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Explaining the Proliferation and Design of International Investment Agreements

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Abstract

This Master's thesis aims to answer two questions: (1) Why do states sign international investment agreements (IIA)?; (2) What determines the substantive strength of these agreements? I use an event history analysis and an ordered logit model, respectively, to answer these questions. I find partial support for the hypothesis according to which the interests of capital-exporting states determine the pattern of IIA diffusion. While the results of my second test are somewhat inconclusive, they allow me to draw a number of interesting lessons for future research.

Ce mémoire de maîtrise a pour objectif de répondre à deux questions: (1) Pourquoi les États signent-ils des accords internationaux d'investissement (AII)?; (2) Qu'est-ce qui détermine la force de ces accords? J'utilise un modèle de survie et une régression logistique ordonnée, respectivement, pour répondre à ces deux questions. Les résultats de mon analyse supportent l'idée selon laquelle l'intérêt des pays exportateurs de capital est un déterminant important de la diffusion d'AIIs. Bien que les résultats de mon second test ne soient pas aussi concluants, ils indiquent clairement la route que devraient emprunter les travaux futurs sur le thème des IIAs.

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Dedication

Je dédie ce mémoire à Sari et Mailis puisque ce sont elles qui ont été le plus affectées par les conséquences de ma procrastination. Je remercie mes parents Évelyne et Laurent, ainsi que mes grands-parents Liane, Marcel et Pacifica pour leur constant support. Finally, I would also like to dedicate this thesis to Killer Kowalski (1927-2008), a true wrestling legend.

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Chapter 1

An Introduction to International Investment Treaties

Foreign direct investment (FDI) is an increasingly important feature of international economic relations and world politics; globally, FDI inflows rose to 1,833 Billion US$ in 2007 (see figure 1).[1] Despite the enormous quantity of capital involved and the large number of countries which contribute to these flows, no strong multilateral legal framework has been devised to regulate FDIs. In fact, attempts at developing such a multilateral framework have either failed[2], or resulted in agreements that offered only weak protection to investors[3].

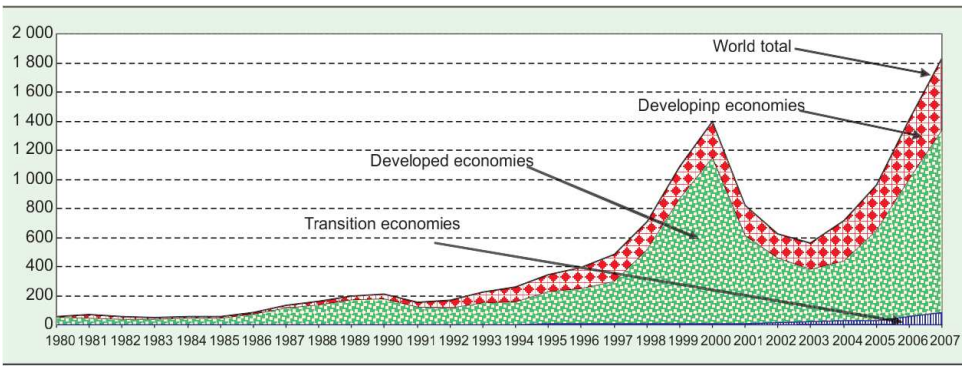
Instead, states and private investors have relied on a complicated web of overlapping bilateral and multilateral treaties to help settle their international

[1] United Nations Conference on Trade and Development (2008)

[2] See for example the failed negotiations around the Multilateral Investment Agreement initiative at the World Trade Organization.

[3] See for example the General Agreement on Trade in Services (GATS), which covers foreign investment under the umbrella of the 3^{rd} mode of delivery for services (commercial presence), but which provides very little in terms of concrete recourse if an investor considers that a policy from the host state affects the value of its investment.

Figure 1.1: FDI inflows: global and by groups of economies, 1980-2007 (Billions of dollars)



Source: UNCTAD, World Investment Report 2008

investment disputes. Given the high number of such agreements, the value of the investments they cover, and considering the fact that international investment agreements (IIAs) often include dispute settlement mechanisms that have teeth, IIAs are an important and interesting object of study.

In this Master's thesis, I address two questions. Firstly, I ask why countries sign IIAs? Using event history analysis with a large-n population of cases, I focus on the effect of capital-exporting countries' interests and preferences on the pattern of diffusion of investment agreements. Secondly, I investigate the determinants of the strength of IIAs' dispute settlement provisions. Again, I am particularly interested in the impact of the preference for protection of capital-exporting countries on the strength of the agreements. I use an ordered logit model on a large sample of agreements.

After a brief discussion on the nature, content, and historical evolution of international investment treaties, chapter 2 offers a survey of the extant literature on the topic. Chapters 3 and 4 present the methodology used to answer my first question, and the results of my test. Chapters 5 and 6 describe the methods and results of my second test. I conclude my thesis with a short

self-reflective note, and some thoughts on lessons for future research.

1.1 The Treaties

International Investment Agreements can take a variety of forms including bilateral investment treaties, or special chapters in bi- or multilateral trade agreements.[4] They are usually crafted using similar language, and are most often structured around a standard template.

IIAs generally begin with a declaration of common purpose (preface) that is followed by a 'definitions' section which lists the types of investors, investments, and territory that are covered by the treaty. There follows a section on the 'protection and promotion of investment', which is usually composed of a series of general standard of treatment clauses such as the 'most-favored nation' (MNF) and/or 'national treatment' (NT). In addition, the treaties can set guidelines for the international transfer of funds, for adequate compensation in case of expropriation, or for allowable exceptions (e.g. national emergencies, public health, etc.).

Finally, IIAs often define the procedures to follow when a dispute arises between states, or between a private investor and a host state. Signatories sometimes grant their pre-consent to participate in binding dispute settlement proceedings initiated under the purview of the International Center for the Settlement of Investment Disputes (ICSID), the United Nations Commission on International Trade Law (UNICTRAL), or the Stockholm Chamber of Commerce (SCC).[5] Agreeing to implement the decision of an independent arbitral body can entail significant losses in terms of sovereignty and policy-making

[4]Canada's Foreign Investment Promotion and Protection Agreements are examples of the former category; NAFTA's chapter 11 of the latter.

[5]I thank Yoel Furman for producing the coding scheme on which much of this section is based. The coding scheme was created in the context of a BIT research project headed by Professor Mark Manger of McGill University.

autonomy. Indeed, defendants whose actions are found to be inconsistent with their obligations under an IIA can be asked to reverse their policies and pay considerable amounts of monetary compensation to the plaintiff.[6]

1.2 BITs in Historical Perspective

Before states started signing bilateral investment treaties *en masse* in the 1960s, foreign investors benefited from two main sources of protection: Friendship, Commerce and Navigation treaties (FCN)[7], and customary international law.

FCN treaties are precursors to the BIT, and have been concluded by pairs of countries for over two centuries; the United States signed its first FCN soon after the birth of the country.[8] While the principal functions of these treaties were to promote international trade and improve international relations, they also included a number of provisions designed to protect foreign direct investment. Most importantly, FCNs established precedents for the treatment of investors that were expropriated. "By the mid-nineteenth century, [FCNs] prohibited the seizures of 'vessels, cargoes, merchandise and effects' of other party's nationals without payment of 'equitable and sufficient compensation'. Later treaties broadened this guarantee to 'property' generally" (Vandevelde, 1988, 205). American FCNs commonly prohibited the expropriation of alien property without compensation.

Despite their important role in laying down the legal infrastructure for the protection of international investment, the rise of the multilateral trade

[6]The Investment Treaty Arbitration website that is maintained by Professor Andrew Newcombe (2009) is an excellent resource on this topic. http://ita.law.uvic.ca/.

[7]As Vandevelde (1988, footnote 19, p. 203) points out, the term FCN is a generic one. Not all treaty titles include the words 'friendship', 'commerce' or 'navigation'; many of the earlier treaties were called 'amity treaties'.

[8]In the early years, FCN agreements were signed by the United States with Prussia (1785), Morocco (1787), England (1794), and Spain (1795) (Vandevelde, 1988, 204).

regime and of the GATT meant that they would gradually lose their place as important tools for trade governance. Accordingly, many countries had abandoned their FCN programs by the 1960s (Guzman, 1997).

Until then, foreign investors whose investments were not covered by a FCN could still hope to enjoy the protection of customary international law when they faced governmental actions that were tantamount to expropriation. In effect, the prevailing view among capital-exporting, developed nations at the beginning of the 20^{th} century, was that international law should help insure that investors were compensated if a host country decided to expropriate them (Guzman, 1997). The modern legal expression of this belief was presented by U.S. Secretary of State Cordell Hull in a note addressed to the Mexican Minister of Foreign Affairs concerning the confiscation of agrarian and oil assets by the state of Mexico (1915-1930):

> "The Government of the United States merely adverts to a self-evident fact when it notes that the applicable precedents and recognized authorities on international law supports its declaration that, under every rule of law and equity, no government is entitled to expropriate private property, for whatever purpose, without provision for prompt, adequate, and effective payment therefore.[9]"

The Hull Rule of 'prompt, adequate, and effective payment' was the legal principle which, most capital-exporting countries argued, best represented the customary practice that had been established over the years with regard to the treatment of foreign investments (Vandevelde, 1998; Guzman, 1997). This view, however, did not go unchallenged.

The Calvo doctrine[10], which holds that national courts hold full jurisdiction to adjudicate disputes between international investors and host country, had had proponents since before the Second World War. For instance, Mexico

[9]Cited in Guzman (1997).

[10]The Calvo doctrine was named after the Argentinian jurist Carlos Calvo (1824-1906).

already affirmed in the 1930s, and in no uncertain terms, that it did not consider itself bound by a rule of prompt, adequate, and effective compensation. In a note written in 1938 by its Minister of Foreign Affairs concerning the expropriation of American property in the early part of the 19^{th} century, we read:

> "[m]y Government maintains... that there is in international law no rule universally accepted in theory nor carried out in practice, which makes obligatory the payment of immediate compensation nor even of deferred compensation, for expropriations of a general and impersonal character..."[11]

This contestation was amplified by the 1960s wave of decolonization, when many countries took hold of an international voice that was, until then, subordinated to that of their colonizers. Along with other LDCs, these new sovereign states started questioning the status of the Hull Rule as a part of customary international law.

As Guzman (1997) shows, the United Nations' General Assembly provided LDCs with a powerful institutional framework through which they could channel their grievances against the prevailing norms of treatment for international investment. With LDCs holding majority in this forum, the U.N. General Assembly passed a series of resolutions to affirm the jurisdictional autonomy of host countries. For instance, the 1973 Resolution on Permanent Sovereignty over Natural Resources (Resolution 3171), stated that

> "the application of the principle of nationalization carried out by States, as an expression of their sovereignty in order to safeguard their natural resources, implies that each State is entitled to determine the amount of possible compensation and the mode of payment, and that any dispute which might arise should be settled in accordance with the national legislation of each State carrying out such measures."[12]

[11] Cited in Guzman (1997, 646).
[12] Cited in Guzman (1997, 649)

Resolution 3171 was adopted with 108 votes (countries) for, 1 against, and 16 abstentions. While the adoption of such resolutions by the General Assembly did not necessarily signal that the Calvo doctrine would thereon be considered part of customary international law, it certainly did make it hard to argue that the Hull Rule was a prevalent and accepted standard in international investment law (Guzman, 1997).

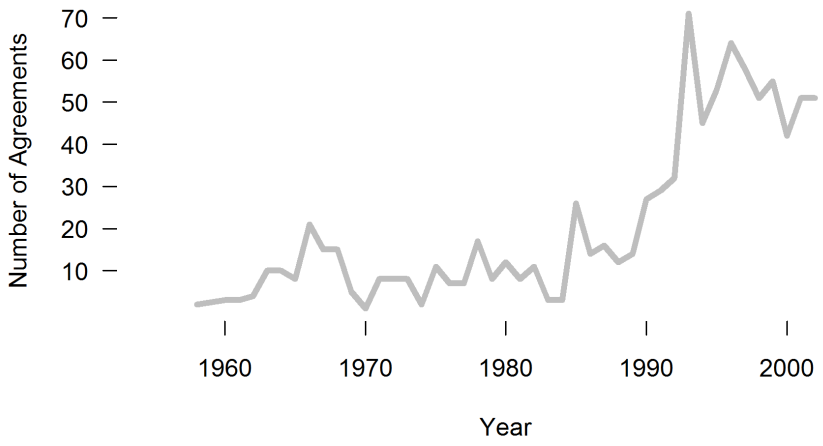
With the demise of the Hull Rule, and the unwinding of FCN treaties, capital-exporting countries sought to develop new tools to protect their outward stocks of FDI. Bilateral investment treaties imposed themselves as the principal response to this challenge.

After the first BIT[13] was signed in 1958, a number of European countries started negotiating them. For instance, West Germany signed forty-six BITs between 1962 and 1972, Switzerland twenty-six, and the Netherlands sixteen (Vandevelde, 1988; International Center for Settlement of Investment Disputes, 2009). Other countries started signing BITs rather belatedly. The United States, for example, launched its BIT program only under the Carter administration, in the late-seventies. It undertook to do so as a response to a series of expropriation action that had been taken against its interests abroad. The United States, like most other capital-exporting countries, generally had three interrelated objectives in mind when signing BITs: (1) to protect current stocks of FDI, (2) to reaffirm that the protection of investments is an important priority of foreign policy, and (3) "to establish a body of practice to support the [...] view of international law governing the protection of foreign investment" (i.e. creating new precedents to support the idea that the Hull Rule is indeed part of customary international law) (Vandevelde, 1988, 210).

This suggests that the preferences and policy objectives of developed states

[13]BITs were then called 'Bilateral Investment and Protection Agreements' (Vandevelde, 1988).

Figure 1.2: Number of BITs that have entered in force each year (1958-2004)



have had an important impact on the development of this legal instrument.

1.3 BITs Today

Today, the BIT has become an extremely common feature of the international legal framework that regulates global investment flows. Whereas there were only 385 of them in 1989, 2,265 BITs had been signed by 2003 (United Nations Conference on Trade and Development, 2009). Given the considerable resources that are invested in the negotiation of these agreements, and considering the limits that they impose on the sovereignty of the states that sign them, it is not surprising to see that IIAs have generated a lot of interest in academia across the disciplines of law, economics and political science. Sections 2.0.1 and 2.0.2 present the main findings of the empirical literature on the topic of bilateral investment treaties.

