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Do International Investment Agreements bite on Swedish outward FDI?
A panel study from 1998 to 2011

Authors: Ida Hansson* & Anna Lind**

Abstract

This study aims to investigate whether International Investment Agreements have any effect on Swedish outward Foreign Direct Investments. The signing and ratification of treaties has continued in a steady pace but their efficiency has been questioned. The study is conducted using a panel dataset regressing Swedish outward FDI to 110 countries between 1998 and 2011. We find no statistically significant impact of ratified Bilateral Investment Treaties (BITs) on Swedish outward FDI indicating that Swedish treaties have failed to fulfill their purpose of fostering investments. The results also suggest that Double Taxation Treaties (DTTs) do not have an effect on FDI except for investments to developing and transition countries. Findings show no impact of the number of ratified BITs by a host country on Swedish outward FDI flows but a positive correlation between the number of ratified DTTs and FDI.

Key words: Foreign Direct Investments, International Investment Agreements, Bilateral Investment Treaties, Double Taxation Treaties

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Supervisor: Yochi Sugita
Opponents: Christopher Tempelman & Elin Pellas
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*22128 **22154

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List of Abbreviations

FDI	A Foreign Direct Investment is an investment made by an enterprise based in one home country into a company or group in another host country. The investment in the host country can occur through setting up subsidiaries or associate companies, by acquiring shares in a foreign company, or through a merger or joint venture. FDI differ from indirect investments such as portfolio investments seen to the investor's influence in the company. Generally, the investor must own at least 10 percent of the voting stock or ordinary shares of the company.
MNE	A Multinational Enterprise is a corporation operating in one or more host countries but is based in one home country. Generally, an enterprise that derives a quarter of its revenues from abroad is considered to be multinational.
IIA	International Investment Agreements are treaties addressing issues regarding cross border investments. The treaties aim to protect, promote, and liberalize FDI and some also include regulations for portfolio investments.
DTT	Double Taxation Treaties aim to increase transparency and to avoid double taxation for firms investing abroad. The agreement is ratified between two countries and it settles to what extent the signing countries may extract tax revenues from firms investing abroad.
BIT	Bilateral Investment Treaties are developed between two countries with the main purpose of promoting and protecting FDI. Standards often include fair and equitable treatment, protection from expropriation, and free transfers of means. BITs may also allow for alternative dispute resolution organs other than courts of the host countries.

Introduction

Foreign Direct Investments (FDI) have increased remarkably during recent years and today many countries actively strive to attract inward FDI as it is perceived to give access to a range of valuable inputs important for growth and development. Policy makers around the world attempt to make business environments more appealing to foreign investors with different means. Some work to improve and liberalize the domestic institutions, for example through corruption controls and by removing restrictions for foreign investors, and others conclude different investment agreements that aim to encourage investments. (Busse, Königer, and Nunnenkamp 2010).

To address national and international investment challenges and to attract inward FDI, international rulemaking is continuously increasing at multiple levels by implementation of bilateral, regional, interregional, and multilateral agreements. International Investment Agreements (IIAs) aim to foster sustainable development and growth through assisting policymakers, government officials and other IIA stakeholders with international investment rules. Ratification of IIAs has continued in a steady pace and by the end of 2011 there were more than 6,000 existing agreements in the IIA universe. The most common forms of IIAs are Bilateral Investment treaties (BITs) and Double Taxation Treaties (DTTs) (UNCTAD 2012).

The 25 countries with the highest number of ratified BITs and DTTs are presented in *Figure 1*. Although Sweden is a small economy, it is amongst the top ten countries regarding ratified BITs and DTTs in the world. In 2011, Sweden had 108 ratified DTTs, only preceded by United Kingdom and France, and 66 ratified BITs placing Sweden at 9th place in number of ratified BITs.

