	1.64	2.03	
Land Area	0.744**	0.745**	0.753**	0.750	0.760**	0.742***	0.667***
	-2.38	-2.52	-2.28	-2.48	-2.35	-2.83	-3.88
GDP per capita	0.902	0.833	0.837	0.792	0.748*		0.663***
	-0.50	-1.06	-0.95	-1.45	-1.92		-2.99
Landmines in 1998	1.096***	1.095***	1.082***	1.083***	1.087***	1.065**	1.059**
	2.76	2.74	2.95	3.06	3.12	2.50	2.28
Never used LMs	1.236	1.218					
	5.50	0.45					
Civil War	1.540	1.520	1.582	1.558		1.576	1.326
	1.25	1.25	1.34	1.31		1.54	0.76
Observations	39	41	41	43	43	47	45
* significant at 10%; ** significant at 5%; *** significant at 1%							

COEFFICIENTS AND Z-SCORES

Table 2

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Auto/Dem	-0.001		-0.040				
	0.00		-0.11				
Log Aid	0.297*	0.287**	0.277*	0.271**	0.226	0.203**	
	1.88	2.07	1.86	2.13	1.64	2.03	
Log Land Area	-0.296**	-0.295**	-0.283**	-0.288**	-0.275**	-0.299**	-0.406***
	-2.38	-2.52	-2.28	-2.48	-2.35	-2.83	-3.88
Log GDP per cap	-1.040	-0.182	-0.178	-0.234	-0.290*		-0.411***
	-0.50	-1.06	-0.95	-1.45	-1.92		-2.99
Log # LMs 98	0.092***	0.091***	0.078***	0.080***	0.083***	0.063**	0.057**
	2.76	2.74	2.95	3.06	3.12	2.50	2.28
Never used	0.212	0.197					
	5.50	0.45					
Civil War	0.432	1.418	0.459	0.443		0.455	0.282
	1.25	1.25	1.34	1.31		1.54	0.76
Observations	39	41	41	43	43	47	45
* significant at 10%; ** significant at 5%; *** significant at 1%							

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