Chapter 2

A Brief Survey of the Literature

2.0.1 The Effects of International Investment Agreements

Conceptual Problems in the Analysis of BITs A superficial survey of the preambles that open some of the BITs shows that signatory states place much emphasis, at least rhetorically, on the role of these agreements in increasing foreign direct investments (FDI). This (expected) positive relationship is one of the central claims that is used to legitimate the loss of sovereignty that these agreements impose. A number of scholars have attempted to ascertain the empirical validity of this relationship, but the analysis is plagued with empirical and theoretical difficulties.

The first major problem is that most analysts have lumped all agreements together in a large sample, disregarding the fact that all BITs are not equally strong. In fact, the difference between them can be quite stark, going from a simple declaration of good intent, to a strong agreement, with broad coverage, and pre-consent to binding arbitration. It would seem, therefore, that one has to take stock of the relative strength of each agreement when running statistical tests to determine their impact on FDI growth. Doing so, however,

is not straightforward.

Most IIAs include a MFN clause, a sort of 'ratchet mechanism' whereby the signatory countries agree to grant each other the most favorable terms of protection they accord any third party. Over the years, MFN has had important liberalizing effects on international investment, since signing a stricter BIT automatically raises the standard of protection given to investors from all countries with which an IIA with MFN has been signed.[1] The proliferation of BITs has created a very complex web of interweaving agreements, which makes any attempt at evaluating the substantive coverage of a single BIT rather hopeless (Yackee, 2007). It is thus important to remain conservative when interpreting the results of empirical analyses of the type described above.

The second problem that one encounters when trying to evaluate the internal validity of previous studies on the topic, is that most of them have failed to define the relevant universe of treaties. In effect, most of the data used in the empirical literature comes from a list of agreements maintained by United Nations Conference on Trade and Development (2009), and this dataset only contains information on treaty signature, not entry in force. It also does not include treaties that would include BIT-like provisions such as NAFTA's chapter 11. Yackee (2008) goes a long way to palliate this problem, which is why I use his data here (see section 3.5 for a more complete description).

Finally, there is an important endogeneity issue. The causal mechanism that links the entry into force of a BIT (IV) to movements in foreign direct investment (DV) is clearly described in the economics literature (see section 2.0.2). One could argue, however, that the causal arrow also runs in the opposite direction. It is indeed quite likely that more (anticipated) investment opportunities leads to an increase in demand for protection from firms that

[1]For an interesting take on the Most-Favored Nation and its role in the sustenance of the liberal trade regime, see Coutain (2009).

have sunk important sums in a capital importing country. Very few of the studies reviewed below have addressed this problem directly.

Even if one would agree to disregard the above three problems, I show below that the evidence concerning the effect of IIAs on FDI flows remains inconclusive.

BITs and FDI Flows In an article published in 2003, Hallward-Driemeier (2004, 22) analyzed bilateral FDI outflows from OECD countries to developing countries over the period 1980-2000, but found "little evidence that BITs have stimulated additional investments." Rose-Ackerman and Tobin (2005), for their part, find a very weak relationship between BITs and investment flows. Furthermore, that relationship is only positive where the business environment is already stable.

With an original dataset that includes a measure of the strength of the dispute settlement provisions in every BIT, and using a dyadic time-series cross-sectional design, Yackee (2008) also concludes that the agreements do not bear heavily on the movements of foreign investments.

In contrast, Neumayer and Spess (2005) find what they consider to be "robust evidence" that signing BITs has a non-negligible, positive impact on FDI inflows. They argue that this effect is sometimes conditional on the quality of domestic institutions in the countries that sign them.

Salacuse and Sullivan (2005) use two statistical models to evaluate the effect of BITs on investment flows. The first is a cross-sectional analysis of aggregate FDI inflows to more than 100 developing countries. This regression is repeated three times, once for each of the years 1998, 1999, and 2000. The second model they use is a time-series analysis of dyads formed by (A) the United States, and (B) one of 31 developing countries. The authors try to establish if signing a BIT with the U.S. increases its bilateral FDI outflows.

Both models suggest that it does.

Kerner (2009) uses a more sophisticated dyadic research design and concludes that "(1) BITs attract significant amounts of investment; (2) BITs attract this investment from protected and unprotected investors; and (3) these results are obscured by endogeneity unless corrected for in the statistical model."

In sum, decision-makers cannot rely on an unambiguous body of empirical studies to justify their decision to sign and ratify BITs.

BITs and Domestic Policy-Making Aside from their potential effect on FDIs, BITs can also have an impact on domestic policy. Manger (2008) has shown that International Investment Agreements can impede a government's ability to enact regulation that would stimulate competition in its domestic markets (e.g. antitrust regulation in the services sector). In *Why LDCs Sign Treaties That Hurt Them*, Guzman (1997) sets out to explain the proliferation of North-South BITs, but frames his puzzle by emphasizing the fact that BITs can have detrimental effects for LDCs, particularly in terms of policy autonomy/sovereignty.

Along these lines, Ginsburg (2005) suggests that BITs can hinder institutional improvements and good governance in developing countries. Because they offer an exit option to powerful actors who can use international dispute settlement mechanisms to avoid local judicial institutions, BITs can prevent the formation of a coalition in support of domestic institutional improvement. In other words, IIAs can create a trap of low-quality institutions.

BITs can also impose considerable costs on politically and economically sensitive states when they fail to fulfil their obligations. In response to the economic crisis it faced in 2001-2002, the Argentinean government enacted the 'Public Emergency Law of 2002'. This law included a series of measures that

affected the value of investments that had been made in Argentina by foreign firms and individuals. For instance, it terminated the one-to-one convertibility between peso and US$, a change which brought a severe devaluation of the peso; and it froze tariffs in the energy and utility sectors. After the enactment of this law, a large number of multi-million dollar claims were made by foreign investors using the dispute settlement mechanisms that were part of Argentina's bilateral investment treaties portfolio (Di Rosa, 2004).[2] The large number, and high value of these claims, has the potential to create a regulatory chill that could reduce the likelihood that developing countries will enact policies that would be optimal in times of economic crisis.

2.0.2 Why Do States Sign IIAs?

Many law scholars and economists have attempted to address this above question, but few have moved beyond theory to offer an empirically informed answer. The two functions that are most often cited as reasons to sign IIAs are: (1) insuring multi-national enterprises (MNE) against the 'obsolescing bargain', and (2) signalling the resolve of a state to foster a favorable business environment.

Obsolescing Bargain In his classic book *Sovereignty at Bay*, Raymond Vernon (1971) exposed the logic of the 'obsolescing bargain'. The premise of his argument is that there exists an inherent conflict between international investors and host countries over the relative distribution of the joint gains of investment (i.e. about wage levels, taxation, pricing of state-supplied inputs, etc.) (Kobrin, 1987, 612). In the pre-establishment phase, multinational entreprises (MNE) have maximum leverage to extract concessions from the

[2]Di Rosa (2004, 73) identified 85 pending ICSID cases in 2004, of which at least 35 concerned Argentina.

host governement since they can credibly threaten exit by investing elsewhere. Post-establishment, however, the roles are reversed. An MNE's investment costs are sunk, and the host government faces strong incentives to extract a rent from the foreign investor, since high relocation costs make it unlikely that it will pull back its investment. This is a clear instance of the 'time inconsistency' problem which arises when the *ex ante* optimal strategy for an agent becomes suboptimal *ex post*.

In theory, IIAs resolve this issue by binding states to dispute settlement procedures that can lead to the imposition of high *ex post* costs if states implement policies that are found to be inconsistent with their obligations. Accordingly, signing a BIT should increase the expected benefit of foreign direct investment, by lowering the probability that a host country will extract a rent, or implement policies that are, in the controversial legal formula, 'tantamount to expropriation'. Higher expected utility should, in turn, attract more FDI to countries who sign IIAs.

This mechanism can only generate effects at the bilateral level. This is important since this fact needs to be reflected in the model selection, that is, in whether the analyst chooses to consider the effect of IIAs on aggregate, or bilateral FDI inflows.

Signalling International investment agreements are also said to signal the host country's resolve to treat FDI in accordance with recognized minimum standards. By signing a BIT, a country 'puts its reputation on the line', since reneging on a commitment that was enshrined in a bilateral treaty can entail important reputational costs. While incurring these costs may well be an efficient way to achieve short-run policy objectives, they might be inefficient on the long-term for countries who aim to attract investment (Buthe and Milner,

2008).[3]

In contrast to the effect described under the previous heading, it could be argued that the signalling benefits of signing a bilateral investment treaty apply to the aggregate FDI inflows of a host country. They are also expected to be somewhat cumulative; agreeing to more IIAs would thus signal more good intentions.

As I mentioned above, deriving these IIA functions theoretically does not suffice to explain why countries sign IIAs. An empirically informed inquiry is necessary.

Empirical Analysis of Policy Diffusion Few authors have used quantitative data analysis to adress the underlying mechanism that sustains the global diffusion of IIAs. The article *Competing for capital: The diffusion of bilateral investment treaties, 1960-2000* is an important exception (Elkins, Guzman and Simmons, 2006).

Using event-history analysis, the authors find "that the diffusion of BITs is associated with competitive economic pressures among developing countries to capture a share of foreign investment". In essence, they contend that LDCs are more likely to sign IIAs when their peer countries[4] sign IIAs with capital-exporting countries.

Neumayer and Plümper (2009) extend the analysis by using the same data as Elkins, Guzman and Simmons (2006), but they experiment with different specifications of the spatial weight matrix. "[R]ather than a capital importing country being influenced by the total number of BITs signed by other capital

[3]I refer the reader to Keohane (1984) and Axelrod (1984) for classic discussions on the topic of cooperation with iterated interactions, and to Mercer (1996) for an interesting take on the concept of reputation.

[4]Peer countries are those that effectively compete against each other for the attraction of the same types of investment. For instance, they could have similar resource endowments (e.g. relatively cheap labor), or they could export a similar basket of goods.

importers, as modelled in the original article, [the authors find that] a capital importing country is only more likely to sign a BIT with a capital exporter if other competing capital importers have signed BITs with this very same capital exporter."

In section 5.1, I improve on the Elkins, Guzman and Simmons (2006) research design in two chief ways. Firstly, recognizing that North-North, South-South, and North-South BITs are likely to be concluded for different reasons, I avoid the inappropriate pooling of dyads by only considering those that are composed of (A) a capital-exporting, and (B) a capital-importing country. Secondly, I add important control variables to account for a factor that the authors do not treat adequately in their analysis: the capital-exporting countries' preferences.

Chapter 3

Why Do States Sign IIAs?

In this chapter, I explore the reasons that lead state dyads to conclude international investment agreements. Most previous works on this question have addressed the puzzle from the perspective of developing countries, who face a trade-off between their sovereignty and the usefulness of the IIA as a commitment device. In contrast, I focus on the interests of capital-exporting states, interests which I expect to be a leading determinant of the diffusion of this policy instrument.

First, I consider the arguments put forth in an article by Elkins, Guzman and Simmons (2006). In this text, the authors explicitly contend that the interests of capital-exporting states cannot explain the pattern of diffusion of bilateral investment treaties. I show that their argument rests on assumptions that are unsupported by the empirical evidence they produce. I conclude this section by reinterpreting the historical pattern of BIT diffusion in a way that is consistent with the idea that the interests of developed states matter.

In the second part of the chapter, I present my research design for a large-n study of international investment agreements using event history analysis. The results of this model are presented in chapter 4.

3.1 Whose interests matter?

3.1.1 The Elkins Argument

Under the heading *Leaders and Followers in BIT agreements*, Elkins, Guzman and Simmons (2006) reject power-based theories which would predict that the pattern of BIT diffusion follows the interests of developed states.[1] The authors base their judgement on two observations.

Firstly, they state that the existence of a programmatic effort on the part of capital-exporting countries would imply that the agreements they sign are temporally clustered. Measuring kurtosis, that is, the degree to which the distribution of BITs over time is peaked/clustered, they find that average kurtosis is higher for developing countries than for developed countries. Thus, the authors conclude, the empirical evidence shows that the latter set of countries have not deployed a programmatic effort to sign bilateral investment treaties.

Secondly, they argue that the core terms of bilateral investment treaties are quite consistent across a large range of dyad types. They take this as evidence that "major capital exporters stand ready with model treaties in hand, the decision whether and when to sign is left to a large extent to the host" (Elkins, Guzman and Simmons, 2006, 822).

A minor problem with this analysis is that the authors measure kurtosis with the full population of dyads, but draw conclusions about a type of causal mechanism that applies specifically to one type of dyad: one formed of a developing country and a developed one. As I explain in section 3.4.2, this type of dyad-pooling is inappropriate.

[1] In this context, the expressions 'power-based' or 'coercive' theories of policy diffusion refers to theories which focus on "power asymmetries that the strong exploit to impose their policy preferences on weaker countries" (Simmons, Dobbin and Garrett, 2006, 819). 'Coercive diffusion' is a concept that is analogous to that of 'vertical diffusion', which is discussed in the federalism and European integration literatures. For the distinction between horizontal and vertical diffusion, see Daley and Garand (2005).

More importantly, the validity of the clustering test rests on an implicit assumption whose empirical truth is not established. In effect, the understanding of the concept of 'programmatic activity' that the authors espouse implies that BIT-signing initiatives are cyclical. Presumably, the efforts of states would coincide with political cycles, where more protectionist governments would be less active in signing international investment agreements than more liberal ones.

However, the within-country distributive effects of IIAs are very different in capital-importing and in capital-exporting countries. In the former, there are important trade-offs between the potential benefits of signing IIAs, and the costs in term of sovereignty and policy autonomy. When competing interest groups seize control of government at different points in time, we could reasonably expect to observe temporal clustering in the BIT-signing behaviour of capital-importing states. In contrast, it could be argued that interest in FDI protection is quite uniformly distributed in capital-exporting countries. If this is true, then programmatic efforts do not necessarily have to exhibit the cyclical/clustered patterns that are assumed by (Elkins, Guzman and Simmons, 2006). In other words, if the demand for protection of foreign investment is positive and constant, and if few domestic groups oppose the BIT program, policy cycles might not be apparent in capital-exporting countries. Instead, we could for example observe constant, but regionally targeted programs. Incidently, this would be consistent with the fact that developing countries' BITs are signed in clusters. If an exogenous shock suddenly renders a new region attractive for foreign investors, many developed states might simultaneously become interested in signing BITs with states from that region. If a large number capital-exporting countries sign a few BITs each with a limited subset of developing countries, as was the case at the end of the Cold War, average

kurtosis could well be significantly higher for developing than for developed countries.

3.2 Hypothesis #1

Assuming that A is a capital exporting country and that B is a capital importing country:

- *Hypothesis #1:* The intensity of A's preference for investor protection in B is positively related to the hazard that an IIA between A and B will enter into force at time-t.