Figure 1. Ratified BITs and DTTs in 2011

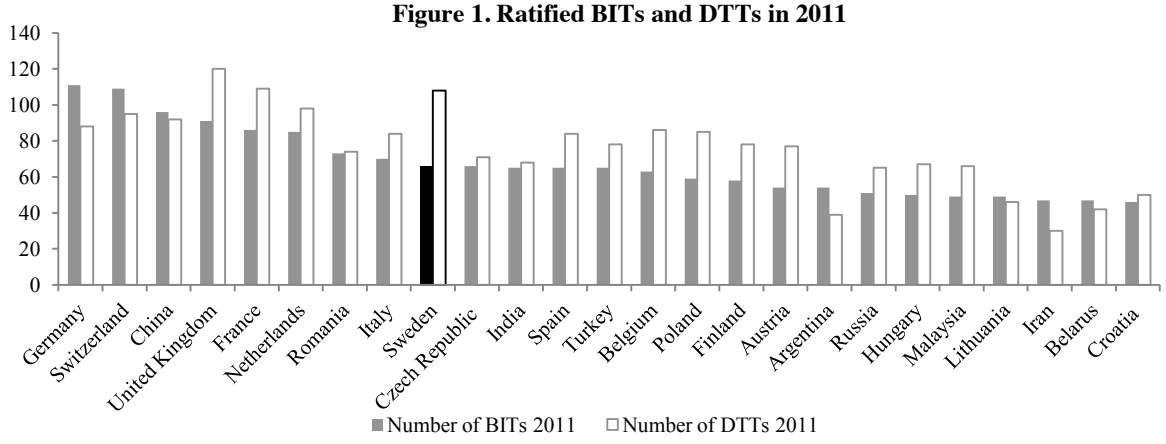

Figure 1. Top 25 countries with highest number of ratified BITs and DTTs in 2011. Data source: UNCTAD

The question is whether the agreements fulfill their purpose of fostering growth and sustainable development. The topic is relatively unexplored and findings regarding their effectiveness have been ambiguous in recent literature. Negotiation, signing, and ratification of agreements require time and other resources as Neumayer and Spess (2005) acknowledge, but are the agreements efficient and worth investing in?

The purpose of this essay is to contribute to the existing literature whether International Investment Agreements are effective in allocating FDI and whether ratification of treaties is a successful way to increase a country's attractiveness to investors. No previous study has investigated the impact of Swedish IIAs and this paper therefore investigates whether ratified BITs and DTTs between Sweden and host countries have an effect on the allocation of Swedish outward FDI. Furthermore, we investigate whether the number of ratified investment treaties with other countries increases a host country's attractiveness to Swedish investors. Our study is based on Swedish outward FDI flows to 110 host countries between 1998 and 2011. The results can help the Swedish government to decide whether it is worth spending time and recourses on ratifying investment agreements in the future.

FDI and Trends

Foreign Direct Investments (FDI) refer to long-term investments made by Multinational Enterprises (MNEs) in host countries. The investments come in different forms, either through setting up subsidiaries or associate companies from scratch, or as mergers and acquisitions of existing firms in the host country. FDI differ from indirect investments, such as portfolio investments, seen to the investor's influence in the company. According to UNCTAD (2009) the investor must control 10 percent of the voting shares or power in the business for the investment to be classified as FDI.

FDI has grown remarkably in the last 15 years, which can be seen in *Figure 2*, and in a faster pace than both trade and income. According to UNCTAD 2012, World FDI flows grew with 16 percent in 2011 to $1.5 trillion and exceeded the average level before the financial crisis. The growth was mostly driven by high profits of MNEs and economic growth in developing countries. Although cross-border M&As rose with 53 percent to $526 billion in 2011, reflecting the growing value of assets on stock markets, the most common form to carry out investments was through greenfield investments amounting to $904 billion in 2011. Despite the recent surge in FDI, the current Eurozone crisis and the possibility of stagnating growth rates in emerging markets cause economic uncertainty and threaten a continued positive trend (UNCTAD 2012).

