



Dyadic military conflict, security alliances, and bilateral FDI flows

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Abstract

Although multinationals operate under cross-border jurisdictions, the relevance of interstate security relations to international business has received little attention. Despite the impressive accumulation of knowledge in international business and international relations, the two intellectual communities have largely ignored the insights from each other. In this article, we seek to bridge this gap. We argue that interstate military conflict and security alliances, as two central features of interstate security relations, often change both government policies toward international business and investor expectations of political risk. From the perspectives of both states and investors, military conflict should reduce bilateral investment whereas security alliances increase it. Our empirical analysis applies the system GMM estimator to a gravity model of bilateral investment flows for 1117 directed dyads among 58 countries from 1980 to 2000. Among 18 countries whose per capita real incomes remain consistently above 12,000 constant dollars, the security factors do not affect bilateral investment; in the high-income/low-income dyads, interstate military conflict and security alliances significantly influence bilateral investment as expected. The findings depict two separate realms in which international politics does and does not interfere with international business, helping us improve political risk assessments and understand the interactions between states and firms.

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INTRODUCTION

International production has grown to become the most salient aspect of the global economy. World foreign direct investment (FDI) inflows reached \$865 billion in 1999, about 14% of global gross domestic capital formation as compared with 2% 20 years ago (UNCTAD, 2000: xvi). The number of multinational enterprise (MNE) parent firms reached 63,000 in 2000 and 79,000 in 2007, associated with 690,000 and 790,000 foreign affiliates, respectively (UNCTAD, 2000: xv; 2008: xvi). Foreign affiliates worldwide now hire some 82 million employees (UNCTAD, 2007: xvi). Even for developing countries, the inward FDI stock rose from about 13% of their GDP in 1980 to about a third in 2002 (UNCTAD, 2003). Since the 1980s, foreign production capital has reached almost all the countries, many of which vigorously compete to attract MNEs. In this context, scholars have studied extensively the economic and political causes of FDI flows. However, there is very little work

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on how the quality of interstate security relations influences bilateral investment flows. We fill that gap in this article.

We consider how two central features of interstate security relations – military conflict and security alliances – influence investment flows. Theoretically, interstate military conflict and security alliances often cause changes both to government policies important for foreign businesses and to investor expectations of political risk. Hence we expect military conflict to reduce bilateral investment whereas security alliances, particularly defense pact ones, increase it. We test our hypotheses in a sample of 1117 directed dyads (or country pairs) among 58 countries from 1980 to 2000. Using a system generalized method of moments (GMM) estimator for dynamic panel data, our statistical analysis demonstrates that military conflict and security alliances affect bilateral investment flows in the high-income/low-income dyads, but not in the high-income/high-income dyads.

We believe that a close look at the effects of both dyadic military conflict and security alliances on bilateral investment is important. It facilitates a better understanding of how international politics influences the distribution of international production and the allocation of resources. Political risk forecast can also improve by incorporating information on interstate military conflict and the nature of security alliances. At the same time, identifying the impact of military conflict and security alliances on FDI is important for understanding the possible reverse effect of FDI on interstate political relations.

LITERATURE REVIEW

In this section, we offer a short review of the small literature related to the effects of military conflict and security alliances on FDI in international business and political science.¹ In international business, scholars devote a lot of attention to studying aggregate indicators of political risk or stability. They treat interstate conflict as merely one component, and completely ignore the relevance of security alliances. We often confront mixed evidence from these studies, and do not know the individual effects of military conflict and security alliances.

For example, Schneider and Frey (1985) find that political instability has a negative effect on FDI flows. In a cross-sectional analysis of FDI flows to 36 countries for 1977 and 1982, Loree and Guisinger (1995) find that political stability significantly

promotes FDI inflows in 1982, but not in 1977. Using data for all reported manufacturing plant openings from 1984 to 1987, Woodward and Rolfe (1993) find that political stability increases the probability of a country being selected as an investment location. But Fatehi-Sedeh and Safizadeh (1989) fail to find any statistical association between political stability and FDI. Olibe and Crumbley (1997) do not find consistent evidence that the political risk index influences US FDI flows to 10 out of 13 OPEC countries. Sethi, Guisinger, Phelan, and Berg (2003) find that political instability, measured by a composite variable on a 100-point scale, does not influence US FDI flows to 28 countries from 1981 to 2000. Globerman and Shapiro (2003) conduct a two-stage analysis of US FDI flows to 143 countries from 1994 to 1997, in which the first stage investigates the causal factors of the probability that a country is an FDI recipient, and the second stage examines the determinants of the amount of FDI received. They find that an index of political instability and violence, including armed conflict, social unrest, terrorist threats, etc., does not influence the probability of whether a country receives any FDI inflow, but reduces the amount of FDI inflow a country receives.

In an exceptional analysis, Nigh (1985) argues that since “many host country officials and citizens do not distinguish between the interests of the US government and those of US direct foreign investors,” investors watch closely for events of inter- and intra-nation cooperation or conflict. These events provide valuable information on the business environment in a host country for an investor from a particular home country. In a statistical analysis of manufacturing FDI by US firms to 24 countries over 21 years, Nigh finds that inter-nation and intra-nation conflicts reduce US investment whereas inter-nation and intra-nation cooperation increases it.

Political scientists also pay very limited attention to the relevance of military conflict and security alliances to FDI. Frieden (1994) argues that, relative to those in manufacturing and public utilities, foreign investments in raw materials and agriculture are more easily appropriated and protected with force by the host government. Using a rational expectation framework, Li (2006) argues that investors reduce investments *ex ante* when anticipating acts of violence, but they can only make adjustments *ex post* when facing unexpected violent acts. In a country-level analysis of 129 countries from 1976 to 1996, he finds that unanticipated



interstate war reduces a country's chance as an investment location, but has little effect on the amount of FDI inflow. In a recent study, Biglaiser and DeRouen (2007) argue that US troops stationed in host countries signal positive relations and possibly alliances between the US and host countries, indicating investment stability that is only available to US firms. They find that the presence of US troops encourages US capital inflows among 126 developing countries between 1966 and 2002.

Therefore, with only a few exceptions, international business scholars and political scientists do not provide in-depth analyses of how the quality of interstate security relations influences bilateral investment flows. The few relevant studies focus on either the country-level or the US FDI flows, raising issues of generalizability for bilateral investments in other country pairs. Almost no study investigates the effect of security alliances, and no one examines how both military conflicts and security alliances influence bilateral investment flows at the same time.

THEORY AND HYPOTHESES

FDI refers to the purchase of physical assets or a significant share of the ownership (stock) of a company in another country to gain a measure of management control. A firm invests abroad when its ownership advantages over tangible and intangible assets, together with the host-country attributes (e.g., resource endowments or government policies), make production abroad profitable, and when it prefers direct hierarchical control of production over other alternative modes (e.g., licensing or trade) to satisfy the demand for its products (e.g., Dunning, 1988, 1993). Therefore, when MNEs invest and produce to maximize profit, they have to operate under the jurisdictions of both home and host governments that not only regulate the investment environments but also manage interstate political relations.