3.3 Event-History Analysis[2]

The statistical technique used to test empirically the validity of hypothesis #1 is the event history analysis (EHA). EHA (or 'survival analysis', or 'duration analysis') is a form of pooled cross-sectional time series analysis that has long been used in biostatistics to study the risk of occurrence of particular events in time (Berry and Berry, 1990). More recently, social scientists have found a vast array of questions for which EHA provides novel answers.

In political science, the technique seems to have first been introduced by Berry and Berry (1990) in support of their analysis of the diffusion of state lotteries in the United States. It is now considered to be the standard approach to evaluate diffusion effects on the probability of occurrence of non-repeating events (Mooney, 2001). As I show below, recent statistical advances allow us to harness the power of the method, even when applied to repeatable events.

[2]This section owes much to Box-Steffensmeier and Jones (2004). Unless otherwise noted, the narrative and mathematical notation employed in this section follow theirs.

In order to adequately interpret the results of my analysis, it is useful to review the main conceptual and mathematical components of EHA. This review is conducted in sections 3.3.1 through 3.3.5.

3.3.1 Dependent Variable: The Hazard Rate

The first important conceptual block on which EHA is built is the notion of 'survival time'. It refers to the time elapsed between an individual's entry in the population, and the time at which she experiences the event that is monitored. In the case at hand, the survival time is equal to the number of years between the beginning of my sampling (1958), and the time at which an IIA enters into force for a given dyad. Using the assembled dataset, I calculate the survival time of each individual country pair, that is, the length of time during which dyads 'survive' without having concluded an IIA.

Using the survival time, we can compute a probability distribution of the form seen in equation 3.1:

$$F(t) = \int_0^t f(u)d(u) = Pr(T \leq t) \tag{3.1}$$

The preceding equation represents the probability that a single, given survival time T is less than or equal to some value of t (Box-Steffensmeier and Jones, 2004). In other words, it refers to the cumulative probability that a particular dyad will have survived without IIA for a number of years T equal to, or inferior to t.

Where F(t) is differentiable, we can define a density function:

$$f(t) = F'(t) = \frac{dF(t)}{d(t)} = \lim_{\Delta t \to\ 0} \frac{Pr(t \leq T \leq t + \Delta t)}{\Delta t} \tag{3.2}$$

This density function can be interpreted quite intuitively. It is the instan-

taneous probability of failure over a very small area Δt. This density function is a crucial element of EHA since, as is shown below, it allows the analyst to construct the (underlying) dependent variable.

The second important concept in EHA is the 'survivor function'. The survivor function is complementary to the probability distribution function, since it denotes the probability that a survival time T is higher than, or equal to some time t. It can also be understood as the proportion of units that have not experienced the event when time t is reached (Box-Steffensmeier and Jones, 2004). Mathematically, we have:

$$S(t) = 1 - F(t) = Pr(T \geq t) \tag{3.3}$$

While the observed dependent variable can be considered to be the occurrence of an event (i.e. entry in force of an IIA), the true dependent variable used in EHA should rather be understood as an underlying, unobserved statistical object that is obtained by combining the concepts of survival function with that of density function. By doing so, we obtain the hazard rate:

$$h(t) = \frac{f(t)}{S(t)} \tag{3.4}$$

The hazard rate can be interpreted as "the rate at which units fail by t given that the unit had survived until t (Box-Steffensmeier and Jones, 2004)" For example, the hazard rate for the year 1974 corresponds to the rate at which units fail in 1974, when taking into account the fact that the surviving dyads have remained in the sample without experiencing the event until 1974. The hazard rate should thus be understood as a *conditional* failure rate.

As we will see below, the hazard rate in a discrete time model like mine will resemble a step function, since the survival of individual dyads is measured once every year instead of continuously (Box-Steffensmeier and Jones, 2004, 13).

3.3.2 Parametric Models

To conduct an EHA, one can employ a number of different approaches. Parametric models provide a convenient point of entry to a discussion of how EHA models are estimated more generally. Comparing them to the Cox proportional hazards model, described in section 3.3.3, should help justify the criteria that guided my research design and model selection.

The primary characteristic of the parametric family of models is that they assume that the hazard rate takes on a specific shape over time. The simplest one of them is the exponential model. By using it, the analyst assumes that the hazard rate is equal to a positive constant λ. The hazard rate is deemed not to vary as a function of time.

If λ is the hazard rate, then λ^{-1} must be equal to the mean duration time.[3] With this in mind, we can compute a model such as the log-linear[4] in order to parametrize the survival times, as well as the covariates that are used to explain deviations from the baseline hazard rate (λ). The expected duration time $E(t_i)$ being equal to λ_i^{-1}, we could estimate, by maximum likelihood (MLE), a model such as this one:

$$\lambda_i^{-1} = E(t_i) = exp(\beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + ... + \beta_j x_{ij}) \tag{3.5}$$

[3]See Box-Steffensmeier and Jones (2004, 23)

[4]The log-linear model would be appropriate because the survival times need to stay strictly positive. Other models with similar properties could of course be used.

The exponential model's central assumption concerning the baseline hazard has been altered to fit a range of expectations concerning the shape of hazard over time. For example, the Weibull model assumes $h(t) = \lambda p(\lambda t)^{p-1}$; the log-logistic, $h(t) = \frac{\lambda p(\lambda t)^{p-1}}{1+(\lambda t)^p}$; the Gompertz, $h(t) = exp^{\gamma t} exp^{\lambda}$ (Box-Steffensmeier and Jones, 2004, Ch. 2). These competing models assume that the baseline hazard evolves over time according to specific patters, which changes the expected distribution of survival times among the population.

While the choice between parametric models does offer a certain degree of flexibility, they present a major shortcoming: the analyst has to make very strong assumptions concerning the evolution over time of the risk of experiencing the event. Since the computation of different parametric models can yield drastically different coefficients for the explanatory variables, it is absolutely imperative that the analyst base her choice on sound theoretical foundations. In the absence of such foundations, when one cannot determine *a priori* the baseline hazard, parametric models are inadequate.

3.3.3 Cox Proportional Hazards Model

The Cox proportional hazards model was developed in the 1970s to palliate the deficiencies of parametric EHA models (Cox, 1972; Cox and Oakes, 1984). It allows for the evaluation of the effect of covariates without making an initial assumption about the shape of the hazard function. In contrast to parametric models, the Cox model leaves the baseline hazard ($h_0(t)$) unspecified.

Fox (2002) offers an instructive example. Suppose two observations η_i and η_i' that have the following linear predictors:

$$\eta_i = \beta_1 x_{i1} + \beta_2 x_{i2} + \beta_3 x_{i3} + ... + \beta_j x_{ij} \tag{3.6}$$

$$\eta_{i'} = \beta_1 x_{i'} + \beta_2 x_{i'2} + \beta_3 x_{i'3} + ... + \beta_j x_{i'j} \tag{3.7}$$

Where $h_0(t)$ is an undefined baseline hazard rate, the hazard ratio for these two observations is given by:

$$\frac{h_i(t)}{h_{i'}(t)} = \frac{h_0(t)exp(\eta_i)}{h_0(t)exp(\eta_{i'})} = \frac{exp(\eta_i)}{exp(\eta_{i'})} \tag{3.8}$$

As we can see, the hazard ratio is not assumed. Rather, it is fitted to the data by looking at the proportional relationship between the values of the predictors for each observation. This hazard ratio can be used with the method of partial likelihood developed in Cox (1972). With this method, one can estimate a model that does not depend on the *a priori* stipulation of a baseline hazard. While the estimates that this method yields are less efficient than the MLE estimates that can be derived from parametric models, the theoretical advantages of the Cox model have been said to compensate (Fox, 2002). Indeed, as Box-Steffensmeier and Jones (2004, 46) point out, "in most applications, the Cox model, or variants of the Cox model, will be preferable on both substantitve and statistical grounds to parametric models".

Since I cannot claim any substantive insight into the baseline hazard for the entry into force of international investment agreements, I cannot formulate a credible assumption about it. The Cox model is thus the appropriate method to use in the context of my study.

3.3.4 Time Varying Covariates

A dataset for use in EHA would typically present itself in a format similar to the one presented in table 3.1.

Table 3.1: Typical dataset format for EHA

ISO1	ISO2	Survival Time (Years)	Common Language
AUT	ARG	10	0
AUT	AFG	12	0
AUT	AGO	35	0
AUT	BHR	20	0
AUT	DEU	05	1
AUT	USA	15	0

This data structure is adequate when a researcher attempts to evaluate the effect of independent variables that remain stable throughout the period of observation. In the context of my study however, this is insufficient, since it does not allow for the introduction of time varying covariates. One of the explanatory variables I use below is the annual rate of GDP growth. To be able to use it, I have to rely on a number of improvements that have been made over the last years in the theory of EHA.

To account for the effect of time varying covariates, the principal technique that is used is the 'counting process' that was first given by Aalen (1976), and further developed in texts such as Andersen and Gill (1982); Fleming and Harrington (1991); Andersen (1993). A detailed discussion of the counting process would take us well beyond the scope of this thesis.[5] However, a brief presentation of the way in which the R statistical package implements it can help explain why I have chosen to structure my dataset like I did.

The `coxph` function of the R statistical environment[6] is designed to han-

[5]For a somewhat concise formal definition, see Martinussen and Scheike (2006, 23-30).

[6]The `coxph` function is part of the `survival` library (S original by Terry Therneau and

dle time-varying covariates by using the counting process. It requires that the data frame be adequately structured. Such a data frame should present one row for each individual, for each discrete period of time at which the covariates are measured. For example, a dataset containing 2 individuals and 2 years of monthly measures would include 48 distinct observations (or rows). Incidently, this data structure also allows more flexibility in dealing with event repeatability.

3.3.5 Repeatable Events

In part because of its origin in biostatistics, survival analysis has mostly been used in the study of non-repeatable events (e.g. death of the subject, or disappearance of the symptoms). Due to the pooled nature of the data, keeping them in the sample after they experience the event in question could introduce important bias. The standard approach to EHA is thus to drop individuals from the sample as soon as the event occurs. The sample should decay over time as the size of the population that is at risk (the 'risk set') shrinks. EHA allows for such adjustment to the sample via the technique of right-censoring.[7]

If the entry into force of an IIA was a non-repeatable event, my raw data would have to consist of one observation per dyad for each year the dyad is at risk of concluding an IIA, that is, for each year in which the dyad had not concluded an IIA prior to the beginning of the year.[8]

In the case of IIAs, however, the assumption of non-repeatability is unrealistic. In fact, country dyads have often signed new IIAs that superseded older ones. If a pair of countries was dropped from the sample after a first agreement between them came into effect, the dataset would exclude potentially revealing

ported by Thomas Lumley, 2008).

[7]On the topics of risk set and right-censoring, see Berry and Berry (1990, 397-399) and Box-Steffensmeier and Jones (2004, 16-18).

[8]This formulation is adapted from Berry and Berry (1990)

information concerning subsequent IIAs.

Reading Elkins, Guzman and Simmons (2006), it is not immediately clear what modelling choice the authors have made with regard to handling the repeatability of events. This omission matters because their choice implicitly introduces assumptions that can be untenable in this research context. For example, if the analyst decides to drop all repeated events, she makes "the strong assumption that the time to the first event is representative of the time to all events and in most cases this assumption will not be justified (Box-Steffensmeier and Jones, 2004, p. 158 - Footnote #2)."

The problem of repeated event in EHA is summarized by Box-Steffensmeier and Zorn (2002, 1071-1072):

> "[T]he issue of repeated events is one of dependence: second and subsequent events are likely to be influenced by, and therefore different from, first events. As a result, analyses that treat repeated events as independent, when in fact they are not, run the risk of yielding misleading results for a least two reasons. First, the presence of correlated events presents a problem similar to autocorrelation in conventional regression analysis: by treating such observations as independent, we overstate the amount of information each observation provides, leading to incorrect estimates of standard errors. Second, such models implicitly restrict the influence of covariates to be the same across events when, in fact, there may be varying effects from one event occurence to the next."

A number of different modelling strategies have been developed to analyze repeatable events within a general EHA framework.[9] For my purposes, those that are perhaps most interesting fall under the category of 'variance-correction models for repeated events'. These models extend the standard Cox proportional hazards model by adjusting "the variance-covariance matrix to account for the individual or group-specific effects that remain" unexplained after the coefficients for the different covariates have been estimated (Box-Steffensmeier

[9]See Wei and Glidden (1997, 835-837) for an overview and summary of these options.

and Zorn, 2002).

Two of the main options available are inadequate in the context of my study. For one, the model proposed by Andersen and Gill (1982) assumes independence between events. This assumption is too strong for my case, since the risk of occurrence of a second IIA might depend on the existence of a first one. For example, discovering a loophole in the dispute settlement provisions of a first IIA might prompt the signatory states to sign a second agreement that fixes the problem. Similarly, the second model, given by Wei, Lin and Weissfeld (1989), does not account for the sequence of events (Box-Steffensmeier and Zorn, 2002).

Prentice, Williams and Peterson (1981) have developed the conditional gap time model (PWP), which seems most appropriate in the context of my study. PWP uses robust variance estimates to control for the possible interdependence between observations made on every pair of countries (Lin and Wei, 1989). "Robust standard errors assume that observations are independent across units (or "clusters") but not necessarily within those units (Box-Steffensmeier and Zorn, 2002)." By using clustering and stratification, the model considers that the IIAs that are signed by a dyad do not affect the hazard that other dyads also conclude an IIA, but it allows for the entry into force of an agreement between a pair of countries to affect the probability that they negotiate a new one at a later date. (In section 3.7.1, I introduce a spatial lag term to measure the interdependence *across* dyads.)

The PWP model comes in two variants. The first equates the survival time to the time elapsed between the beginning of the sampling period (elapsed time model); the second to the time-to-last-event (conditional gap-time model). The elapsed time model should be used when events could theoretically be thought of as developing simultaneously, since the survival time to the second event

covers wholly the survival time to the first. In the case of IIAs, this approach seems flawed, because negotiations for a second IIA are unlikely to start before a first IIA has entered into force. Of course, anecdotal evidence to the contrary could probably be found. Still, I contend that the assumptions of the PWP gap-time model are more realistic than those of the elapsed-time model in the current context. In my empirical test of hypothesis #1, I will thus use a Cox proportional hazards model that is extended using the counting process, and the conditional gap-time technique developed by Prentice, Williams and Peterson (1981).