Figure 2. World and Swedish net outward FDI Flows

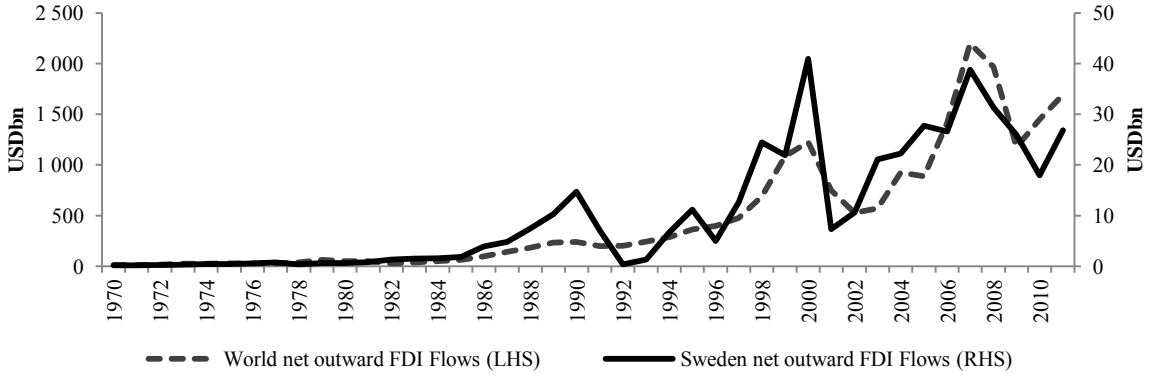

Figure 2. World net outward FDI flows are plotted on the left hand side in USD billion. Sweden's net outward FDI flows are plotted on the right hand side in USD billion. Data source: UNCTAD STAT

The amount of FDI has grown remarkably over the last years and the Swedish flows have followed the development of the world flows relatively well. The question is where does the FDI come from? FDI from developed countries increased by 25 percent and reached a 73 percent level of world FDI in 2011. The driving factors behind the increase among developed countries differed, FDI flows from the U.S. rose due to reinvested earnings by MNEs, EU experienced a surge of cross-border M&As with a large number of megadeals, and Japan doubled their outward FDI as the yen appreciated. Outward FDI from developing countries accounted for 23 percent of the world flows after experiencing a slight decline in 2011 (UNCTAD 2012).

It is important to distinguish different motives for MNEs to invest in foreign countries. The MNE general equilibrium theory identifies two motives: *horizontal* to overcome trade frictions caused by tariffs, double taxation, or impedimental regulations, and *vertical* to gain access to favorable inputs in the host country such as low wages or natural resources (Navaretti and Venables 2004). The company's motive will most likely affect their choice of host country and determine what form the investment will take.

Turning from the source to the destination of FDI, around 50 percent of world investments goes to developed economies. These flows increased by 21 percent in 2011 whereas flows to developing countries increased by 11 percent to reach a record of 45 percent of world flows. FDI to transition countries increased the most, by 25 percent, and accounted for 6 percent of world investments. Developing and transition countries experienced a surge of inward FDI during the financial crisis and have managed to maintain a large share of world investments even though developed countries rebounded in 2011. UNCTAD projects sustained growth of FDI to transition countries driven by improvements in investor environments in several important countries (UNCTAD 2012).

International Investment Agreements

International Investment Agreements (IIAs) are treaties concluded between two signing countries and aim to foster sustainable development and growth through addressing issues regarding cross border investments. The treaties work to protect, promote, and liberalize FDI and some also include regulations for portfolio investments. There are several forms of IIAs but the most common are Bilateral Investment treaties (BITs) and Double Taxation Treaties (DTTs). By the end of 2011, more than 2,860 BITs and 2,976 DTTs existed.

BITs are international treaties developed between two countries with the main purpose of promoting and protecting FDI. Standards included in the treaties differ from case to case but often include fair and equitable treatment, protection from expropriation, and free transfers of means. BITs may also allow for an alternative dispute resolution organ other than the courts of the host country, often under the protection of the International Center for the Settlement of Investment Disputes (UNCTAD 2012).

DTTs aim to increase transparency and to avoid double taxation for firms investing abroad. The agreements are concluded between two countries and settles to what extent the signing countries may extract tax revenues from firms investing in both nations (UNCTAD 2011). Besides providing tax reliefs for companies facing double taxation, DTTs can help decrease tax evasion by enabling information exchange by signing countries. Increased transparency to reduce tax evasion may decrease rather than increase FDI. Additionally, DTTs can assist investors through other regulations and tax calculation methods to reduce administration and uncertainty in foreign fiscal systems (Barthel, Busse, and Neumayer 2010).