Interstate military conflict and security alliances are two salient, observable features of interstate political relations. How do they influence bilateral investments? We argue that the quality of interstate political relations affects bilateral investment flows by both influencing government policies important for foreign businesses and modifying investor expectations of political risk. Since FDI involves cross-border jurisdictions, we consider the theoretical effects of military conflict and security alliances on

investment flows from both the perspective of states and the perspective of foreign investors.

Effect of Interstate Military Conflict on Bilateral Investment

From the perspective of the state, it seems intuitive that when two states fight with each other, both sides have an incentive to increase their own chances of winning. Direct investments flowing from a home country to a host country can generate security externalities for both sides. On the one hand, FDI brings into a host needed capital and managerial know-how, creates technological spillovers, and increases local employment (Lipsey, 2002). Since these economic benefits can easily translate into improved military power, a home country will rationally restrict outward investments to a belligerent host.² On the other hand, large MNEs often invest in various capital-intensive industries (e.g., chemicals, oil) and create monopoly or oligopoly market structures (Stopford & Strange, 1991; Vernon, 1998). The imminent dominance in strategic sectors by firms from a hostile home country inevitably causes the host government to restrict such investments, owing to national security concerns.³ Therefore, if either government perceives the bilateral investment flows as harmful to its own national security, it will attempt to regulate the entry, exit and operations of both outgoing and incoming businesses.

To regulate business, a national government can often choose from a large menu of policy choices concerning, for example, breach of contract, expropriation, repatriation of profits, exchange controls, performance requirements, tax rates, entry and exit restrictions, embargoes and other import–export controls (e.g., Brewer, 1993). Home governments can prevent FDI from going to adversaries by imposing capital controls. Host governments, on the other hand, may raise tax rates, restrict profit repatriation, limit the access of foreign investors to security-sensitive sectors, and even expropriate assets of firms from hostile home countries.

In some situations, when governments anticipate a war, they are likely to restrict investment flows before the war occurs, to manipulate the odds of victory. However, in the international relations literature, the occurrence of military conflict is widely noted as a stochastic process, involving incomplete information and the signaling of resolve at the crisis-bargaining stage (e.g., Fearon, 1995). Lacking information about each other's true intent, states do not always anticipate the occurrences of wars.

An unanticipated war often serves to reveal valuable information about the true quality of interstate relations (Li, 2006). In light of such new information after a war, states will adjust their regulatory policies for national security reasons. Therefore interstate military conflict may lead to policy changes that decrease bilateral investment flows.

From the perspective of the investor, cross-border jurisdiction implies that foreign investors operate in an unfamiliar, foreign environment (e.g., Brewer, 1993; Henisz, 2000). Often, they are not as well informed and connected as domestic investors, and may not be treated the same as domestic investors by the host government. Hence foreign investors necessarily care about government policies toward FDI, because they influence the expected returns and security of their assets. To the extent that interstate military conflict influences these government policies, investors have to consider its impact seriously in making investment decisions.

Forward-looking investors constantly evaluate the probability of interstate conflict, and may preemptively adjust their investments before a war occurs (Li, 2006). However, just like states, investors do not have perfect foresight, and have to operate with uncertainty. Hence investor forecasts of interstate conflicts and their consequences are often inaccurate. Whereas certain types of uncertainty are endogenous, and can be resolved by investors through experiential learning, the type of uncertainty resulting from violence-induced outcomes tends to be exogenous to investment (Rivoli & Salorio, 1996). As a result, investors often have to adjust their decisions and reduce investments or reinvestments after military conflicts occur.

Arguably, an MNE may not necessarily care too much about the risks for its investments in a particular country, because it can diversify away some of the risks by holding a market portfolio (Butler & Joaquin, 1998: 600). However, for specific investment assets in a particular country, at least some of the political risks resulting from military-conflict-related policy changes are not diversifiable, for two reasons: investors cannot fully anticipate all contingencies; and the market for the securitization of political risks is not yet well developed (Finnerty, 2001).

Now, multinationals may still modify their risk assessments and reduce investments or reinvestments, even in the absence of any conflict-induced government policy change after an interstate conflict occurs (Li, 2006, 2008). Foreign investors often produce goods intended for sale in the host

country. In the event of interstate conflict, nationalist sentiments are likely to run high. Consumers and producers in the host may boycott the products of the foreign affiliate of an MNE headquartered in a belligerent home country.⁴ In addition, military violence often interferes with transportation, communication, public utilities, and the smooth functioning of the market, causing delays in the delivery of goods and inflicting direct damages on investment assets. Interstate conflict may further cause panics in the financial market, volatility in currency value, and holdups in the payments system. Hence, even without inducing any policy change, interstate military conflict may still reduce bilateral investments.

Effect of Security Alliances on Bilateral Investment

One may also explain the effects of security alliances on FDI from the perspectives of both states and investors. States form security alliances for a variety of reasons: to adjust power distribution (Waltz, 1979); to react to threats (Walt, 1987); to trade off security and autonomy (Morrow, 1991); to pursue an optimal portfolio of security risk and return (Conybeare, 1992); or because they share similar preferences (Bueno de Mesquita, 1981; Smith, 1995). Regardless of the reason, military allies have to align their security interests, at least tentatively. Security alliances may further strengthen common interests, because alliances sometimes require coordination costs and institutionalized commitments that enhance their credibility (Fearon, 1997; Morrow, 1994), and because allies honor their commitments most of the time (Leeds, Long, & Mitchell, 2000).

In the political science literature, scholars find that security alliances frequently motivate international monetary cooperation and promote bilateral trade flows. States are often more likely to defend or peg to the currencies of their allies in fixed exchange rate arrangements, because security ties can reduce concerns over relative gains, motivate active collaboration by the anchor-currency ally to defend the fixed exchange rate, and signal to the currency market the durability of the fixed-rate arrangement (e.g., Kirshner, 1995; Li, 2003; Oye, 1985). Security allies also tend to trade more with each other, because trade increases national wealth and contributes to military advantages, producing positive security externalities for both sides (e.g., Gowa, 1994; Gowa & Mansfield, 1993; Mansfield & Bronson, 1997). These arguments also apply to FDI flows.



As discussed earlier, FDI can create national security externalities for both home and host governments, for its economic consequences influence military capabilities and national security. Alliance ties help alleviate and even remove the concerns over security externalities of capital movement for both sides. Hence home countries are less likely to restrict domestic capital from leaving for foreign military allies. And host governments are less likely to restrict foreign entry into the economy, particularly the security-sensitive sectors such as banking, telecommunications, and the defense industry.