In order to successfully evaluate such a model, the correct specification of my data structure is essential. To be able to account for time-varying covariates, the dataset must consist of one observation per year for each dyad at risk of concluding an IIA. To use the counting process, every one of those yearly observations must be assigned a `start` and a `stop` time. Furthermore, because the gap-time model uses the inter-event time, this `start-stop` counter must be reset every time a particular dyad experiences the entry into force of an IIA. Finally, in order for the statistical package to correctly identify clusters of observations, dyads must be assigned a unique identification string.

My dataset was prepared by following the indications given in Cleves (1999). The R code was written with reference to Therneau and Grambsch (2000, 208). Table 3.2 shows a subset of my formatted data.

3.4 The Data

3.4.1 Time

Like Elkins, Guzman and Simmons (2006), I make yearly observations on all the dyads in my population for the period 1958-2002. The choice of this time

Table 3.2: A subset of the database used to test hypothesis #1

ID	ISO1	ISO2	Year	Trade/GDP (ISO2)	New IIA enters in force	Start	Stop
14	AUS	ARG	1958	NA	0	0	1
14	AUS	ARG	1959	NA	0	1	2
14	AUS	ARG	1960	15.21	0	2	3
14	AUS	ARG	1961	11.99	0	3	4
...	...	...	...	...	...	...	...
14	AUS	ARG	1994	18.12	0	36	37
14	AUS	ARG	1995	19.72	0	37	38
14	AUS	ARG	1996	21.47	0	38	39
14	AUS	ARG	1997	23.30	1	39	40
14	AUS	ARG	1998	23.32	0	0	1
14	AUS	ARG	1999	21.32	0	1	2
14	AUS	ARG	2000	22.40	0	2	3
15	AUS	ARM	1958	NA	0	0	1
15	AUS	ARM	1959	NA	0	1	2
15	AUS	ARM	1960	NA	0	2	3
15	AUS	ARM	1961	NA	0	3	4

frame was conditioned by the limited availability of data for the older and more recent periods.

3.4.2 Population

Unlike Elkins, Guzman and Simmons (2006) I do not consider all possible pairs of countries; their sampling strategy is flawed. Blonigen (2005) have argued that in order to evaluate the effect of bilateral investment treaties on economic growth, one has to distinguish between the differing causal pathways that link BITs and GDP in developed and developing countries. An investment treaty does not necessarily carry the same economic functions when it is concluded between two developed countries, between two developing countries, or between a developed and a developing country.

In a working paper entitled *Pooling dyads is a BIT inappropriate*, Jand-

hyala et al. (2007) have extended the logic to cover the analysis of the determinants of BIT signings. While the legal obligations imposed on the contracting parties are formally symmetric, the weight of these obligations bears more heavily on capital importing countries. This asymmetry means that the factors that can push a capital importing country to sign a BIT are probably different than those that motivate capital exporting countries. It would thus be inappropriate to pool all different types of dyads into a single sample.

Taking this argument into consideration, I follow Yackee (2009) in defining my population as all dyads formed of (A) one of 17 developed, capital exporting countries[10], and (B) all other countries. As Yackee (2009) points out, these 17 countries have generated most of the world's outward foreign direct investment for the period under study. The 'all other countries' category could then be thought of as a group of developing, capital-importing states. All my dyads are thus of the same type, that is, they are made up of a developed (capital exporting) country and a developing (capital importing) country.[11]

With 17 capital exporting countries, 179 capital importing countries, and 44 years of coverage, I have 3043 unique dyads, and 133,892 individual observations.

3.5 Dependent Variable

To calculate the survival times and the hazard rate, I need to establish whether or not an agreement has entered into force during each year surveyed. To do

[10](1) Australia (AUL); (2) Austria (AUT); (3) Belgium (BEL); (4) Canada (CAN); (5) Denmark (DEN); (6) Finland (FIN); (7) France (FRA); (8) Germany (GER); (9) Italy (ITA); (10) Japan (JPN); (11) Norway (NOR); (12) Netherlands (NTH); (13) Spain (SPN); (14) Sweden (SWD); (15) Switzerland (SWZ); (16) United Kingdom (UKG); (17) United States (USA).

[11]Not all members of the "all other countries" category were net capital importers for the full 1958-2002 period. Still, my categorization follows what can be empirically observed closely enough to warrant the assumption that underlies it.

so, I rely on data from two sources.

First, I use the online list of agreements that is maintained by the International Center for Settlement of Investment Disputes (2009). This list includes both the date of signature, and the date of entry into force. I use the latter, because a considerable subset of signed treaties never enter into force.

Second, I cross-reference the ICSID list with the database built by Jason W. Yackee (2009) to support the analysis of his article *Bilateral Investment Treaties, Credible Commitment, and the Rule of (International) Law: Do BITs Promote Foreign Direct Investment?*. To construct his dataset, Yackee has drawn on data gathered by UNCTAD and ICSID, and on the Oceana looseleaf series on investment treaties. In addition to regular BITs, he has also included a number of BIT-equivalent treaties, that is, other types of treaties that include significant investment protection provisions. Like him, I am fairly confident that the database I use for this analysis includes almost the full universe of investment treaties for the selected group of dyads.[12]

3.6 Explanatory Variables

As I stated in section 5.1, I am interested in evaluating the effect of the preference for investment protection of capital exporting states on the propensity of dyads to conclude international investment agreements. I assume that the source of this preference is two-fold. First, it is a function of the quantity of investments that firms from one country have already sunk in another. The higher the stock of FDI, the higher the intensity of the preference for protection. Second, the desire to protect investment is also forward looking, since investment treaties are also meant to cover future investments. The greater

[12] See the codebook that accompanies the Yackee (2009) dataset for more details on data collection.

the prospects for high return on future investments, the greater the demand for a BIT.

I use macro-level variables to act as proxy measures for these two effects. For the first, I use data on FDI stocks provided by the United Nations Conference on Trade and Development (2008). This stock measure allows a much closer theoretical fit to my hypothesis than the measure of flows that is commonly employed in the literature. Unfortunately, I show below that the choice to use FDI stocks also limits the confidence we can have in my results, since data availability is relatively limited. For the second effect, I use a measure of the annual GDP growth rate in the capital-importing country.

3.7 Control Variables

3.7.1 Modeling Spatial Dependency

As was mentioned in chapter 2, one of the most important articles in the political science literature on investment treaties explains why dyads conclude IIAs by reference to the competitive pressures that developing countries face (Elkins, Guzman and Simmons, 2006). It is thus important that I control for this factor in my statistical test.

To model how LDCs respond, at time t, to the earlier actions of other dyads, it is not sufficient to control for the sum of IIAs that had entered into force by time $t-1$. Indeed, not all IIAs pose the same 'competitive threat'. For instance, a Germany-Canada BIT is unlikely to evoke much fear of capital diversion with regard to Canada's FDI outflows to Angola. Clearly, it is necessary to weight the importance of each IIA signed by third parties by some indicator of what could be thought of as 'competitive proximity'. Spatial econometrics provides sophisticated means of doing so.

As Beck, Gleditsch and Beardsley (2006) suggest, the notion of spatial dependency can be conceptualized in other ways than simply as a relation of geographic proximity. Here, it is meant to convey how close capital importing countries are to each other with regard to their underlying capacity to attract capital from the same sources.

There are two main approaches to modelling spatial dependency: the spatial lagged error model, and the spatial autoregressive lagged model. I choose the latter, following the suggestion of Beck, Gleditsch and Beardsley (2006, 30), who "find that for most political economy applications (and probably most applications more generally) the spatially lagged error model seems less appropriate."

The spatial autoregressive lagged model, or spatial lag model, "presumes that there is only one form of dependence, which can be represented in a single connectivity matrix W (Beck, Gleditsch and Beardsley, 2006, 31)." When dealing with the type of data with which I am concerned, this connectivity matrix takes the form of an $N \times N \times T$ table, where the distance between members of each dyad ($N \times N$) is measured for every year of the study (T) (Elkins, Guzman and Simmons, 2006).

For each pair, I would have to define a weighting factor by calculating the correlation between indicators of proximity between members of country pairs (e.g. basket of export products). The result is subsequently multiplied by a dummy variable which equals 1 if an agreement had been concluded between the parties, and 0 if no agreement had entered into force at time $t-1$. This way, each BIT is weighted by the strength of the association between countries or, in other words, by their 'competitive distance'.

In practice, the data setup necessary to evaluate a spatial lag model when

the dependent variable is discrete, instead of continuous, is complex.[13] Constructing my own spatial weights would pose a challenge that, I believe, goes well beyond the requirements of this thesis. For this reason, I choose to follow Elkins, Guzman and Simmons (2006), and use one of the measures that they have already constructed.

The Elkins Variable The authors "calculate the distance between countries according to their export products, using information from the World Bank's World Development Indicators that describes a country's export mix. These indicators tap the value of exports in 1995 $US in sectors such as food, fuel, agricultural raw materials, ores and metals, and arms. [They] calculate the correlation between countries for each year across thirteen such indicators. The result is a measure, ranging from -1 to 1, of the similarity between countries according to the products they export." Finally, the authors add 1 to make the value strictly positive, and use it to weight the competitive threat posed by all the BITs that had been signed at time $t-1$.

Diffusion Mechanisms As has been shown in Franzese, Jr and Hays (2007) and Franzese, Jr and Hays (2008), finding that the spatial-lag term has a large and statistically significant effect cannot be taken as *prima facie* evidence that competition is the main mechanism through which diffusion is effected. In fact, a number of mechanisms could produce effects that are consistent with this empirical finding. Franzese, Jr and Hays (2008) identify five of them: coercion, competition, emulation, learning, and migration.

In a similar vein, but using formal modelling, Volden, Ting and Carpenter

[13] For those who wish to go further than I in this direction, Beck, Gleditsch and Beardsley (2006) suggest the article *Location, location, location: An MCMC approach to modelling the spatial context of war and peace* by Ward and Gleditsch (2002). Bivand (2002) has implemented a number of techniques to create spatial weights matrix in the R package `spdep`.

(2008) have identified problems in the empirical literature on policy diffusion. They devise two models, one in which governments make policy innovations on their own, and one in which they learn from others. The great degree of similarity between the policy output in each of these two models is a powerful testament to the difficulty of distinguishing between the two different mechanisms.

3.7.2 Other Control Variables

Geodesic Distance The studies reviewed in section 2 have mostly controlled for the effect of distance by using a binary variable that specifies if the members of a given dyad share a common border. Instead of this unidimensional measure of contiguity, I use a sophisticated dataset developed by the Centre D'Etudes Prospectives et D'Informations Internationales (2009). A simple measure of distance is first calculated by measuring the distance between the capitals of each country pairs. Then, city-level data is used to weight these distances by an indicator of the distribution of population in each country. In essence, we obtain a measure of the distance between the main demographic and, by extension, economic centers of each state.

FDI, Net Outflows (% of GDP) The greater the importance of outward FDIs relative to the size of one's economy, the more intense the drive to negotiate investment protection should be. The relationship is thus expected to be positive.

It is necessary to include this variable because it represents the overall interest of a state in signing BITs with other states. This contrasts with the specific bilateral effect that I hope to measure via the explanatory variables described above.

The data used was assembled for the World Bank's World Development Indicators (World Bank, 2009).[14]

Common Language & Alliances This binary variable helps control for the greater links that often unite countries that share a language (0 = no shared language, 1 = shared language). A shared language permits the establishment of closer links between countries, which allows for more opportunities of exchange. In turn, these exchanges can increase the probability that two countries sign an agreement. For example, links between countries can take form as a result of colonial heritage, or through contacts in international organizations such as the Organisation Internationale de la Francophonie.

Following a similar logic, I control for the existence of a military alliance between the members of each dyad.

Veto Players In a series of influential contributions, George Tsebelis has demonstrated how the number of actors with veto power over policy change affects policy stability (Tsebelis, 1995, 1999, 2002). On the basis of this work, Henisz (2002) has built a database that includes a measure of the political constraint imposed by the institutional setting in every country over a large period of time.

I assume that the interest for investment protection in a developed, capital-exporting country is unambiguously positive, since signing an IIA is unlikely to have major within-country distributional effects. In contrast, such a policy should be more controversial in capital-importing countries, where there exists a trade-off between the expected increase in FDI inflows, and the loss of sovereignty that an IIA imposes. Henisz' measure is used to control for this effect in the capital importing countries (iso2).

[14]In table 3.3, a negative value indicates that more FDI goes in the country than goes

Table 3.3: Summary table of the variables used in the ordered logit model

	Variables	N	Missing	Mean	Median	S.D.	Min.	Max.	Sources[a]
Host Country Variables	BITs Among Export Product Competitors	731	140	6.14	5.37	4.80	0	18.28	[1]
	Annual Growth Rate (%GDP)	876	45	3.23	4.03	-32.12	19.56		[2]
	GDP per capita	877	44	2640	median	sd	142	28797.4	[2]
	Veto Players	911	10	0.2517	median	sd	0	0.67	[3]
Home Country Variables	FDI Stock (Millions of US$)	251	670	453.9	52	1609.71	0	16968	[4]
	Investment Share of Real GDP	761	160	3374	median	sd	1187	5028	[5]
Dyadic Variables	Common Language	914	7	0.05	-	-	0	1	[1]
	Geodesic Distance (Population Weighted)	892	29	5785	5457	3589.57	60	18372	[6]
	Alliance	781	140	0.036	0	0.186	0	1	[7]

[a]Sources: [1] Elkins, Guzman and Simmons (2006); [2] World Bank (2009); [3] Henisz (2002); [4] United Nations Conference on Trade and Development (2008); [5] Penn World Table 6.2 (2006); [6] Centre D'Etudes Prospectives et D'Informations Internationales (2009); [7] Correlates of War Project (2008)

3.8 Econometric Model

I estimate the same basic equation that is put forth by Elkins, Guzman and Simmons (2006):

$$y_{ij,t} = \alpha X_i, t + \beta Z_{j,t} + \delta V_{ij,t} + \rho W y^*_{t-1} + \epsilon_{ij} \tag{3.9}$$

> "where $y_{ij,t}$ is the number of years without a BIT between countries i (host) and j (home), X is a vector of conditions that affect country i's calculations, Z is a vector of conditions that affect country j's calculations, V is a vector of characteristics of the relationship between countries i and j, and Wy^* s a vector of spatial lag terms in which a count of BITs among other host countries in the previous year (y^*) is weighted by various measures of their distance (W) to country i (see our discussion of spatial lags below)."