The IIA universe also consists of 16 other types of agreements. In comparison to almost 6,000 ratified BITs and DTTs, only 309 other agreements were ratified in 2010. Most of these treaties were Free Trade Agreements. The scopes of investment provisions differ but often include standards for cooperation, promotion, liberalization, commercial presence, and investment protection. Some trade agreements include investment protection chapters comparable to those found in BITs replacing a country's need for BITs, which has been the case for Chile (UNCTAD 2009).

Theoretical Framework

Country Determinants of FDI

The big question is what country characteristics MNEs find important when determining their allocation of FDI and why some countries attract more investments than other. Cross country FDI patterns have been investigated in the literature with the gravity model where FDI flows between two countries are linked to country factors such as income in each country, geographical distance, and market size. The gravity model's origin is within the field of trade estimating effects of international trade flows. The model has been established by a series of papers, for example by Anderson and Wincoop (2003), where findings have been reasonable stable across studies claiming gravity effects to be economically and statistically correct. The model has also successfully managed to explain variation and deviant behavior of international trade (Anderson and Wincoop 2003) and been used to estimate various phenomena affecting trade patterns, for example Rose (2005) used the model searching for effects of multilateral agreements on trade.

Unfortunately, estimating determinants of FDI flows is more complicated than of trade flows (Blonigen 2005) and although gravity variables may be adequate to explain some characteristics of FDI behavior no paper claims the gravity framework to solely describe FDI patterns. MNEs' different motives for FDI affect their investment behavior and complicate the estimation. The horizontal and vertical motives affect some of the determinants in the model differently and it is therefore difficult to find a universal model explaining FDI behavior.

The different motives for FDI clearly pose problems for empirical investigation and for interpretation of results since there often is no clear distinction between horizontal and vertical FDI. The literature deals with this problem in different ways where the first and most common solution is to use a gravity framework with FDI data that contains both horizontal and vertical forms of investments. The regression will therefore give an average effect of the different forms of FDI.

To avoid the problem of different motives, another method is to split the data between those investments that are horizontal and vertical. This is generally difficult due to poor data availability but an influential paper by Hanson, Mataloni, and Slaughter (2001) succeeded to split the analysis in order to distinguish between the motives. They claimed that FDI patterns and the motives for investments in the 1990's were much more diverse than previous research had suggested. Previous studies claimed that horizontal FDI was more widespread than vertical FDI since evidence suggested that access to foreign markets through affiliates was a superior motive for FDI. In their study, Hanson, Mataloni, and Slaughter (2001) emphasized the importance of vertical FDI and claimed it to be a significant driving force of MNEs' investment behavior.

The third approach is to estimate a model that includes both motives. A knowledge-capital model was developed by Markusen et al. (1996) and Markusen (1997) that took both horizontal and vertical motives into account. In this model, factor endowments in addition to gravity variables are included when determining FDI behavior. Carr, Markusen, and Maskus (2001) conducted the first empirical analysis and found evidence for both horizontal and vertical motives for FDI using a panel dataset of U.S. affiliate sales from 1986 to 1994. Markusen and Maskus (2002) verified the model by testing an integrated regression including both types of motives for FDI against models of purely horizontal and vertical FDI. They found the integrated model to perform better than the vertical but not the horizontal, and argued the horizontal model to be as well suited as the integrated in explaining FDI patterns, whereas they rejected the vertical model.

The knowledge-capital model specified by Carr, Markusen, and Maskus (2001) has been questioned in several papers, especially the empirical evidence claiming the vertical motive for FDI to be less significant has been criticized. Blonigen, Davies, and Head (2003) pointed out an error in the variable specification regarding factor endowment that may undermine the vertical motive. Furthermore, Yeaple (2003) found the vertical motive for FDI to be more important in industries where firms take advantage of the factor in which the host country has comparative advantage. The model also ignores the possibility that high FDI inflows in one country may increase a neighboring country's inward FDI. MNEs can also have additional motives for their investments besides the horizontal and vertical, one example is investments in production platforms with the aim to export to neighboring countries (Blonigen 2005).