In fact, alliance ties are critical in order for foreign investment to occur in the defense and other security-sensitive industries. As Brooks (2005) shows, because states pursuing cutting-edge military technology can no longer resort to autarkic defense production, the involvement of MNEs in the defense industry leads to large increases in the cost, complexity, and scale of new military technologies and the internationalization of weapons production. The internationalization of US defense production significantly contributed to its technological edge over the autarkic defense industry of the former Soviet Union.⁵ Increasingly, states seek the participation of foreign capital and technology in those industries, but they are highly sensitive to whether foreign business partners are from their security allies.⁶

From the perspective of foreign investors, security alliances add to the attractiveness of the host country. In situations of cross-border jurisdictions, investors constantly evaluate the level of political risk in the host country (e.g., Henisz, 2000). As noted earlier, an important source of political risk is the quality of political relations between states, because it influences both government policies and business operations. But the quality of interstate political relations often involves information private to leaders, so that investors have to use observable factors to make inferences about the unobservable. Like the occurrence of interstate military conflict, alliance ties also serve to indicate the nature of interstate political relations, helping to reduce the information asymmetry for foreign investors. Furthermore, to the extent that alliance ties reduce security concerns for national governments, investors could anticipate government policies in allied hosts to be either less disruptive (e.g., fewer security checks, less demanding performance requirements) or even more favorable

(e.g., entry into security-sensitive industries). These effects of security alliances help to stabilize business expectations, facilitate the entry and reinvestment of foreign investors, and increase investment opportunities for firms from security allies. Therefore, a security alliance is likely associated with fewer investment restrictions and lower political risks in the host for investments from an allied home country.

Security alliances, however, are heterogeneous, and do not embody the same degree of security interest alignment and commitment (Moul, 1988; Singer & Small, 1966). A neutrality agreement simply requires the avoidance of engagement in a coalition that is aggressive toward either party to the agreement, and an entente pact only asks for consultation or cooperation in a time of crisis. In contrast, the defense-pact alliance is more demanding, requiring the willingness to help each other militarily, the formation of a coalition, and coordinated military efforts. Therefore defense-pact alliances imply more compatible security interests and stronger security commitments between members. The members can expect of each other more credible and friendly reciprocal actions.⁷ Since most security alliances are public knowledge, investors can observe the distinctions among different types of alliance agreements and make inferences about their business implications accordingly. Therefore, if a security alliance does affect bilateral investment flows, we should expect to find a strong effect between defense-pact allies.

Hypotheses and Conjecture

Based on the theoretical discussions above, we identify the following testable hypotheses.

Hypothesis 1: Interstate military conflicts reduce bilateral investment flows.

Hypothesis 2: Security alliances, particularly defense pact ones, increase bilateral investment flows.

One caveat we note is that while FDI could come in different types (based on, e.g., site specificity, R&D intensity, vertical and horizontal integration), our hypotheses do not distinguish them. An extensive analysis is beyond the scope of this article, but we might conjecture about the effects of military conflict and security alliances on different FDI types. For example, horizontal investment involves duplicating the same stage of the production

Table 1 Summary statistics

	All dyads sample			High-income/low-income dyads			High-income/high-income dyads		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
Real FDI flow at T+1 (log)	10,401	9.216	0.142	6740	9.192	0.048	3661	9.261	0.223
Real FDI flow at T+1	10,401	501.276	3,266.069	6740	110.954	622.733	3661	1,219.869	5,366.571
Dyadic military conflict	10,401	0.005	0.073	6740	0.007	0.082	3661	0.002	0.050
Alliance	10,401	0.305	0.461	6740	0.225	0.418	3661	0.453	0.498
Defense pact	10,401	0.299	0.458	6740	0.216	0.412	3661	0.453	0.498
Lagged real FDI flows (log)	10,401	9.213	0.131	6740	9.191	0.043	3661	9.254	0.207
Spatially weighted FDI (log)	10,401	3.918	0.964	6740	4.138	0.973	3661	3.513	0.805
Population of origin (log)	10,401	17.016	1.487	6740	17.043	1.512	3661	16.965	1.439
Population of destination (log)	10,401	17.022	1.331	6740	17.163	1.177	3661	16.761	1.541
GDP per capita of origin (log)	10,401	9.172	1.184	6740	8.722	1.243	3661	9.998	0.292
GDP per capita of destination (log)	10,401	9.625	0.614	6740	9.435	0.668	3661	9.977	0.245
Ratification of BIT	10,401	0.139	0.346	6740	0.213	0.409	3661	0.004	0.059
Bilateral trade (log)	10,401	5.027	1.897	6740	4.434	1.718	3661	6.120	1.718
Distance (log)	10,401	7.213	2.273	6740	7.543	1.867	3661	6.607	2.775

process in a foreign affiliate, whereas vertical investment refers to breaking the value-added chain over different countries (Navaretti & Venables, 2004). Although both FDI types are subject to the risks associated with interstate security relations, vertical investment is likely to be more sensitive. A holdup at one affiliate in one country influences the entire value-added chain under vertical investment, whereas its effect is localized under horizontal investment. Likewise, the benefit deriving from a security alliance tie may also be more important for vertical investment than for horizontal investment. Testing these distinctions accurately and directly is difficult, because of serious problems in obtaining and classifying FDI data (Navaretti & Venables, 2004: 31). However, there is some consensus that most FDI to developed countries is horizontal, whereas most FDI to developing countries is vertical. Thus Blonigen and Wang (2004) argue that FDI activities in highly developed and less-developed economies follow different patterns and should be studied separately, a suggestion we will follow in our empirical analysis.

METHODS AND DATA

Sample and Dependent Variable

We test the effects of interstate military conflict and security alliances on bilateral investment flows using a sample of directed dyads between 58 countries from 1980 to 2000, including 29 OECD members and 29 non-OECD countries.⁸ Summary statistics and correlation matrix of all variables are

in Tables 1 and 2. The dependent variable is the FDI flow, either from one OECD country (origin) to any of the other 57 countries (destination), or from one of the 29 non-OECD countries (origin) to an OECD member (destination). The data, unfortunately, do not cover the flows between non-OECD countries, and thus one should interpret our findings with caution. The variable is measured in millions of constant US dollars and log-transformed, which involves the issue of negative and zero values, to be discussed below. Data are collected from the OECD *International Direct Investment Statistics Yearbook*. Detailed descriptions of the bilateral FDI data are presented in the Appendix.