3.9 Limits and Contributions

Four important limitations of my research design need to be acknowledge. First, the restricted availability of data for crucial variables such as the FDI stock forces me to exclude many observations from the analyzed sample. While I do not believe that the number of excluded observations is high enough to preclude me from drawing meaningful inferences, I recognize that better raw data would improve the validity of my conclusions. Second, I use my regressors in a simple additive model, whereas some of the explanatory variables could probably be thought to interact with one another. Third, the EHA model I use assumes that the independent variables are fully exogneous, which may not be the case in reality. While some interesting attempts have been made

out.

to handle the problem of endogeneity in the study of international trade[15], I cannot imagine a simple way to do so in the context of my thesis. Finally, future studies would do well to study the determinants of BIT signings with an interactive model that accounts for the fact that the ability to sign a BIT depends on the willingness of *both* parties.

Despite those limitations, and considering the fact that I use the same basic model specification as Elkins, Guzman and Simmons (2006), it is worth mentioning that I make several significant modifications to their research design. Taken together, these four changes allow me to provide a much improved empirical test of the 'Why states sign IIAs?' question. My study should thus contribute to the advancement of knowledge in the field.

1) I avoid the inappropriate pooling of dyads by only considering dyads composed of a capital exporting and a capital importing country. Doing so improves the internal validity of my research design since I do not conflate the distinct causal mechanism that lead dyads of different types to conclude IIAs.

2) The population of agreements that I consider excludes those that were signed, but which never entered into force. Keeping those agreements would be inconsistent with the assumptions that allow us to form expectations on the direction of the relationship between the hazard rate and the covariates. For instance, an IIA can hardly be said to pose a competitive threat if it never entered into force. Thus, the spatial lag model that I use dictates the limits of my chosen population.

3) By using the counting process, I explicitly fashion my model so as to account for event-repeatability. Using the conditional gap-time model constitutes another improvement to the original event-history model used by Elkins, Guzman and Simmons (2006).

[15]See Frankel and Romer (1999) for example.

4) I include new independent variables that control for important features of the institutional, economic and political context (e.g. veto players & FDI stock).

Chapter 4

Cox Model Results

4.1 Diagnostic Tests[1]

4.1.1 Non-Proportionality

The evaluation of hazard in the Cox model relies on a proportionality assumption. If the strength of the effect of a covariate varies over time, the mathematical assumptions of the model are violated. It is thus important to control for non-proportionality, and to correct for it as best we can.

One way to diagnose this problem is by using a test based on a correlation between the scaled Schoenfeld residuals and a "suitable transformation of time" (Fox, 2002, 12). The `coxph` function in R returns the results of such a test for each of the covariates used in the cox model. A p-value that crosses the threshold for statistical significance signals that there are strong reasons to believe that the non-proportionality assumption is violated.

Table 7.1 shows that four of my variables appear to violate the assumption of non-proportionality. In other words, the evidence seems to indicate that the impact of these variables changes over time. Furthermore, we see that the

[1]For a more detailed discussion of diagnostic tests in EHA, Fox (2002) recommends reading Therneau and Grambsch (2000).

Table 4.1: Test of Non-Proportionality Using Scaled Schoenfeld Residuals

	rho	chisq	p
BITs Among Export Product Competitors	0.1278	4.4503	0.034894
GDP Annual Growth Rate	-0.2126	6.7230	0.009518
GDP per capita	-0.0294	0.1937	0.659849
Veto Players	0.1265	4.7862	0.028688
FDI Stock	-0.1558	13.2234	0.000276
Investment Share of Real GDP	-0.0822	1.3749	0.240977
Geodesic Distance	0.0765	1.3441	0.246309
Alliance	0.0097	0.0236	0.877846
Cold War	-0.0838	1.4707	0.225243
Common Language	0.0198	0.0911	0.762766
GLOBAL	NA	27.7933	0.001948

global measure of non-proportionality is also statistically significant at the 0.05 level. Fox (2002) suggests that a good way to correct for these problems is to create interactive terms between the infringing covariates and time. Including interaction terms using the four variables in question does in fact seem to move my model specification towards conformity with Cox' assumptions. Indeed, doing so brings the p-value of the global test to 0.39, a point at which it is impossible to reject the null hypothesis with confidence.[2] Appendix B presents the results of the Schoenfeld residuals test after inclusion of the interaction terms. Appendix C presents the results table for the cox model *before* inclusion of the interaction terms. Table 4.2 presents the results table for my Cox model *after* inclusion of the interaction terms.

4.1.2 Influential Observations

In some cases, extreme observations can have a strong influence on the coefficients yielded by the Cox model. Observing graphically how the deletion of individual observations influences coefficients, is a useful means of discovering if extreme observations have an undue influence on our results. The graphics

[2]Here, the null hypothesis is that we do not observe non-proportionality.

Table 4.2: Cox Model Coefficients After Correction for Non-Proportionality

Explanatory Variables	Coefficient	exp(Coefficient)
GDP Annual Growth Rate	0.1002	1.105*
FDI Stock	1.209e-04	1.000**
BITs Among Export Product Competitors	-0.03597	0.9647
GDP per capita (K-exporting country)	-6.175e-05	0.999***
Veto Players	-0.03032	0.9701
Investment Share of Real GDP (K-exporting country)	0.03548	1.036
Geodesic Distance	-7.095e-05	0.9999***
Common Language	-0.8971	0.4077**
Alliance	-0.6051	0.5460*
Cold War	0.2921	1.339
Competition & Time	0.003381	1.003*
GDP Growth & Time	-3.171e-03	0.9968**
Veto Players & Time	0.0149	1.015
FDI Stock & Time	-4.393e-06	1.000*

Significance codes: *** = 0.001, ** = 0.01, * = 0.05

matrix presented in Appendix D shows index plots of the estimated change in coefficients caused by individual observations, divided by their standard errors. The study of these graphs leads me to conclude that, for the most part, extreme observations do not seem to sway the value of the obtained coefficients too much.

4.2 Results

4.2.1 Interpreting the Cox Model Coefficients

Table 4.2 presents the coefficients obtained by running the Cox model. The exponentiated coefficients presented in the third column can be interpreted as multiplicative effects on the hazard (Fox, 2002). In this section, I describe the impact of each covariate.

FDI Stock My interest in the potential effect of this variable was instrumental in leading me to undertake this research project. Initially, I expected that a high stock of FDI would generate incentives to sign international investment agreements, since one of the main functions of these agreements is to protect the past investment of a capital exporting country's nationals in a foreign state. Accordingly, I expected that the hazard of concluding agreements would be higher when firms from country A had invested a lot of capital in country B.

The empirical evidence does not confirm this intuition. The p-value easily crosses the traditional threshold of statistical significance[3], and the exponentiated coefficient is equal to one.[4] Taken together, these two indicators allow me to affirm with a relatively high degree of confidence that the FDI stock has no effect[5] on the propensity of dyads to conclude IIAs.

Annual GDP Growth Rate (K-Importing Country) While the FDI Stock variable was meant to represent the interest for the protection of past investments, the GDP growth rate measure was included in my model to act as a proxy for the intensity of interest for the protection of potential future investments. Presumably, a developing country with high economic growth would present a high number of investment opportunities in the future. Capital-importing countries which exhibit a high GDP growth should thus attract the attention of capital exporting countries who should seek to sign IIAs with them. While a discourse analysis lies outside the scope of this thesis, I suspect that my proposed causal mechanism is in line with the objectives that are officially pursued by developed countries who seek to sign IIAs.

The GDP annual growth coefficient is statistically significant at the .05

[3]The p-value for the FDI Stock variable equals 0.001324.
[4]At least 5 zeros follow the decimal point.
[5]Evidently, multiplying the hazard by 1.0000 leaves it unchanged.

level, and the exponentiated coefficient indicates that a 1% increase in the annual GDP growth rate of a developing country, leads to a 10.5% increase in the hazard that this country will sign an IIA with a given developed country. Assuming that the GDP growth rate is an adequate indicator of capital-exporting countries' interest for investment protection, I can thus conclude, with a high degree of confidence, that the interests of developed countries influence the pattern of IIA diffusion.

BITs Among Export Product Competitors One of the more interesting results of my test concerns the variable developed by Elkins, Guzman and Simmons (2006) to measure the competitive pressures that are faced by developing countries. The coefficient for this variable is both of the wrong direction, and statistically insignificant.[6] For reasons that have been explained above, I believe that the specification of my model represents a considerable improvement upon previous attempts to evaluate the effect of peer competition on the propensity to sign IIAs. As such, the output of my model should certainly lead us to question the view according to which developed countries are price-takers, and developing countries are left to decide when they decide to agree to the inflexible terms proposed by capital-exporters. In fact, the empirical evidence does not allow us to reject the null hypothesis; one would be unable to argue, on the basis of my model, that the competitive pressure that is exerted on developing countries drives the diffusion of international investment agreements.

Counter-Intuitive Results With the Control Variables The GDP per capita of capital-exporting country seems to have a very small, but statistically significant, negative effect on the propensity to conclude IIAs. This result runs

[6]The exponentiated coefficient is inferior to 1, and the p-value equals 0.612

against my initial expectations since I anticipated that richer countries, having more disposable income to invest, would be more likely to sign and ratify IIAs. Similarly, I expected that being the member of a military alliance and sharing a common language would both increase the likelihood of concluding an IIA. This does not appear to be the case. However, since those variable were included as a controls, and are not a primary focus of my analysis, I choose not to explore potential explanations for those counter-intuitive results.

Interactions With Time The scaled Schoenfeld residuals test (see section 7.1) highlighted the necessity to correct the model for the time-varying effects of four of my covariates. In three of those cases, the inclusion of interactive terms (covariate * time) yields statistically significant results, which strongly suggests that the effects of the covariates do in fact vary as a function of time. The strength of the effect of my two main explanatory variables[7] appears to be declining as the number of years elapsed since 1958 increases.[8]

4.2.2 Survival Function

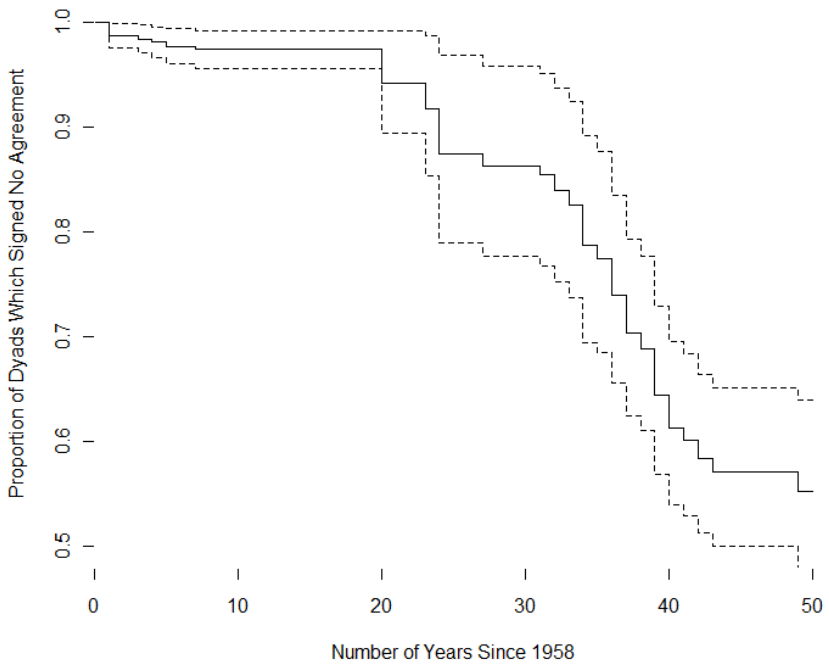
In addition to the coefficients presented in table 4.2 the Cox model also allows us to make potentially revealing observations on the survivor function. As was mentioned in section 3.3.3, the fact that I make discrete yearly observations leads to the computation of a survival function that takes the form of a step function. Figure 4.1 presents the estimated survival curve as calculated on the basis of the different predictors that I have included in my model.

Figure 4.1 would certainly benefit from a careful study that, unfortunately, lies outside the scope of this project. Still, one important point needs to be

[7]FDI stock and annual growth rate of the GDP.

[8]For more on the interpretation of these interactive terms, see Fox (2002); Therneau and Grambsch (2000).

Figure 4.1: Estimated survival function for the Cox regression of time to entry in force of an IIA, on several predictors. The broken lines show a point-wise 95-percent confidence interval.



made: the Z-shape of the curve clearly shows a rapid period of development in international investment law (during the 1980s and 1990s), preceded and followed by periods of relative stability in failure rates (i.e. low rate of entry into force of IIAs). Future studies would probably benefit from deploying a new set of more qualitative, perhaps case study-centered, methods to understand the micro-level processes to help describe a pattern of activity that cannot be adequately explained by the type of models I have used.

4.2.3 Summary of the Results

The results presented herein provide partial support for the idea that capital-exporting countries' interests matter, and they allow me to draw a number of interesting conclusions. Firstly, it appears that the forward-looking interests of capital-exporting countries have a non-negligible impact on the probability that a given dyad will strike an international investment agreement. Secondly, the analysis does not allow me to reject the null hypothesis when comes time to evaluate the effect of the current stocks of FDI on the propensity to sign IIAs. Thirdly, I find strong evidence that the strength of the effect of some of my covariates varies over time. This observation could potentially have interesting implications, and could most likely illuminate further other problems concerning the different types of diffusion mechanism that were identified by Franzese, Jr and Hays (2008). Finally, my study shows that the strength of the evidence in support of the competitive hypothesis seems to have been overstated in earlier works on the topic of bilateral investment treaties, and in the obsolescing bargain literature.

Chapter 5

Determinants of IIA Strength

5.1 Hypothesis #2

- *Hypothesis #2:* The intensity of A's preference for investor protection in B is positively related to the strength of the international investment agreement that is concluded between A and B.

5.2 The Strength of an Agreement

As I explained in section 2.0.1, the ubiquity of the most-favored nation clause makes it nearly impossible to evaluate the substantive coverage of an international investment agreement. The scope of coverage of the MFN clause on the dispute settlement mechansim (DSM) of an agreement, however, is much less clearly defined. Two competing principles of treaty interpretation have been advanced.

From one point of view, "it can be argued that a broadly-phrased MFN clause, which neither expressly excludes nor includes dispute settlement, means that the MFN clause applies without limitation to all 'treatment' of investments, i.e. not just traditional protections against unfair treatment, uncom-

pensated expropriation and the like, but also mechanisms for dispute settlement (Freyer and Herlihy, 2005, 62)."

From another perspective, it is said that "since an MFN clause has to be read in the context of the dispute settlement procedures in the basic treaty, it cannot reasonably be inferred that the contracting parties intended those procedures to be overridden by a combination of an MFN clause in the basic treaty and some other dispute settlement procedure in an investment treaty entered into between the host state and a third nation (Freyer and Herlihy, 2005, 63)."