Previous Research on Bilateral Investment Treaties and FDI

There are a number of studies examining the effects of investment treaties on the allocation of FDI, although the field has gained quite low attention in recent literature, which is surprising due to the large number of signed and ratified treaties. Some studies use the knowledge-capital model and include both horizontal and vertical investment activities when investigating FDI due to difficulties in splitting the data between the different motives. Many studies also incorporate characteristics from the gravity model in the analyses since FDI patterns share some characteristics found within the field of trade. However, previous studies have differed significantly in research design, type of FDI data, and country sample. The empirical findings have been highly ambiguous and the correctness of the analyses has been questioned. One argument is that poor data availability has prevented researchers from capturing several fundamental elements of the models, for example is data on skill endowments often not available for low-income countries (Busse, Königer, and Nunnenkamp 2010). Excluding important elements of the models may have biased the results and could be an explanation for the ambiguous findings.

UNCTAD (1998) conducted one of the first studies in the field through a cross-section analysis of bilateral FDI data in 1995. The result showed a weak impact of a signed BIT between two countries and no correlation between the number of signed BITs in a host country and FDI inflows. Hallward-Driemeier (2003) claimed that cross-section analyses fail to capture the upward trend in FDI over time and conducted a panel study covering 31 host countries from 1980 to 2000. The dependent variable was measured as absolute flows, flows divided by the host country's GDP, and flows divided by the source country's FDI outflow. She found no evidence in any regression that a ratified BIT between two countries increases FDI. She also claimed that BITs have a larger effect in host countries that possess a certain level of institutional quality. In that sense, BITs work as complements to good institutional quality rather than as substitutes, which contradicts their original function to provide protection to foreign investors in countries with weak domestic institutions.

Panel data has been more widely used than cross-section analyses and studies have investigated FDI outflows originating from only one host country. In an analysis of flows from the U.S. to 54 developing countries, Tobin and Rose-Ackerman (2005) failed to find any statistically significant effect of BITs on FDI flows. In an additional study covering 63 countries from 1980 to 2000, with FDI data averaged over five-year periods, they found that number of signed BITs do not encourage FDI except at low levels of political risk. Neumayer and Spess (2005) also tried to capture the possible spillover effects from number of ratified BITs and found a positive correlation but in contrast to Tobin and Rose-Ackerman (2005) the level of political risk was not significant.

In comparison to studies using a mixed framework with variables from both the gravity and knowledge-capital model, Egger and Pfaffermayr (2004) estimated several variants of the pure knowledge-capital model. Using a panel of outward FDI stocks to both OECD and non-OECD economies, their study differed from the majority of previous studies that only included developing countries. They found a positive and significant impact of both ratified and signed BITs on FDI, however the effect from signed treaties was proved smaller than by those ratified.

Salacuse and Sullivan (2005) conducted three cross-sectional analyses of FDI inflows to 99 countries from 1998 to 2000, as well as a panel study with flows from the U.S. to 31 developing countries between 1991 and 2000. In line with Egger and Pfaffermayr (2004) they found a positive and significant effect of signed BITs on FDI flows in both regressions. Furthermore, they investigated whether the number of signed BITs with other countries had effect on FDI flows, but this variable was not statistically significant.

In a more recent study, Busse, Königer, and Nunnenkamp (2010) deserted the knowledge-capital model as they claimed data restrictions to bias estimation of the model and instead employed a gravity model. They concluded that BITs increase FDI flows to developing countries and that BITs can substitute for weak domestic institutions. In this study, the potential effects of DTTs and Regional Trade Agreements were also taken into account and were proved to be statistically significant.

Tobin and Rose-Ackerman (2011) argued that BITs attract FDI but claimed the case to be complicated by nature. Evidence from a panel study with data covering 97 countries from 1984 to 2007 showed that BITs do not entirely work as substitutes for weak domestic institutional settings, countries must attain a critical level of institutional quality to make treaties credible to investors. The effectiveness of signing BITs was found to diminish as BITs importance in signaling the host country's willingness to protect foreign investors decrease over time.