Modeling and Design Issues

To test the hypotheses in a pooled design, we consider the following dynamic panel data model:

$$y_{ijt+1} = \alpha y_{ijt} + \rho \sum_{km \neq ij} \omega_{pqt} y_{kmt} + \beta_1 X_{i,j,ij,t} + \beta_2 Z_{i,j,ij,t} + v_{ij} + \varepsilon_{ijt}, \quad ij = 1, \dots, N, \quad t = 1, \dots, T \quad (1)$$

where y_{ijt+1} indicates FDI flows from the origin country i to the destination country j at year $t + 1$; y_{ijt} denotes FDI flows from i to j in year t to model temporal dependence in FDI; $\sum_{km \neq ij} \omega_{pqt} y_{kmt}$ models spatial dependence in FDI flows; $X_{i,j,ij,t}$ denotes exogenous variables in the model, including geographic distance between i and j in year t , populations of i and j in year t , and the possible alliance tie between i and j in year t ; $Z_{i,j,ij,t}$ denotes endogenous variables in the model, including military conflict

Table 2 Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Real FDI flow at $T+1$ (log)	1													
2. Real FDI flow at $T+1$	0.9006	1												
3. Dyadic military conflict	0.0128	0.0081	1											
4. Alliance	0.2318	0.1634	0.015	1										
5. Defense pact	0.2344	0.1655	0.0102	0.9862	1									
6. Lagged real FDI flows (log)	0.6896	0.6115	0.0054	0.2238	0.226	1								
7. Spatially weighted FDI (log)	-0.0748	-0.041	0.0314	-0.2491	-0.255	-0.0625	1							
8. Population of origin (log)	0.0964	0.0652	0.0428	0.0594	0.05	0.0957	0.1001	1						
9. Population of destination (log)	0.1382	0.1029	0.0337	0.0641	0.055	0.1423	-0.0978	-0.0087	1					
10. GDP per capita of origin (log)	0.174	0.1122	-0.0453	0.2412	0.249	0.1722	-0.3989	-0.4109	-0.1323	1				
11. GDP per capita of destination (log)	0.1192	0.0913	-0.0041	0.0543	0.053	0.1206	0.0034	0.0028	-0.1273	0.0005	1			
12. Ratification of BIT	-0.0795	-0.054	0.0166	-0.0611	-0.07	-0.0796	0.322	0.0734	0.0002	-0.2465	-0.224	1		
13. Bilateral trade (log)	0.3406	0.2323	0.0364	0.3743	0.367	0.3363	-0.2273	0.2827	0.3524	0.3018	0.3257	-0.1358	1	
14. Distance (log)	-0.1529	-0.095	-0.0795	-0.2706	-0.276	-0.1459	0.1072	0.1029	0.0933	-0.1698	-0.043	-0.0103	-0.4043	1

between i and j in year t , trade flows between i and j in year t , the ratification of bilateral investment treaty (BIT) between i and j since year t , and per capita incomes of i and j in year t ; α , ρ , β_1 , β_2 represent individual or vectors of parameters to be estimated; v_{ij} indicates dyad-level fixed effects that may correlate with the covariates; and ε_{ijt} is the error term, assumed to be independently and identically distributed, with variance σ_ε^2 .

The dynamic panel data model has a lot of advantages, but it also poses several technical challenges. We discuss these issues below. First, FDI flows tend to correlate over time. For example, reinvested earnings and other forms of income transfers between a parent and an affiliate often persist over time and correlate with prior investment. The dynamic panel model captures temporal dependence with the lagged dependent variable and the dyad fixed effects.

Second, FDI flows often correlate across space. FDI into one country may not be independent of FDI into alternative host countries. A host, in lieu of its neighboring countries, may be chosen by MNEs as an “export platform,” implying negative spatial correlation; or an MNE may set up its vertical chain of production across neighboring countries, generating vertical specialization with conglomeration, and thus positive spatial correlation (see, e.g., Blonigen, Davies, Waddell, & Naughton, 2007). Meanwhile, FDI from one origin may correlate with FDI from other origin countries when MNEs in different countries compete for international market shares. We use the spatial autoregressive term $\sum_{km \neq ij} \omega_{pqkt} y_{kmt}$ to capture the time-varying spatial dependence in FDI, where $\sum_{km \neq ij} \omega_{pqkt}$ represents the spatial connectivity from destination j to other destinations m and the spatial connectivity from origin i to other origins k .⁹

Third, all right-hand-side variables are lagged one period behind the dependent variable, to control for possible reverse causality. Thus we treat the one-period-lagged geographic distance, populations of both countries, and their security alliance tie as exogenous. However, according to theoretical reasons in various previous studies,¹⁰ dyadic military conflict, bilateral trade, BIT ratification, and national incomes are likely to remain endogenous even with one-period lag, correlating with unexplained shocks in FDI flows in the error term. We model these endogenous variables explicitly, as discussed below.

Fourth, the specification of the control variables follows the gravity model that scholars use to

explain not only bilateral trade but also FDI flows (Bergstrand, 1989; Blonigen & Davies, 2004; Brainard, 1997; Grosse & Trevino, 1996; Grubert & Mutti, 1991). However, the gravity model of FDI does not have as strong a theoretical foundation as in the case of trade: thus one should interpret the results with caution.¹¹

Fifth, although we follow the standard gravity model specification, it does not include all possible causes of FDI flows. Many of these factors, such as the cultural distance between countries and colonial ties, are dyad-specific and do not vary over time. We employ the dyad-fixed effects to model these factors. In addition, the lagged dependent variable also helps to absorb other possible omitted variables. Still some other variables that are often found to affect FDI, such as capital controls, tax rates, and country risks, are not directly included in the model, because they are part of the causal mechanisms through which military conflict and security alliances affect investment flows.

Sixth, the lagged dependent variable by construction correlates with the unobserved panel-level effects, causing inconsistent estimates for both the OLS and random effect estimators. The fixed-effect estimator is also biased and inconsistent for our model, and the size of the finite sample bias is of order $1/T$, that is, about 10% in our case. To obtain consistent estimates for this type of model, Arellano and Bond (1991) suggest a GMM estimator that uses first differencing to remove the time-invariant fixed effects and employs instruments to form moment conditions. Arellano and Bover (1995) and Blundell and Bond (1998) further develop a system estimator that outperforms the Arellano–Bond estimator when the autoregressive process is persistent or when the variance of v_{ij} is much larger than the error variance σ_e^2 .

For this analysis, we apply the Arellano–Bover/Blundell–Bond system GMM estimator, which uses the moment conditions of lagged levels as instruments for the differenced equation, together with the moment conditions of lagged differences as instruments for the level equation. The Arellano–Bover/Blundell–Bond estimator allows the possibility of also identifying time-invariant variables (e.g., distance), provides a larger set of moment conditions both to overcome some weak instruments biases of first differenced estimators and to reduce the finite sample bias in panels with short T and persistent regressors, and enables us to address the endogeneity of several variables with appropriate instruments (see, e.g., Baltagi, 2005;

Roodman, 2006). The estimator is particularly suitable for our design, in which the number of time periods is far below the number of panels, the dependent variable persists and depends on its past realization, certain independent variables are endogenous, and fixed effects are present.

Seventh, the estimator assumes that errors are independently and identically distributed across observations. With first differencing, in order for the moment conditions to be valid, we should find the errors to be serially correlated at order one, but not at any higher order.¹² We test this assumption directly. In addition, we estimate the robust standard errors to control for possible heteroskedastic error variance.

Eighth, as noted, Blonigen and Wang (2004) argue that it is important to run separate analyses for highly developed and less-developed economies. Hence we estimate models for three samples, one for all dyads in the sample, a second one for the high-income/low-income dyads in which at least one country in a dyad does not maintain \$12,000 real GDP per capita in the whole sample period, and a third one for the high-income/high-income dyads in which both countries maintain \$12,000 real GDP per capita in the whole sample period.¹³ The effects of the security variables are likely to be stronger in the high-income/low-income dyads than in the high-income/high-income dyads.