In practice, both of these competing principles have been accepted by ICSID arbitral panels. Figure 5.1 shows short passages from the awards written by two ICSID panels who took opposite views on the principle of treaty interpretation that should apply in the case of MFN and DSM.[1]

With this uncertainty in interpretation, country pairs face strong incentives to design, for each concluded BIT, the type of dispute settlement provisions that they hope will apply to their disputes. Indeed, the probability that the DSM detailed in a particular BIT is that which applies to disputes between its two signatories is considerably greater than zero. From a social science perspective, the content of the DSMs inscribed in investment treaties is thus likely to be particularly meaningful and interesting.

In the next sections, I describe the data and empirical method that I use to test hypothesis #2. As far as I know, I provide the first large-n empirical test aimed at identifying the factors that determine the substantive content of investment treaties.

[1] I have first been made aware of these two quotes through the following website: `http://legaldevelopments.blogspot.com/` The quotes have subsequently been verified in-text.

Figure 5.1: ICSID panels in the *Wintershall* and *Maffezini* cases adopted opposite stances on the issue of treaty interpretation at hand.

Wintershall Aktiengesellschaft (Claimant)
v.
Argentine Republic (Respondent)

> "[...] if a third-party treaty contains provisions relating to dispute settlement procedures which were more favourable than those included in the basic BIT, then those beneficial provisions may be extended to the beneficiary of the MFN clause (International Center for Settlement of Investment Disputes, 2008)."

Emilio Augustin Maffezini (Claimant)
v.
The Kingdom of Spain (Respondent)

> "In the absence of language or context to suggest the contrary, the ordinary meaning of 'investments shall be accorded treatment no less favourable than that accorded to investments made by investors of any third State' is that the investor's substantive rights in respect to the investments are to be treated no less favourable than under a BIT between the host State and a third State. It is one thing to stipulate that the investor is to have the benefit of MFN treatment but quite another to use a MFN clause in a BIT to bypass a limitation in the settlement resolution clause of the very same BIT [...] (International Center for Settlement of Investment Disputes, 2000)."

5.3 Data & Dependent Variable

My data is taken from the Yackee (2009) database that I have described in section 3.4.2.

Aside from doing a recension of all BIT and BIT-like treaties between the selected population of dyads, Yackee (2008) also offers an ordinal measure of the strength of their investor-state dispute settlement provisions. His four-level

typology goes from weak (1) to strong (4), where a weak agreement includes no pre-consent to arbitration, nor a promise to participate in independent arbitration if a dispute arises. Strong BITs (4) include pre-consent provisions, which means that a case is automatically forwarded to an arbitral panel when the dispute cannot be resolved amicably (within a specified time-frame, under certain conditions). This four-level typology is described in detail in Appendix A.

Table 5.1: Distribution of IIAs according to the strength of their DSMs

		DSM Strength			
N	Missing	1	2	3	4
921	0	177 (19%)	27 (3%)	77 (8%)	640 (69%)

5.4 Ordered logit

The ordinal variable that Yackee makes available rests on a clear typology. As a measure of 'DSM strength', his four categories are useful since they provide an ordering of the different types of constraints that distinct provisions impose to the parties. A level-4 DSM is considerably more binding than a level-3 DSM, which is itself considerably more binding than a level-2 DSM, etc. From a theoretical perspective, however, the measure leaves room for interpretation; a category 3 DSM cannot meaningfully be said to impose 3 times the level of constraints that a category 1 does. In my empirical analysis, it would thus be inappropriate to employ conventional statistical techniques that require the analyst to assume that the four categories are equidistant points on an underlying, continuous, value of DSM strength.

5.4.1 A Few Mathematical Concepts

The ordered logit statistical technique seems most appropriate in the case at hand, as it is meant to apply to ordered choices with more than two categories. In this section, I follow the notation and sequence of exposition retained by Glasgow and Alvarez (2008) in order to present some of the mathematical concepts that allow the evaluation of the ordered logit model.

The four categories of the Yackee ordinal variable are considered to be positioned at different points on a continuum represented by the latent variable y^*. We do not evaluate (or assume) the exact location of each point on y^*. Rather, we observe y_i, which shows whether the agent's choice falls under or over the three thresholds that separate our four categories. Formally, we observe:

$$y_i = j \text{ if } \tau_{j-1} \leq y_i^* < \tau_j \text{ for } j = 1 \text{ to } J \tag{5.1}$$

Where τ represents the thresholds that separate categories, $\tau_0 = -\infty$, and $\tau_j = \infty$).

We assume that the latent variable can be described by a simple linear function of some observed variables (with coefficients) that affect the agents' choice of a point on the y^* continuum, plus some unobserved stochastic influences:

$$y_i^* = X_i\beta + \epsilon_i \tag{5.2}$$

The probability that $y_i = j$ when we observe a vector of values X_i is:

$$\begin{aligned} Pr(y_i = j|X_i) &= Pr(\tau_{j-1} \leq y_i^* < \tau_j|X_i) \\ &= Pr(\tau_{j-1} \leq X_i\beta + \epsilon_i < \tau_j|X_i) \\ &= Pr(\tau_{j-1} - X_i\beta \leq \epsilon_i < \tau_j - X_i\beta|X_i) \end{aligned} \tag{5.3}$$

Glasgow and Alvarez (2008, 517) write that "as the probability that a random variable will fall between two values is the dfference between the cumulative density function at those two values, we can rewrite equation 5.3 as":

$$\begin{aligned} Pr(y_i = j|X_i) &= Pr(\epsilon_i < \tau_j - X_i\beta|X_i) \text{ - } \Pr(\epsilon_i < \tau_{j-1} - X_i\beta|X_i) \\ &= F(\tau_j - X_i\beta|X_i) - F(\tau_{j-1} - X_i\beta|X_i) \end{aligned} \tag{5.4}$$

, where F is the cumulative density function of ϵ_i.

By making assumptions concerning the distribution of the error term[2], one can then calculate the probability that $y_i = j$. This discrete choice model is usually estimated via maximum likelihood (Glasgow and Alvarez, 2008).[3]

5.5 Explanatory Variables

As was the case with the event history analysis, I use two distinct variables to evaluate the effect of two sources for a capital exporting country's interest for investor protection in the capital importing country: (1) the stock of FDI (millions of $) that firms from country A have invested in country B (United

[2]Specifically, "ϵ_i is drawn from an independently and identically distributed normal distribution [...] with mean zero and unit variance (Glasgow and Alvarez, 2008, 516-517)".

[3]I use the `polr` function of the `MASS` library to evaluate my ordered logit model (Venables and Ripley, 2009). This R library implements the cumulative link model proposed in Agresti (2003).

Nations Conference on Trade and Development, 2008), and (2) the annual GDP growth rate in country B(World Bank, 2009).

5.6 Control Variables

Geodesic Distance As in model #1, I use the Centre D'Etudes Prospectives et D'Informations Internationales (2009) data to account for the influence of geography.

Spatial Dependency On the basis of the theoretical literature in economics (see section 2.0.2), it would be reasonable to infer that a stronger BIT provides a better committment device. As such, I expect that stronger competitive pressures will lead states to adopt stronger BITs. Again, I use the number of BITs signed at time $t-1$, weighed by the proximity of the export product mix of competing capital importers (Elkins, Guzman and Simmons, 2006).

Veto Players The number of veto players in a given institutional setting can not only affect the probability that a given capital-importing country will sign an IIA, but also the form that these agreements can take. If, for example, we think of the negotiation process as a two-level game (Putnam, 1988), it is easy to see that the win-sets of domestic actors condition both the possibility of striking an agreement (i.e. is there an overlap between the win-sets?), and the substance of this agreement (i.e. where is the area of potential agreement located?).

Others Like in the model #1, I control for the GDP per capita of the capital importing country, common languages and for the size of the net FDI outflows of the capital exporting country.

5.7 Limits and Contributions

The research design proposed herein exhibits an important limitation: it fails to account for the effect of time on the development of the substantive provisions of investment agreements. By doing so, I neglect the possibility that processes such as learning might have an effect on the content of BITs' dispute settlement mechanisms. An interesting avenue for future research would be to develop a formal model of the ways in which treaty design responds to disputes that were brought in front of an ICSID panel.

A second way in which my research design could eventually be improved would be to control for the underlying, unobserved demand for IIAs when trying to evaluate the effect of different explanatory variables on the substantive content of BITs. To do this, one could probably use a statistical model akin to the Heckman two-stage correction model.

Despite these faults, my research does make a significant contribution, since it appears to be the first paper to make an attempt at identifying the factors that determine the substance of international investment agreements.

Chapter 6

Ordered Logit Model Results

Table 6.1 presents the results of my ordered logit test. I present odds ratios, which can be obtained by exponentiating the ordered logit coefficients (e^{coef}) (UCLA Academic Technology Services, 2009). Odds ratios are calculated with the proportional odds assumption, which means that they are estimated over the different levels of the dependent variable. In other words, the odds ratios stay the same for all levels of the dependent variable. "[I]f we view the change in levels in a cumulative sense and interpret the coefficients in odds, we are comparing the people who are in groups greater than k versus those who are in groups less than or equal to k, where k is the level of the response variable. The interpretation would be that for a one unit change in the predictor variable, the odds for cases in a group that is greater than k versus less than or equal to k are the proportional odds times larger" (UCLA Academic Technology Services, 2009).

Even when equipped with a clear definition, the interpretation of odds ratios in ordered logit models remains difficult. As Glasgow and Alvarez (2008) point out, a common expository strategy consists in the use of hypothetical observations. Following the approach they suggest, I select values of interest

Table 6.1: Ordered Logit Model Coefficients

Explanatory Variables	Odds Ratio
GDP Annual Growth Rate	1.025265
FDI Stock	1.000187
BITs Among Export Product Competitors	1.462221*
GDP per capita (K-exporting country)	.999957
Veto Players	.5152443
Geodesic Distance	1.000284**
Alliance	5.915542
Cold War	.20009[a]

Significance codes: ** = 0.01, * = 0.05, a = 0.1

for comparison, and then use the estimated values of β to calculate a baseline probability for each category of the dependent variable. In practice, I hold all control variables constant at their mean value, and then compare the baseline probabilities that are obtained by using the minimum, mean, and maximum values for the explanatory variable of interest.

As table 6.1 shows, few of my variables yield statistically significant results. In particular, the coefficients for both of my main explanatory variables (FDI stock and annual growth rate of the GDP) do not cross the traditional threshold of 0.05. Because I am unable to reject the null hypothesis with confidence, I choose not to discuss the impact of these two variables. Even if I cannot confirm my initial intuitions, the model's output can still yield interesting insights.

In the rest of this section, I thus focus on other statistically significant results that are likely to be of interest in guiding future research on the topic of investment treaties (appendix E presents tables which show the comparative predicted probabilities associated with different values of the distance, FDI stock, GDP growth variables).

The coefficient for the Elkins variable is statistically significant, with a p-value of 0.017. Table 6.2 shows the predicted effect of a change in the value of

Table 6.2: Baseline Probability that an IIA's Dispute Settlement Mechanism Will Fall in Each of the 4 Categories, Depending on the Value of the Cold War Variable

	Competition Min	Competition Mean	Competition Max
Pr(DSM Category= 1|x)	0.0234	0.0016	0
Pr(DSM Category= 2|x)	0.0178	0.0013	0
Pr(DSM Category= 3|x)	0.2355	0.0225	0.0007
Pr(DSM Category= 4|x)	0.7234	0.9746	0.9993

Table 6.3: Baseline Probability that an IIA's Dispute Settlement Mechanism Will Fall in Each of the 4 Categories, Dependending on the Value of the Competition Variable

	During Cold War	After Cold War
Pr(DSM Category= 1|x)	0.0063	0.0013
Pr(DSM Category= 2|x)	0.0049	0.0010
Pr(DSM Category= 3|x)	0.0802	0.0175
Pr(DSM Category= 4|x)	0.9087	0.9803

the competition variable on the probability that an IIA's dispute settlement mechanism will fall in one of the four categories of the Yackee (2009) typology. As we can see, going from the minimum, to the mean, to the maximum value for the competition variable successively increases the probability of concluding a strong IIA (category 4) by 25, and then 2.5 percentage points. Similarly, table 6.3 shows that the (statistically significant) Cold War coefficient translates into a substantial change in the predicted strength of IIAs' dispute settlement provisions. Holding every other covariate constant at their mean value, the probability of signing a type-4 agreement after the Cold War ended is more than 7 percentage points higher than during the Cold War.

Aside from the distance variable, it is important to note that the only two statistically significant coefficients have been computed using variables that hold an important temporal dimension. The Cold War variable was constructed as a simple dummy that indicates if an agreement entered in force in or before 1990 (1), or after 1990 (0). The Elkins competition variable also

depends crucially on the time element. As years go by, the aggregate number of signed IIAs increased considerably (see figure 1.2). It is thus rather unsurprising to find that the yearly mean value of the Elkins variable increases steadily with time. As I mentioned in section 5.7, my research design is, after all of limited use, since it does not account explicitly for the effect of time[1] on the substantive content of agreements. I now believe that this problem will need to be resolved before progress can be made on the topic.[2]

[1]To be precise: for time-dependent diffusion processes like learning or emulation

[2]Relatedly, it is worth noting that my sample is heavily biased toward the latter years of observation. Because data is difficult to find for the earlier years of the 1958-2004 period, missing values have forced me to censor many early observations, which means that of the 192 agreements that made it to the final sample, most have entered in force post-1990.

Table 6.4: Summary table of the variables used in the ordered logit model

	Variables	Mean	S.D.	Min.	Max.	Sources[a]
Host Country Variables	BITs Among Export Product Competitors	8.917785	4.245824	1.8497	18.28344	[1]
	Annual Growth Rate (%GDP)	2.99087	5.015648	-22.934	13.5	[2]
	Veto Players	0.3274479	0.2154898	0	0.66	[6]
Home Country	FDI Stock (Millions of US$)	475.8958	1654.491	0	16968	
	GDP per capita	22427.93	4255.844	15670.49	36789.23	[2]
Dyadic Variables	Alliance	0.0989583	0.2993867	0	1	[1]
	Geodesic Distance (Population Weighted)	5978.964	3822.532	216	14093	[5]

[a]Sources: [1] Elkins, Guzman and Simmons (2006); [2] World Bank (2009); [3] Centre D'Etudes Prospectives et D'Informations Internationales (2009); [5] Henisz (2002)

Chapter 7

Conclusion

In chapter 4, I concluded that my Cox model provided partial support for hypothesis #1, that is, for the idea that the interest of capital-exporting countries has a positive effect on the hazard that country dyads[1] will conclude international investment agreements. My results also undermine the conclusions of an important article which argued that competition amongst developing countries was an important explanatory factor when answering the 'why sign IIAs' question.