Bergstrand and Egger (2011) experimented with the models and introduced a third mobile factor of physical capital to the knowledge-capital model. They also added a third country into the gravity model of bilateral FDI. Addressing the trouble stone in the MNE literature that foreign affiliate sales between two countries work as a perfect substitute for trade, they claimed that trade and FDI, as well as foreign affiliate sales, can coexist for both national firms and MNEs.

Previous Research on Double Taxation Treaties and FDI

In the discussion regarding the impact of corporate taxes on FDI activity the effect can vary by type of taxes, measurement of FDI, and tax treatment in the host and home country. It is further complicated by problems in measuring corporate taxes where only average tax rates and not effective tax rates are available. Double taxation that MNEs may face in home and host countries can further complicate the calculation of the actual tax rates companies face (Blonigen 2005). Ratified DTTs can be a solution to the double taxation problem and the impact of these treaties has been investigated in several research papers. The methods used in previous studies have differed and the findings have been ambiguous.

Hartman (1985) investigated the effect of the territorial approach and the residence approach that are two ways to handle double taxation problems. His study separated the effect of host country taxes between mature firms financed by foreign earnings and immature firms funded by parent companies. The study indicated differences between mature and immature firms. He argued that mature firms view the home country tax as an unavoidable cost and that neither the home country's tax rate on foreign income or foreign tax credit is relevant for investment decisions. On the other hand, home country tax rates were proved to affect immature firms' investments. Furthermore, Hartman argued that tax change implications on aggregate investments are likely to be minor and temporary.

In contrast to Hartman, Janeba (1995) investigated tax competition strategies as a non-cooperative game where governments use corporate tax rates and double taxation reliefs through ratified treaties as strategies. He argued that tax competition leads to inefficiency in allocation of the world capital and that cooperation through double taxation treaties is necessary. Janeba showed that capital distribution is equal under different solutions for double taxation implying indifference in method chosen by governments.

When tax treaties are analyzed in a general equilibrium model of tax competition, it is argued that tax treaties can have a significant role in improving global capital flows. Davies (2003) concluded that any combination of double taxation relief methods result in both positive outward and inward capital flows. In contrast to Janeba (1995), he also found both home and host countries to set positive tax rates in the equilibrium and that tax treaties result in efficient capital flows if the countries are symmetric in endowments and technologies. Nonetheless, he argued that it is impossible to guarantee that tax treaties will improve welfare when countries are not symmetric.

Blonigen and Davies (2004) investigated the effect of bilateral tax treaties on U.S. outward and inward FDI. To estimate the effect of tax treaties they applied the knowledge-capital model and used FDI stock data as their dependent variable. They separated the effect from old treaties ratified before the years of their panel data from new treaties ratified between 1980 and 1999. The average effect of new taxation treaties showed no significance for both U.S. inward and outward FDI under several alternative specifications, the results suggested that treaties either have no effect or that positive and negative aspects cancel one another.

Using a general equilibrium approach closely related to the knowledge-capital model, Egger et al. (2006) researched the effect of tax treaties on bilateral stocks of outward FDI. Using data from 1985 to 2000 they found a negative impact of newly implemented tax treaties. The authors suggested the negative effect to be a result from a decrease of tax evasion, known to be one objective for implementation of tax treaties. Estimating several regressions, the impact of tax treaties showed to be inconclusive ranging between -15 and 20 percent.

In a recent study by Barthel, Busse, and Neumayer (2010) the effect of DTTs on bilateral FDI stocks was investigated using a dyadic country dataset including both developed and developing countries. In their estimation they included both BIT and DTT dummy variables and a set of normally used FDI determinants as control variables. To separate the effect from old treaties that came into force before the years of their panel data from the effect of new treaties they introduced two dummy variables representing old and new treaties. The average effect of new taxation treaties was not significant and no difference between old and new treaties was found. When treating both sorts of treaties equally they found that ratified DTTs increased FDI stocks between 27 and 31 percent.

Conclusively, previous literature has used both cross-section and panel approaches to investigate the impact of different investment treaties on FDI, but studies have failed to deliver a cohesive answer. Most studies have taken only one treaty into account, only a few studies (Barthel, Busse, and Neumayer 2010; Busse, Königer, and Nunnenkamp 2010) have investigated the joint effect of several treaties. Considering the widespread signing and ratification of different treaties there is clearly room for further investigation within this field.