Ninth, as noted earlier, we log-transform the dependent variable, both to correct its skewed distribution and to be compatible with the gravity model specification. However, over one third of the observations of the dependent variable in our sample have zero values (no investment, or investment canceling divestment) or negative values (divestment larger than investment). Some scholars (e.g., Globerman & Shapiro, 2003; Li, 2006; Woodward & Rolfe, 1993) consider this series in a two-stage model, where the first selection stage is a binary investment decision between not investing (negative and zero values) and investing (positive investment amount), and the second stage models the logged positive investment amount. Although this approach addresses the outlier problem, it loses valuable information on the magnitude of net divestment, and fails to model the whole series as from one data-generation process. These costs make it difficult to evaluate, for example, the effects of security alliances and military conflict on net FDI inflows as a whole.¹⁴

To address this issue, we follow the recommendation and practice of applied researchers in other



fields (e.g., McDonald, 2008; Osborne, 2002): that is, to add some constant value that is just large enough to turn zero and negative values into positive ones before log-transforming the variable.¹⁵ Adding a constant value to all observations of a variable allows the analyst both to log-transform the variable without losing any observation and to maintain the distance between any two observations as before. The interpretation of the coefficient of an independent variable also remains unaffected. That is, as the variable changes by one unit, the dependent variable still changes by the size of the coefficient.¹⁶

Measurements of Independent Variables

We finally discuss the measurements of the independent variables. To measure dyadic military conflict, we rely on the widely used and recently updated Militarized Interstate Dispute (MID) database. The MID database expects to capture serious disagreements between states over some salient issues, based on the premise that states do not engage in militarized actions unless they perceive that the contested issues are important (Jones, Bremer, & Singer, 1996: 168). Hence an MID refers to a militarized event that one state explicitly initiates against the government, official representatives, official forces, property, or territory of another state. The latest MID database contains data on all MIDs between any countries in the world from 1816 to 2001, and includes the explicit threat to resort to armed force, the display or mobilization of armed force, the use of armed force short of war, or the war defined to involve at least 1000 battle deaths (Bennett & Stam, 2000; Ghosn & Bennett, 2003; Jones et al., 1996).¹⁷ For our analysis, the variable dyadic military conflict is coded 1 if one country initiates against another a threat to use force, a display of force, an actual use of force, or a war in a year, and 0 otherwise.

Alliance is typically easily observed, because it is a formal written agreement between two or more states that is ratified and specifies the obligations of the alliance members (Gibler & Sarkees, 2004). To test Hypothesis 2, we construct two alliance variables. The variable *alliance* measures the presence or absence of any type of alliance ties, coded 1 if two countries in a dyad year are allied through defense, neutrality or entente pacts, and 0 otherwise. The variable *defense pact* also is a dummy variable, and it equals 1 if two countries have a defense pact alliance in a year, and 0 otherwise.¹⁸

Alliance data are from the EUGene software (Bennett & Stam, 2000).

Distance is the logged distance between the capitals of two states in a dyad, and the data are from EUGene. Distance reduces FDI flows. The farther away the destination country, the higher the transaction costs. Bilateral trade is the logged total trade flows in millions of constant dollars between two countries in a year. Data on trade are from the OECD Bilateral Trade Database (OECD 2005). The effect of trade on FDI is ambiguous (e.g., Brainard, 1997; Grosse & Trevino, 1996). Trade may complement and encourage FDI, especially for intra-firm trade within an MNE. On the other hand, FDI sometimes leapfrogs high trade barriers or substitutes trade in serving the local market.

BIT ratification is a dummy variable, coded 1 since the year when a BIT is ratified between two countries and 0 otherwise. The data on BITs are from UNCTAD (2005). One often expects the BIT to encourage FDI flows, for it could work as a substitute for low domestic institutional quality or as a signal of a country's commitment to good governance practices (Elkins, Guzman, & Simmons, 2006). However, the BITs in the developing countries may not be effectively implemented.

GDP per capita for the home or host country represents the level of development. Population for the home or host country indicates the market size. Data on GDP per capita and population are from the World Development Indicators (World Bank, 2008). The home country's market size and economic development could affect FDI flows positively (e.g., Grosse & Trevino, 1996). Larger markets imply the potential for increasing production and greater demand. Economic development of the origin country leads to more available resources for investments abroad, whereas economic development of the destination country creates higher demand and more qualified labor.

FINDINGS

Table 3 presents the statistical results from the Arellano–Bover/Blundell–Bond system GMM estimator for three different samples: all dyads, high-income/low-income dyads, and high-income/high-income dyads. For each sample, we estimate two models: one with the defense pact dummy, and the other with the alliance dummy. Across all models and samples, the results for the serial correlation tests are as expected. The null hypothesis of no serial correlation at order one is rejected

Table 3 Effects of interstate military conflict and security alliances on bilateral FDI inflows, 1980–2000

	<i>All dyads sample</i>		<i>High-income/low-income dyads</i>		<i>High-income/high-income dyads</i>	
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>	<i>Model 6</i>
Dyadic military conflict	−0.003 0.014	−0.004 0.014	−0.014* 0.008	−0.014* 0.008	0.011 0.027	0.011 0.027
Alliance		0.015 0.010		0.007* 0.004		0.053 0.057
Defense pact	0.019* 0.011		0.010** 0.004		0.053 0.057	
Lagged real FDI flows (log)	0.475*** 0.093	0.475*** 0.093	0.107 0.108	0.108 0.108	0.496*** 0.088	0.496*** 0.088
Spatially weighted FDI (log)	0.012*** 0.004	0.012*** 0.004	0.005*** 0.001	0.006*** 0.001	0.004 0.009	0.004 0.009
Population of origin (log)	0.026*** 0.007	0.027*** 0.007	0.015** 0.006	0.016** 0.006	0.043* 0.022	0.043* 0.022
Population of destination (log)	0.032*** 0.007	0.032*** 0.007	0.014** 0.006	0.014** 0.006	0.031 0.024	0.031 0.024
GDP per capita of origin (log)	0.045*** 0.009	0.046*** 0.009	0.021*** 0.005	0.021*** 0.005	−0.063 0.111	−0.063 0.111
GDP per capita of destination (log)	0.031*** 0.009	0.031*** 0.009	0.009** 0.004	0.009** 0.004	0.314*** 0.110	0.314*** 0.110
Ratification of BIT	0.009 0.010	0.009 0.010	−0.003 0.003	−0.003 0.003	−0.187 0.238	−0.187 0.238
Bilateral trade (log)	−0.015*** 0.004	−0.015*** 0.004	−0.004** 0.002	−0.004** 0.002	−0.015 0.022	−0.015 0.022
Distance (log)	−0.010* 0.005	−0.010* 0.005	−0.008** 0.003	−0.008** 0.003	−0.011 0.014	−0.011 0.014
Constant	3.237*** 0.779	3.219*** 0.779	7.489*** 1.033	7.477*** 1.033	1.019 0.870	1.019 0.870
Number of observations	10,401	10,401	6740	6740	3661	3661
Number of dyads	1117	1117	847	847	270	270
Wald test	326.27	324.31	62.16	61.74	252.11	252.11
AR(1) Test	−6.14	−6.14	−4.08	−4.08	−6.046	−6.046
AR(2) Test	0.72	0.72	0.56	0.56	0.52	0.52

Note: two-tailed test: *** $p < 0.01$; ** $p < 0.05$, * $p < 0.1$.