In chapter 6, I was less enthusiastic about the explanatory value of my results, since most variables of interest yielded statistically insignificant coefficients. Still, the interpretation of my ordered logit model has led me to consider in more detail the distribution of agreements over time, and the distribution of *types* of agreements over time. If we also consider the fact that many of the covariates in my Cox model violated the proportionality assumption (i.e. the strength of their effect varied over time), it becomes clear that the temporal dimension plays a very important role in explaining both the pattern of diffusion of IIAs, and the agreements' substantive content. Study-

[1] Specifically, country dyads composed of one capital exporting and one capital importing country.

ing the time-dependent micro-processes that shape the data (e.g. learning or emulation) would surely be a fruitful avenue for future research.

7.1 A little BIT about me

As I hope to have made clear in the preceding sections of this text, my BIT study makes a number of small but novel contributions to the field. Nevertheless, I must acknowledge that it also presents some rather serious limitations. Aside from the issues of data availability and statistical design that I have already discussed, the problem that seems to hurt my analysis the most is the lack of a serious qualitative, case study-based investigation of the causal processes that explain the empirical patterns observed via my quantitative data analysis. My failure to adopt a true mixed-methods approach forced me to make broad, and often implicit assumptions about the causal pathways that link my variables of interest.

For example, I ask the reader to assume with me that the GDP growth rate in a capital-importing country is a good measure of the level of investor interest in the protection of future FDI outflows to that country. In this context, a deep case study would serve two main purposes. First, it would allow me to verify if this measure is indeed a correct approximation of the level of interest of investors, and would allow me to confirm if this interest finds an equivalent at the state level.[2] Second, case studies would probably have allowed me to unearth the different mechanisms that form the causal chain[3] which links

[2]Obviously, this exposes another flaw in my analysis, namely that I do not theorize adequately the process of domestic politics that allows private interests to be aggregated in state preference and policy.

[3]In discussing mechanisms and causal chains, I use the same terminology as Jon Elster (2007, 32-51), who defines the former concept as "frequently occurring and easily recognizable causal patterns that are triggered under generally unknown conditions or with indeterminate consequences", and the latter as a series of interlocking mechanisms that link a cause to a consequence.

independent and dependent variables. Forgoing the use of this method affects both the internal and the external validity of my models and conclusions.

The decision not to conduct in-depth case studies was made after I came across a number of obstacles that delayed and prolonged my research process. As one of the reviewers of my initial thesis proposal pointed out, this was an ambitious project from the onset; perhaps too ambitious. For me, the statistical analysis has proven to be a bigger challenge than I had anticipated.[4]

From this experience, I take away an efficient new workflow for quantitative data analysis, much new technical ability, and an improved understanding of the challenges posed by a research project of a larger scale. I also gained a better appreciation for the possibilities and limits of quantitative data analysis. Most importantly, I strongly believe that despite its flaws, my thesis has succeeded in shedding interesting new light on important problems.

[4]I learned about event history analysis, ordered logits, and about how to use the program R to conduct these tests. I chose this statistical package because it was the only one I could afford to install on my personal computer. Later, I realized that the original data that I needed to merge into a single dataset were published in different formats that required much 'cleaning'. In order to do this, I had to learn the basics of Perl programming. Further along the road, I hit the limits of R's memory management system. R keeps all the objects it uses loaded in memory. When manipulating datasets containing a few million observations such as mine (dyadic time-series), the physical limits (RAM memory) of one's computer are quickly reached. Because of this, I had to learn how to use and manage relational databases (SQLite).

Appendix A

Typology, as described in Yackee (2008, 5)[5]:

- "**Type 4** or 'strong' BITs are those that contain investor-state dispute settlement provisions that allow the investor to unilaterally initiate binding international arbitration against the capital importing state for violations of most or all of the investor's rights under the treaty. The treaties do this by providing what I call a host state "pre-consent" to investor-initiated arbitration. Absent state consent to arbitration, an arbitral tribunal will not exercise jurisdiction. Strong BITs provide the needed consent, sometimes by explicitly stating that the treaty serves as such consent, other times implicitly by stating, for example, that "Each Contracting Party hereby gives its unconditional consent to the submission of a dispute to international arbitration in accordance with the provisions of" the BIT (the language here is from the Canada-Armenia BIT).

- **Type 3** or 'partial pre-consent' BITs are those BITs that contain only a limited pre-consent to investor-initiated arbitration. These treaties, which tend overwhelmingly to have been signed by Communist capital importing states in 1970s and 1980s, generally grant investors access to arbitration only for a limited class of disputes, typically concerning the amount of compensation for expropriation. It is generally acknowledged by practitioners that these BITs are less desirable to investors than are strong BITs, because "expropriation" tends to be defined narrowly under international law, and it rarely occurs in modern times. More valuable is the ability in strong BITs for the investor to obtain arbitration over the meaning of other, potentially much broader, BIT-based promises, such as promises that investors will be treated "fairly and equitably." Strong BITs guarantee arbitration of disputes involving these latter kinds of provisions; Type 2 BITs do not.

- **Type 2** or 'promissory' BITs contain language indicating that the capital importing state will consent to arbitration if the investor requests it at some later date, but which do not relatively unambiguously incorporate the capital importing state's actual consent to investor-initiated arbitration. In other words, these treaties require some further manifestation of state consent before an arbitral tribunal will be likely to accept jurisdiction over a treaty dispute. By making investor access to arbitration contingent on further expressions of state consent, that access becomes less certain, and these treaties, accordingly, should have less value to investors than Type 4 (and perhaps Type 3) treaties. There are relatively few Type 2 treaties in the database, and I give a specific example further below in discussing Australia's treaties. Type 2 treaties are potentially

[5]I have reversed the order of the numbered list to facilitate the interpretation of my empirical analysis.

the most difficult of the four types to code, as it is sometimes not clear if the language which indicates a promise to consent rather than an actual consent is intentional or merely the result of poor legal drafting. As a general coding practice, I tried to keep in mind the tendency of arbitral tribunals to find a basis for their own jurisdiction, even in the face of textual ambiguity, and if I erred in coding Type 2 treaties, it was probably in the direction of coding textually ambiguous pre-consents as Type 1 treaties rather than as Type 2 (promissory) treaties.

- **Type 1** or 'weak' BITs contain neither effective pre-consents to arbitration nor promises to consent to arbitration. Most Type 4 treaties contain no investor-state dispute settlement provisions whatsoever. Until the mid-1980s most BITs were Type 4 BITs. Practitioners tend to agree that Type 4 BITs are of the least potential value as 'credible commitment' devices."

Appendix B

Table 7.1: Test of Non-Proportionality Using Scaled Schoenfeld Residuals

	rho	chisq	p
BITs Among Export Product Competitors	0.09134	2.45205	0.1174
GDP Annual Growth Rate	.04415	0.43129	0.5114
GDP per capita	-0.02394	0.12925	0.7192
Veto Players	0.11808	3.35411	0.0670
FDI Stock	-0.03319	0.08508	0.7705
Investment Share of Real GDP	-0.08994	1.90514	0.1675
Geodesic Distance	0.07408	1.31372	0.2517
Alliance	0.02710	0.17920	0.6721
Cold War	-0.10444	2.40746	0.1208
Common Language	-0.00575	0.00776	0.9298
Competition & Time	-0.11325	3.46866	0.0625
GDP Growth & Time	-0.05162	0.64892	0.4205
Veto Players & Time	-0.10930	2.48925	0.1146
FDI Stock & Time	-0.10930	2.48925	0.1146
GLOBAL	NA	14.78440	0.3930

Significance code: * = 0.05

Appendix C

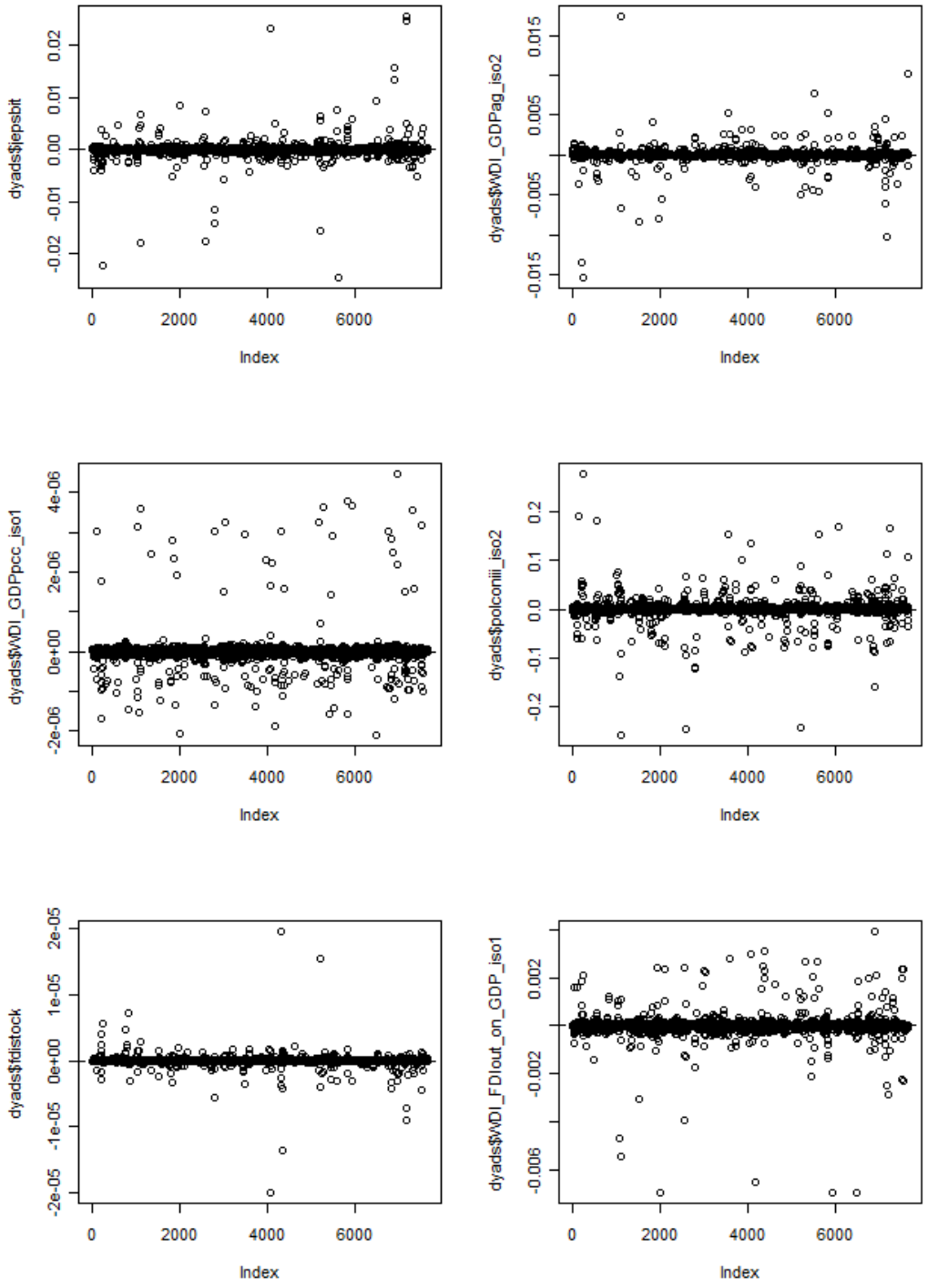
Table 7.2: Cox Model Coefficients Before the Non-Proportionality Correction

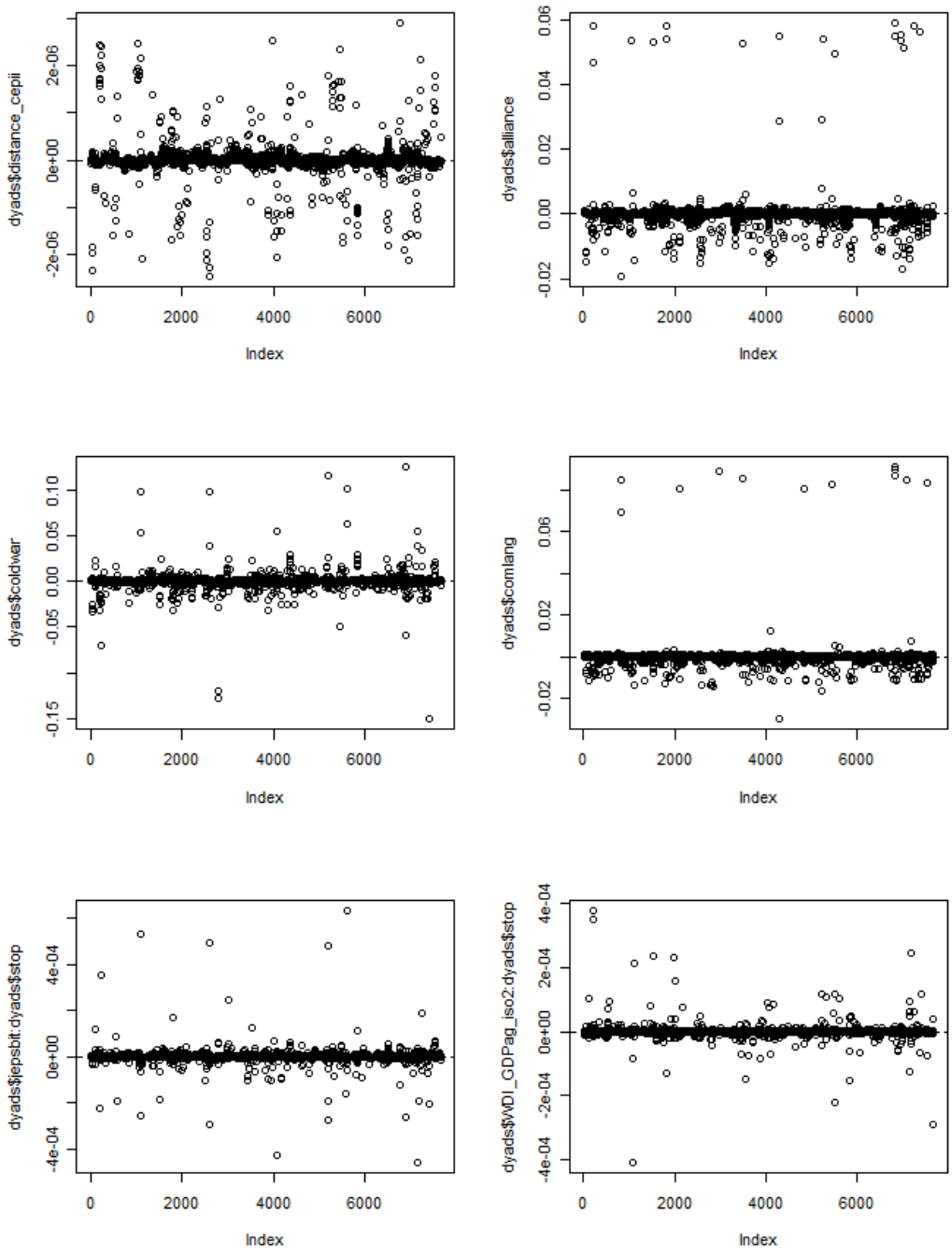
Explanatory Variables	Coefficient	exp(Coefficient)
Annual Growth Rate	-2.188e-02	0.784*
FDI Stock	-6.041e-05	1.028
BITs Among Export Product Competitors	0.0777	1.081^{a}
GDP per capita (K-exporting country)	-6.008e-05	0.999***
Veto Players	0.5510	1.735
Investment Share of Real GDP (K-exporting country)	0.02781	1.028
Geodesic Distance	-6.965e-05	0.999***
Common Language	-0.8924	0.4097**
Alliance	-0.5917	0.5534*
Cold War	0.1926	1.212