We will contribute to the current literature by investigating the effect of both BITs and DTTs on bilateral FDI, including only one treaty can bias the results. Our study is unique since we investigate both the effect from ratified treaties between two countries and the total number of ratified agreements by a country. Most studies have been applied to the U.S. and we have therefore chosen to investigate the effect of treaties on Swedish FDI since no such study has been conducted. This will give insight to the Swedish government regarding the treaties' efficiency and whether it is worth ratifying treaties in the future.

Research Questions and Hypotheses

There is ambiguous evidence of the impact of investment treaties. The signing and ratification of new treaties has continued in a steady pace, the question is whether it is worth spending time and recourses on ratifying investment agreements in the future. Studies have investigated this issue, but there has been no consensus regarding research design or results. Sweden, one of the top ten countries in ratified BITs and DTTs in the world, has not yet been subject to any study investigating the effect of its treaties and is therefore a subject of interest and importance. Therefore, we propose the following research question:

Research question 1. Do ratified International Investment Agreements between Sweden and host countries affect Swedish MNEs' allocation of investments?

Our study will take host country characteristics into account to investigate if ratified IIAs have had an impact on Swedish MNEs' investments. The results will shed light on the treaties' effect and whether it is worth ratifying new investment treaties in the future. IIAs give MNEs legal protection in disputes and tax reliefs, therefore we believe host countries with ratified treaties with Sweden to be more attractive for Swedish investors and to receive more FDI.

Parallel to this question we will also investigate whether ratified agreements with other countries increase a country's attractiveness to investors. We therefore suggest the following research question:

Research question 2. Does the number of ratified International Investment Agreements concluded by host countries with other countries affect Swedish MNEs' allocation of investments?

There has been ambiguous evidence whether there are positive spillover effects from ratified agreements by host countries on investors not covered by the agreements. Some studies have shown that ratification of agreements increases a country's attractiveness to investors, however, agreements concluded between other countries do not give investors legal protection or tax reliefs and should not impact their allocation of investments. Swedish investors are not covered by agreements concluded between other countries and we believe the number of ratified agreements by host countries to have no significant impact on Swedish MNEs' allocation of FDI.

Seen to the hypotheses we believe it is of importance for the Swedish government to develop, sign, and ratify new International Investment Agreements to promote FDI through legal protection and tax reliefs for Swedish companies investing abroad. However, we do not believe that a high number of ratified treaties will increase a country's attractiveness to foreign investors.

Delimitations of Scope

To answer the research questions some limitations must be set. Due to the complex nature and scarcity of similar content of certain International Investment Agreements, we limit this study to only investigate the effect of BITs and DTTs. The content of these agreements also differ between cases to some extent, but standards included are fairly similar and we therefore treat them as equal.

The research questions will be investigated in a panel study with data of Swedish outward FDI flows to 110 host countries. A second limitation is set to the countries included, we exclude host countries with incomplete data to ensure higher quality. Poor data availability also limits us to only include data from 1998 to 2011.

Method

The Model

To test our hypotheses and investigate BITs' and DTTs' impact on Swedish outward FDI we estimate a gravity model. The gravity model has originally been used to describe international trade patterns and has been applied within the FDI literature due to its straight-forwardness and lack of other more appealing methods. An alternative would be to use the knowledge-capital model developed by Carr, Markusen, and Maskus (2001) that unites both horizontal and vertical motives of FDI. This model incorporates additional elements of the MNE activity not captured in the gravity framework such as skill endowments and would theoretically be a more appealing option. Poor data availability prevents us from capturing some of the critical elements of the knowledge-capital that if excluded would bias the results. In line with a large part of the recent literature on FDI determinants, we conduct our analysis using a gravity framework.