Robust standard errors below coefficient estimates.

All AR(1) test statistics statistically significant at 1% level; all AR(2) test statistics statistically insignificant.

High-income/low-income dyads sample: at least one country in a dyad with real GDP per capita less than 12,000 constant \$ in whole sample period.

High-income/high-income dyads sample: both countries in a dyad with real GDP per capita greater than 12,000 constant \$ in whole sample period.

and fails to be rejected at order 2, which collectively indicate that the moment conditions are valid.

The results for interstate military conflict and security alliances largely support our hypotheses, but exhibit interesting variations across models and samples. The effect of dyadic conflict involvement for all dyads has the expected negative sign in models 1 and 2, but is statistically insignificant. The

insignificance of dyadic conflict results from its different effects between high-income/low-income dyads and high-income/high-income dyads. Dyadic military conflict has a statistically significant negative effect for the high-income/low-income dyads in models 3 and 4, but is positive and insignificant for the high-income/high-income dyads in models 5 and 6. Interstate military conflict



reduces bilateral FDI flows in the high-income/low-income dyads. In contrast, military conflict does not influence FDI flows between countries whose per capita incomes remain above \$12,000 constant dollars throughout the sample period. Hypothesis 1 receives support in the high-income/low-income dyads, but not in the high-income/high-income dyads.

These results do not directly test, but provide indirect support for, our conjecture that the effect of military conflict is stronger for the high-income/low-income dyads than for the high-income/high-income dyads, owing to differences in FDI types. As noted, the former group involves more vertical investments, which are more widely affected by the conflict-induced changes; the latter group involves more horizontal investments, on which the effects of the conflict-induced changes tend to be localized.

This explanation, however, does not account for why FDI between high-income countries is *not* sensitive at all to the risks of military conflict. In our view, the insignificance of military conflict in the high-income/high-income dyads is consistent with the democratic peace literature in international relations. That is, democracies rarely fight militarily with each other, and when they do, they resolve them through mediation without escalating into more serious conflicts (e.g., Dixon, 1994; Maoz & Russett, 1993). The 18 high-income countries in the sample have been stable democracies and rarely fought one another (only nine cases during the sample period). Furthermore, one might argue that the few military disputes result from frequent economic and political interactions and the consequent frictions, rather than serious disagreements. Hence, the few MID occurrences do not imply high political risks to investors.

When dyadic military conflict reduces bilateral investment in high-income/low-income dyads, is the size of effect important? Based on models 3 and 4, the occurrence of a dyadic conflict causes the flow from a home to a host state to decline by 1.4%. To get a better grasp, we compute the two predicted values of logged FDI in a model when conflict changes from zero to one, keeping all continuous variables at mean levels and the BIT, alliance or defense pact dummy at zero. Then we exponentiate the two values and calculate their difference. Hence, all else equal, the dyadic military conflict reduces bilateral investment by 133 and 137 millions of constant dollars, based on models 3 and 4, respectively. As shown in Table 1, the average bilateral flow in this estimation sample is

about 111 millions of constant dollars. Thus, a dyadic MID conflict could turn a dyad with the sample mean FDI flow from one with positive bilateral investment to one experiencing net divestment of more than 20 million constant dollars. The effect of military conflict in the high-income/low-income dyads is quite large.

Both the alliance dummy and the defense pact variable have positive effects across the samples. In the all dyads sample, the effect of the defense pact is statistically significant and the effect of the alliance dummy is insignificant (but significant based on the one-tailed test at the 10% level). Interestingly, both variables have statistically significant and positive effects in the high-income/low-income dyads, whereas neither variable has a significant effect in the high-income/high-income dyads. Security alliances promote bilateral investment flows for all dyads and the high-income/low-income dyads, but do not significantly affect bilateral investment in the high-income/high-income dyads.

Like the military conflict variable, the security alliance variables also exhibit distinct effects between the high-income/low-income and high-income/high-income dyads, a pattern that is consistent with the conjectured distinction between vertical and horizontal investments. If security alliances reduce political risks, such benefits are more widespread and significant for vertical investments than for horizontal investments.

Still, this explanation does not account for why neither alliance variable has any statistical effect on bilateral investment in the high-income/high-income dyads. One plausible explanation is that while alliance ties among many high-income democracies are defense pacts and quite stable, removing national security concerns for governments, investors do not derive any new information from these strong and stable alliance relationships. Thus their investment behaviors do not change owing to alliances in these dyads.

How large are the effects of security alliances for the high-income/low-income dyads? The general alliance tie and the defense pact increase bilateral investment by 0.7% and 1.0%, respectively, based on models 3 and 4. Similar to the case of dyadic conflict, we compute the dollar amount change in FDI when an alliance variable goes from zero to one, keeping all continuous variables at mean levels and the BIT or conflict dummy at zero. Hence, *ceteris paribus*, the defense pact increases bilateral investment by 96 million constant dollars in model 3, whereas the general alliance tie increases bilateral

investment by 69 million constant dollars. The defense pact alliance could help a dyad with zero net bilateral investment reach nearly the sample mean level FDI flows (111 million constant dollars), and the general alliance tie could help it reach more than halfway toward the sample mean level FDI flows. These effects also support our expectation that the defense pact produces a stronger effect than a general alliance tie.

The control variables in Table 3 also produce interesting results. The lagged FDI variable has significant, positive effects in all dyads and the high-income/high-income dyads. A 1% increase in bilateral FDI in the current year generates almost 0.5% rise of FDI flow in the next year. This temporal dependence, however, is very weak in the high-income/low-income dyads, indicating probably more volatility and less continuity for these country pairs.

The spatially weighted FDI is associated with significant positive effects for all dyads and the high-income/low-income dyads, but not for the high-income/high-income dyads. These results indicate strong positive spatial contagion among neighboring host countries as well as neighboring home countries for the first two samples. The BIT ratification does not influence bilateral investment flows in all three samples. In contrast, in all dyads and the high-income/low-income dyads, bilateral trade flows appear to have a substitution effect with bilateral FDI flows. This is consistent with the conventional view that the higher trade barriers in less-developed economies tend to motivate the multinationals to overcome them by greater FDI.