Significance codes: *** = 0.001, ** = 0.01, * = 0.05, a = 0.1

Appendix D

Figure 7.1: Index plots of dfbeta for the Cox regression




dyads$distance_cepii
dyads$alliance
dyads$coldwar
dyads$comlang
dyads$jepsbit:dyads$stop
dyads$WDI_GDPag_iso2:dyads$stop
Index

Appendix E

Table 7.3: Baseline Probability that an IIA's Dispute Settlement Mechanism Will Fall in Each of the 4 Categories, Dependending on the Value of the Distance Variable

	Min Distance	Mean Distance	Max Distance
Pr(DSM Category= 1|x)	0.0083	0.0016	0.0002
Pr(DSM Category= 2|x)	0.0065	0.0013	0.0001
Pr(DSM Category= 3|x)	0.1032	0.0225	0.0023
Pr(DSM Category= 4|x)	0.8820	0.9746	0.9974

Table 7.4: Baseline Probability that an IIA's Dispute Settlement Mechanism Will Fall in Each of the 4 Categories, Dependending on the Value of the FDI Stock Variable

	Min FDI Stock	Mean FDI Stock	Max FDI Stock
Pr(DSM Category= 1|x)	0.0018	0.0016	0.0001
Pr(DSM Category= 2|x)	0.0014	0.0013	0.0001
Pr(DSM Category= 3|x)	0.0245	0.0225	0.0011
Pr(DSM Category= 4|x)	0.9723	0.9746	0.9988

Table 7.5: Baseline Probability that an IIA's Dispute Settlement Mechanism Will Fall in Each of the 4 Categories, Dependending on the Value of the GDP Growth Variable

	Min GDP Growth	Mean GDP Growth	Max GDP Growth
Pr(DSM Category= 1|x)	0.0031	0.0016	0.0013
Pr(DSM Category= 2|x)	0.0024	0.0013	0.0010
Pr(DSM Category= 3|x)	0.0419	0.0225	0.0174
Pr(DSM Category= 4|x)	0.9526	0.9746	0.9803

Bibliography

Aalen, O.O. 1976. *Statistical inference for a family of counting processes*. Institute of Mathematical Statistics, University of Copenhagen.

Agresti, A. 2003. *Categorical data analysis*. Wiley-Interscience.

Andersen, P.K. 1993. *Statistical models based on counting processes*. Springer.

Andersen, PK and RD Gill. 1982. "Cox's regression model for counting processes: a large sample study." *The Annals of Statistics* pp. 1100–1120.

Axelrod, R. 1984. *The Evolution of Cooperation*. Basic Brook.

Beck, N., K.S. Gleditsch and K. Beardsley. 2006. "Space is more than geography: Using spatial econometrics in the study of political economy." *International Studies Quarterly* 50(1):27–44.

Berry, F.S. and W.D. Berry. 1990. "State lottery adoptions as policy innovations: An event history analysis." *The American Political Science Review* 84(2):395–415.

Bivand, R. 2002. "Spatial econometrics functions in R: Classes and methods." *Journal of Geographical Systems* 4(4):405–421.

Blonigen, BA. & MG Wang. 2005. Inappropriate Pooling of Wealthy and Poor Countries in EmpiricalFDI Studies. In *Does Foreign Direct Investment*

Promote Development, ed. M. Blomstrom Theodore Moran, E. Graham. Institute for International Economics.

Box-Steffensmeier, J. M. and B. S. Jones. 2004. *Event history modeling: A guide for social scientists*. Cambridge University Press.

Box-Steffensmeier, J.M. and C. Zorn. 2002. "Duration Models for Repeated Events." *Journal of Politics* pp. 1069–1094.

Buthe, T. and H.V. Milner. 2008. "The Politics of Foreign Direct Investment into Developing Countries: Increasing FDI through International Trade Agreements?" *American Journal of Political Science* 52(4):741–762.

Centre D'Etudes Prospectives et D'Informations Internationales. 2009. "Geodesic Distances Dataset.". `http://www.cepii.fr/anglaisgraph/bdd/distances.htm`.

Cleves, M. 1999. "Analysis of multiple failure-time survival data." *Stata Technical Bulletin* 49:30–39. `http://www.stata.com/support/faqs/stat/stmfail.html`.

Correlates of War Project. 2008. `http://www.correlatesofwar.org/`.

Coutain, B. 2009. "The Unconditional Most-Favored-Nation Clause and the Maintenance of the Liberal Trade Regime in the Postwar 1870s." *International Organization* 63:139–175.

Cox, DR. 1972. "Regression models and life-tables." *Journal of the Royal Statistical Society* 34(2):187–220.

Cox, D.R. and D. Oakes. 1984. *Analysis of survival data*. Chapman & Hall.

Daley, D.M. and J.C. Garand. 2005. "Horizontal diffusion, vertical diffusion, and internal pressure in state environmental policymaking, 1989-1998." *American Politics Research* 33(5):615.

Di Rosa, P. 2004. "Recent Wave of Arbitrations against Argentina under Bilateral Investment Treaties: Background and Principal Legal Issues, The." *University of Miami Inter-American Law Review* 36:41.

Elkins, Z, AT Guzman and BA Simmons. 2006. "Competing for Capital: The Diffusion of Bilateral Investment Treaties, 1960–2000." *International Organization* 60(04):811–846.

Elster, J. 2007. *Explaining social behavior: more nuts and bolts for the social sciences*. Cambridge University Press.

Fleming, T.R. and D.P. Harrington. 1991. *Counting processes and survival analysis*. Wiley New York.

Fox, J. 2002. Appendix: Cox proportional-hazards regression for survival data. In *An R and S-PLUS companion to applied regression*. Thousand Oaks, Sage.

Frankel, J.A. and D. Romer. 1999. "Does trade cause growth?" *American Economic Review* pp. 379–399.

Franzese, Jr, RJ and JC Hays. 2007. "Spatial Econometric Models of Cross-Sectional Interdependence in Political Science Panel and Time-Series-Cross-Section Data." *Political Analysis* 15:140.

Franzese, Jr, RJ and JC Hays. 2008. Empirical Models of Spatial Interdependence. In *Oxford Handbook of Political Methodology*. Oxford University Press.

Freyer, D.H. and D. Herlihy. 2005. "Most-Favored-Nation Treatment and Dispute Settlement in Investment Arbitration: Just How" Favored" is" Most-Favored"?" *ICSID Review - Foreign Investment Law Journal* 20(1):58.

Ginsburg, T. 2005. "International Substitutes for Domestic Institutions: Bilateral Investment Treaties and Governance." *International Review of Law and Economics* 25(1):107–123.

URL: *http://www.sciencedirect.com/science/article/B6V7M-4G94HS9-1/2/82dbd5c63750942cbf58a1c326affb58*

Glasgow, G and RM Alvarez. 2008. Discrete Choice Methods. In *Oxford Handbook of Political Methodology*. Oxford University Press.

Guzman, A.T. 1997. "Why LDCs sign treaties that hurt them: Explaining the popularity of bilateral investment treaties." *Virginia Journal of International Law* 38(4):639–688.

Hallward-Driemeier, M. 2004. "Do Bilateral Investment Treaties Attract Foreign Direct Investment? Only a Bit... and They Could Bite." *Social Science Research Network Working Paper Series* . `http://ssrn.com/abstract=636541`.

Henisz, W.J. 2002. "The institutional environment for infrastructure investment." *Industrial and Corporate Change* 11(2):355–389.

International Center for Settlement of Investment Disputes. 2000. "Emilio Agustin Maffezini (Claimant) v. The Kingdom of Spain (Respondent), Case No. ARB/97/7.".

International Center for Settlement of Investment Disputes. 2008. "Wintershall Aktiengesellschaft (Claimant) v. Argentine Republic (Respondent), Case No. ARB/04/14.".

International Center for Settlement of Investment Disputes. 2009. "ICSID Database of Investment Treaties.". http://icsid.worldbank.org/ [Consulted July 5th 2009].

Jandhyala, S., W.J. Henisz, E. Mansfield, H. Preliminary and I. Draft. 2007. Pooling Dyads is a BIT Inappropriate. Technical report Working Paper, Wharton School, University of Pennsylvania, Philadelphia, PA.

Keohane, R. O. 1984. *After hegemony: cooperation and discord in the world political economy*. Princeton University Press.

Kerner, A. 2009. "Why Should I Believe You? The Costs and Consequences of Bilateral Investment Treaties." *International Studies Quarterly* 53(1):73–102.

Kobrin, S. J. 1987. "Testing the bargaining hypothesis in the manufacturing sector in developing countries." *International Organization* pp. 609–638.

Lin, DY and LJ Wei. 1989. "The robust inference for the Cox proportional hazards model." *Journal of the American Statistical Association* pp. 1074–1078.

Manger, M. 2008. "International Investment Agreements and Services Markets: Locking in Market Failure?" *World Development* 36(11):2456–2469.

Martinussen, T. and T.H. Scheike. 2006. *Dynamic regression models for survival data*. Springer.

Mercer, J. 1996. *Reputation and international politics*. Cornell University Press.

Mooney, C.Z. 2001. "Modeling regional effects on state policy diffusion." *Political Research Quarterly* 54(1):103.

Neumayer, E. and L. Spess. 2005. "Do bilateral investment treaties increase foreign direct investment to developing countries?" *World Development* 33:1567–1585.

Neumayer, E. and T. Plümper. 2009. "Spatial Effects in Dyadic Data." *International Organization* 64(1). Forthcoming.

Newcombe, A. 2009. "Investment Treaty Arbitration Website." `http://ita.law.uvic.ca/`.

Penn World Table 6.2. 2006. Center for International Comparisons at the University of Pennsylvania. `http://pwt.econ.upenn.edu/`.

Prentice, RL, BJ Williams and AV Peterson. 1981. "On the regression analysis of multivariate failure time data." *Biometrika* 68(2):373–379.

Putnam, RD. 1988. "Diplomacy and Domestic Politics: The Logic of Two-Level Games." *International Organization* 42:427–460.

Rose-Ackerman, S and J Tobin. 2005. "Foreign Direct Investment and the Business Environment in Developing Countries: The Impact of Bilateral Investment Treaties." Social Science Research Network Working Paper Series.

S original by Terry Therneau and ported by Thomas Lumley. 2008. *survival: Survival analysis, including penalised likelihood.* R package version 2.34-1.

Salacuse, JW and NP Sullivan. 2005. "Do BITs Really Work: An Evaluation of Bilateral Investment Treaties and Their Grand Bargain." *Harvard International Law Journal* 46:67.

Simmons, B.A., F. Dobbin and G. Garrett. 2006. "Introduction: The international diffusion of liberalism." *International Organization* 60(04):781–810.

Therneau, T.M. and P.M. Grambsch. 2000. *Modeling survival data: extending the Cox model*. Springer.

Tsebelis, G. 1995. "Decision making in political systems: Veto players in presidentialism, parliamentarism, multicameralism and multipartyism." *British Journal of Political Science* pp. 289–325.

Tsebelis, G. 1999. "Veto players and law production in parliamentary democracies: An empirical analysis." *American Political Science Review* pp. 591–608.

Tsebelis, G. 2002. *Veto players: How political institutions work*.

UCLA Academic Technology Services. 2009. Stata Annotated Output Ordered Logistic Regression. Technical report. `http://www.ats.ucla.edu/stat/stata/output/stata_ologit_output.htm`.

United Nations Conference on Trade and Development. 2008. "World Investment Report.".

United Nations Conference on Trade and Development. 2009. "Quantitative data on bilateral investment treaties and double taxation treaties.". `http://www.unctad.org/`.

Vandevelde, K.J. 1988. "Bilateral Investment Treaty Program of the United States, The." *Cornell International Law Journal* 21:201.

Vandevelde, K.J. 1998. "The political economy of a bilateral investment treaty." *American Journal of International Law* pp. 621–641.

Venables, W. N. and B. D. Ripley. 2009. *MASS (polr) Ordered Logistic or Probit Regression*. R package version 7.2-47.

Vernon, R. 1971. *Sovereignty at Bay: The Multinational Spread of US Enterprises*. Prentice Hall Press.

Volden, C., M.M. Ting and D.P. Carpenter. 2008. "A Formal Model of Learning and Policy Diffusion." *American Political Science Review* 102(03):319–332.

Ward, M.D. and K.S. Gleditsch. 2002. "Location, location, location: An MCMC approach to modeling the spatial context of war and peace." *Political Analysis* 10(3):244–260.

Wei, LJ and D.V. Glidden. 1997. "An overview of statistical methods for multiple failure time data in clinical trials." *Statistics in Medicine* 16(8):833–839.

Wei, LJ, DY Lin and L. Weissfeld. 1989. "Regression analysis of multivariate incomplete failure time data by modeling marginal distributions." *Journal of the American Statistical Association* pp. 1065–1073.

World Bank. 2009. "World Development Indicators.".

Yackee, JW. 2007. "Conceptual Difficulties in the Empirical Study of Bilateral Investment Treaties." University of Wisconsin Legal Studies Research Paper Series Paper No. 1053.

Yackee, JW. 2008. *Codebook for Database of Investor-State Dispute Settlement Provisions in Bilateral Investment Treaties*. Obtained via contact with the author.

Yackee, JW. 2009. "Bilateral Investment Treaties, Credible Commitment, and the Rule of (International) Law: Do BITs Promote Foreign Direct Investment?" *Law & Society Review* 42(4):805–832.