The populations and per capita real incomes of both home and host countries all have statistically significant, positive effects for all dyads and the high-income/low-income dyads. The population of the origin and the GDP per capita of the destination also encourage bilateral investment for the high-income/high-income dyads as well. Distance, on the other hand, reduces bilateral investment flows for all dyads and the high-income/low-income dyads, but not for the high-income/high-income dyads. The results of these typical gravity model variables are consistent with those in previous studies.

The results for the control variables also demonstrate the systematic differences between the high-income/low-income and high-income/high-income dyads. The typical gravity model variables all have significant effects in the former sample, but they rarely have significant effects in the latter one.

The effects of other control variables such as bilateral trade and the lagged FDI flows also vary between the two samples. These findings, though not testing directly the horizontal-vertical investment distinction, support the call by Blonigen and Wang (2004) for separate analyses of developed and developing economies.

In light of the key results reported in Table 3, one may raise some issues that we address using several additional analyses. First, one may wonder how dominant US firms are in these data, and whether the coefficients remain robust without the US. We find that excluding the US does not change the effects of security alliances, but makes the effect of dyadic conflict significant in all dyads and yet insignificant in the high-income/low-income dyads. Apparently, US military involvement plays an important role for the countries in the high-income/low-income dyads. Second, the results in Table 3 indicate very low temporal dependence in bilateral flows for the high-income/low-income dyads. One may ask whether the results remain robust if one excludes the lagged FDI variable and applies an alternative estimator. We re-estimate the model for this sample using the dyad-fixed effects estimator with clustered robust standard errors. The results are encouraging, and consistent with those in Table 3. Both the alliance and defense pact variables significantly increase bilateral investment flows, whereas dyadic military conflict significantly reduces bilateral investment. Third, a growing literature in political science looks at the effect of regime type on FDI flows (e.g., Jensen, 2003; Li & Resnick, 2003). One may wonder whether the effects of security alliances and military conflict are robust when we control for regime attributes. In an additional analysis that controls for the democracy levels of both home and host countries, the results of alliance, defense pact and military conflict remain consistent with those in Table 3.

CONCLUSION

Although MNEs by nature operate under multiple national jurisdictions, the relevance of interstate political relations to FDI has received surprisingly little attention. Despite the fact that, over the past several decades, international relations scholars have produced enormous insights into the workings of international politics, and international business scholars have made substantial progress in understanding the behaviors of MNEs, the two intellectual communities have largely ignored the insights they could offer to each other. This



situation is unfortunate and lamentable, because of lost opportunities in exploring how international business and international politics interact to influence the behaviors of firms and states in the global economy. In this article, we make an effort to bridge this gap between the two communities, seeking to contribute new knowledge on the interactions among the home state, the host state, and the multinational.

Focusing on two central features of interstate security relations, we argue that from the perspectives of both states and investors, interstate military conflicts reduce bilateral investment whereas security alliances, particularly defense pact ones, increase it. These expectations are based on how interstate security relations influence both government policies toward international business and investor expectations of political risk. We further conjecture that the effects of the security variables are likely to be stronger for vertical investments, more often associated with less-developed economies, than for horizontal investments, more often associated with developed economies.

The empirical analysis applies the system GMM estimator to a gravity model of bilateral investment flows for a sample of 1117 directed dyads among 58 countries from 1980 to 2000. A wide variety of technical issues are addressed, including temporal dependence, spatial correlation, endogenous independent variables, the presence of fixed effects, and heteroskedastic error variance.

The statistical analysis produces several key findings. First, dyadic military conflict reduces bilateral investment in the high-income/low-income dyads. Second, security alliances, particularly defense pact ones, promote bilateral investment in the high-income/low-income dyads. Finally, neither military conflict nor security alliances influence bilateral investment in the high-income/high-income dyads. In sum, the effects of the security variables are significant both statistically and substantively in the high-income/low-income dyads, but they turn out to be insignificant in the high-income/high-income dyads.

These findings have important implications for both international politics and international business. For the high-income/low-income dyads, they cast doubt on the conventional practice in the IB literature of ignoring the relevance of security alliances to quantitative political risk assessments and treating military conflict as part of the aggregate index of political risk. Firms can better quantify and forecast political risks by incorporating

the information on the differentiated effects of military conflict and security alliances across country pairs. Another implication is theoretical. In the realm of high-income/low-income dyads, international politics significantly affects business considerations. This is where the market does not always operate on its own in allocating resources. Simply put, firms in this realm cannot brush away interstate security relations as a nuisance and irrelevant. Those who do are likely to find themselves making wrong business decisions, either exposing themselves to the uncovered risk of military conflict or missing the benefits from security alliances.

For the club of certain high-income countries, whose per capita real incomes remain above 12,000 constant dollars in the entire sample period, international investments appear divorced from interstate security relations. The heavy share of horizontal investments for these economies may partially explain this pattern, owing to the narrower impact of the changes induced by the security variables. This explanation, however, cannot account for why the security factors have no effect at all on bilateral investment. One has to recognize, based on the insights from the international relations literature, that many of these countries rarely engage in military conflicts against one another, and they also have stable defense pact ties. In this zone of peace, the security variables carry little new information on political risks for firms investing in each other's countries. International business and interstate security relations operate in their own separate realms, such that firms that pay much attention to security relations in this club may be wasting their scarce resources. Firms themselves are likely to be more efficient in investment and production, since the market experiences little interference from interstate security relations. The pattern further highlights the enormous additional benefits of economic development for low-income countries.

The irrelevance of interstate security relations to international business within the rich-country club contrasts sharply with their significant impact in the high-income/low-income dyads. This raises some interesting questions that are worth further exploration. For example, one might find it useful to examine the specific economic sources of such stable alliance ties and the rarity of conflict in the club of rich countries. One might also explore whether these patterns apply to different types of FDI as well as bilateral trade flows. Ultimately, the

new insights from this research are difficult to uncover without marrying what we know from international business and international politics. An intellectual synergy between the two fields is likely to lead to more interesting, informative, and innovative answers to these and other exciting challenges in the global political economy.

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NOTES

¹For a recent review of the research on the relationship between military conflict and FDI, see Li (2008).

²Almost all countries enact at times export control laws and capital control restrictions for national security reasons.

³As a recent example, in 2005 the US Congress prevented the acquisition by CNOOC (a Chinese state-owned enterprise) of Unocal (a US oil company) for national security reasons. Further, we note that this point is complemented by, but does not require the help of, the dependency theory. The latter argues that the advanced countries in the core use MNEs as a vehicle to increase the reliance of the developing countries in the periphery on foreign capital, perpetuate their low status in the world system, and undermine their national security and autonomy (e.g., Choucri & North, 1995; Moran, 1978).

⁴Such sentiments and behaviors are popular and easily observed in business news during episodes of interstate conflicts.

⁵Examples are abundant for the involvement in the US defense industry of foreign producers from Israel, Japan, and other US military allies.

⁶The failed CNOOC acquisition of Unocal in 2005 is a perfect counter-example. Had China been a formal security ally of the US, the acquisition might very well have been approved.

⁷The effects of defense pacts on international monetary cooperation and bilateral trade are stronger than those of other types of alliance agreements. See Li (2003) and Long (2003).

⁸We stop at year 2000 owing to data availability on our key independent variables.

⁹We employ the procedure constructed by Neumayer and Plümpert (2010). And we lag the spatial autoregressive term to control for possible endogeneity. There may also be other forms of spatial dependence. For example, a shock in one home country affects

investment outflows irrespective of the destination, or the investment climate in one host affects investments from many sources at once. First-differencing in the system GMM removes such dependence if it is time invariant and specific to either the host or home country. We leave the study of other time-varying type dependence for future research.

¹⁰For the effects of FDI on conflict, GDP per capita, BIT, and trade, see, for example, Li (2008), Gartzke, Li, and Boehmer (2001), Henisz (2008), Elkins et al. (2006), and Amiti and Wakelin (2003), respectively.

¹¹We do not use the specification of the knowledge capital model developed theoretically by Markusen (2002), for two reasons. First, the empirical specification of the model remains controversial (see Blonigen, Davies, & Head, 2003; Carr, Markusen, & Maskus, 2001). Second, the empirical testing in previous studies has been limited to the US FDI flows: thus, for our much larger sample, the demands for data on skill endowments and investment barriers are too difficult to satisfy.

¹²First-differencing introduces regressor–error correlation (e.g., $\Delta y_{it-1} = (y_{it-1} - y_{it-2})$ is a function of ε_{it-1} , an element in the first-differenced error term). The GMM estimator addresses this by applying y_{it-2} or Δy_{it-2} as an instrument that correlates with Δy_{it-1} , but not $\varepsilon_{it} - \varepsilon_{it-1}$.

¹³These 18 high-income countries are the US, Canada, Germany, Netherlands, Belgium, Luxembourg, France, Switzerland, Austria, Australia, Italy, Sweden, Norway, Denmark, Iceland, Japan, and New Zealand.

¹⁴Some other scholars replace all negative and zero values with some arbitrary positive value before taking the log of the FDI variable. This practice is problematic, because it conflates net divestment with net investment, and distorts the distance between any replaced observation and any other observation in the dataset. Inferences based on the distorted data are questionable.

¹⁵In our estimation sample, the smallest negative value is $-9,717.291$. Thus we add a constant value of 9718 to all observations.

¹⁶The added constant value cancels out in the change between two values of the transformed dependent variable.

¹⁷For example, the USA and Venezuela are recorded to have had an MID in 2000. The Venezuelan government accused the US Coast Guard of violating its territorial waters in mid-October. At the end of October, a Venezuelan patrol boat intercepted a US Coast Guard boat. The Venezuelan government declared this was a second US violation of Venezuela's territorial waters. As a result, Venezuela issued a formal



protest to the US government. The US government replied that there was no violation by the US Coast Guard, the incident had happened in international waters, and Venezuela responded with a disproportionate military power. For more details, see the

Dispute Narratives – MID 3.0 dataset, Correlates of War 2 Project at <http://www.correlatesofwar.org/>.

¹⁸For example, during the 1980–2000 period, US had defense pact agreements with Canada, Mexico, Costa Rica, Panama, to name a few.

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APPENDIX

DESCRIPTION OF DATA ON BILATERAL INVESTMENT FLOWS

The dataset is based on the balance of payments published by central banks or statistical offices of the corresponding countries (OECD, 2004). It provides statistics on FDI inflows and outflows from 1980 to 2008. Our statistical analysis does not include 2001–2008 because data on military conflict and security alliances are not available for those years. According to OECD (2004: 10), FDI inflows are the direct investments from abroad in OECD countries, and FDI outflows are the direct investments abroad from OECD countries. The dataset covers all flows between OECD countries in both directions and between OECD and non-OECD in both directions, but there is no coverage of any FDI flow between non-OECD countries. There are in total 58 countries, of which 29 are OECD countries and 29 non-OECD ones. The total number of non-OECD countries for which data are available on the OECD website is 34, but we include only 29, excluding Chinese Taipei, Hong Kong, Netherlands Antilles, and treating Czech Republic and Russia as successors of Czechoslovakia and the USSR, respectively. Data for Czechoslovakia before 1992 and for Czech Republic from 1992 are both represented under the name Czech Republic for the whole period; data for the USSR before 1992 and for Russia from 1992 are under the name Russia for the whole period. The 58 countries in the dataset are as follows:

Algeria	Iceland	Poland
Argentina	India	Portugal
Australia	Indonesia	Romania
Austria	Iran	Russia
Belgium	Ireland	Saudi Arabia
Brazil	Israel	Singapore
Bulgaria	Italy	Slovak Republic
Canada	Japan	Slovenia
Chile	Korea	South Africa
China	Kuwait	Spain
Colombia	Libya	Sweden
Costa Rica	Malaysia	Switzerland
Czech Republic	Mexico	Thailand
Denmark	Morocco	Turkey
Egypt	Netherlands	UAE
Finland	New Zealand	UK
France	Norway	Ukraine
Germany	Panama	USA
Greece	Philippines	Venezuela
Hungary		

The OECD data have by far the most comprehensive coverage of bilateral FDI flows. Still, it has several notable shortcomings. Figure 1 describes clearly the pairs of countries for which FDI flows are covered in the dataset. If we denote countries A and B as two out of 29 OECD countries, and countries C and D as two out of 29 non-OECD countries, then we have data on FDI flows between A and B, A and C, A and D, B and C, as well as B and D. As noted, however, we do not have data on FDI flows between C and D.

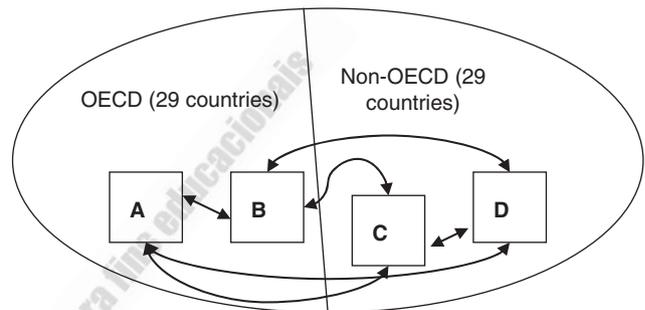


Figure 1 Scheme of possible dyads or country pairs.

Second, if we had data on FDI flows between all possible pairs of countries in our dataset for the 1980–2000 period, we should have 79,344 observations: $N \times (N - 1) \times T = 58 \times 57 \times 21 = 69,426$. Excluding non-OECD to non-OECD observations, we should have 52,374 observations. The actual size for the all dyads sample in Table 1 is only 10,401, the result of a large number of missing values.

The final drawback of the data is some possible discrepancies because FDI definitions used in balances of payments of different countries sometimes vary. For example, OECD (2004) gives an example of reinvested earnings that are not included in FDI definition for some countries. This accounts for why FDI outflows from one country (country A) to another (country B) do not always match B’s inflows from A.

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