We use bilateral net FDI outflows from Sweden to 110 host counties. Both countries that have established BITs and DTTs with Sweden and those that have not are included to avoid biases in our regressions. We will investigate the treaties' impact using two different dependent variables and introduce a set of independent variables often used in the FDI literature. The two regressions including all variables are:

Model (1) $$Log(FDI_{ijt}) = Log(GDP_{jt}) + GDPG_{jt} + Log(D_{ij}) + OPEN_{jt} + CORR_{jt} + BITNO_{jt} + DTTNO_{jt} + BIT_{ijt} + DTT_{ijt}$$

Model (2) $$Log(FDI_{ijt} / FDI_{it}) = Log(GDP_{jt}) + GDPG_{jt} + Log(D_{ij}) + OPEN_{jt} + CORR_{jt} + BITNO_{jt} + DTTNO_{jt} + BIT_{ijt} + DTT_{ijt}$$

The variables are listed in *Table 1* and explained further under the headlines *The Dependent Variables* and *The Independent Variables*.

Table 1. List of Variables

Variable	Description	Expected sign	Type of variable	Source
FDI_{ijt}	Swedish (*i*)outward FDI received by a host country *j* at time *t*	n.m.	Dependent	OECD
FDI_{ijt}/FDI_{it}	Swedish (*i*)outward FDI received by a host country *j* at time *t* divided by total Swedish outward FDI	n.m.	Dependent	UNCTAD for total outward FDI
GDP_{jt}	Real GDP in host country *j* at time *t*	(+)	Independent	UNCTAD
$GDPG_{jt}$	GDP growth in host country *j* at time *t*	(+)	Independent	UNCTAD
D_{ij}	Distance between *i* (Sweden) and *j* (host country) at time *t*	(-)	Independent	se.avstand.org
$OPEN_{jt}$	Host country *j* openness at time *t* defined as $(export_{jt} + import_{jt})/GDP_{jt}$	(+)	Independent	UNCTAD
$CORR_{jt}$	Corruption index in host country *j* at time *t*	(+)	Independent	Euromonitor International
$BITNO_{jt}$	Number of BIT agreements ratified by host county *j* at time *t*	(+)	Independent	UNCTAD
$DTTNO_{jt}$	Number of DTT agreements ratified by host county *j* at time *t*	(+)	Independent	UNCTAD
BIT_{ijt}	Dummy variable: 1 if *i* and *j* have a ratified BIT at time *t*, otherwise 0	(+)	Dummy	UNCTAD
DTT_{ijt}	Dummy variable: 1 if *i* and *j* have a ratified DTT at time *t*, otherwise 0	(+)	Dummy	UNCTAD
EU_{jt}	Dummy variable: 1 if host country *j* is a EU member at time *t*, otherwise 0	(-)	Dummy	europa.eu
WTO_{jt}	Dummy variable: 1 if host country *j* is a WTO member at time *t*, otherwise 0	(+)	Dummy	wto.org

For each of the two dependent variables we will run four different regressions to control for possible multicollinearity between some of the variables. The regressions will measure the effects of the dummy variables representing ratified treaties and the number of BITs and DTTs separately.

The Dependent Variables

Model (1) includes the dependent variable FDI_{ijt}, representing the absolute level of Swedish FDI flows received by a host country. FDI flows are not optimal to describe MNEs' activity since they only represent a fraction of MNEs' operations, but the only other alternative is FDI stocks. Mayer-Foulkes and Nunnenkamp (2009) claimed FDI flows to be more suitable than stocks to capture MNE activity and we therefore choose FDI flows as our endogenous variable. This is in line with the majority of previous research.

In Model (2), the dependent variable represents Swedish FDI flows received by a host country relative to the total amount of Swedish FDI outflows. The ratio FDI_{ijt}/FDI_{it} captures the attractiveness of a host country in comparison to other countries, not affected by year variations. We have chosen to include Model (2) to account for the fairly large year-to-year fluctuations in Swedish outward FDI flows, seen in *Figure 2*.

The Independent Variables

To investigate our first research question whether IIAs between Sweden and host countries affect Swedish MNEs' allocation of investments we introduce dummy variables for BITs and DTTs. The variables take on the value 1 once the treaty is ratified as suggested by Hallward-Driemeier (2003) and Egger and Pfaffermayr (2004). We have chosen to only include dummy variables for ratified treaties and not for signed since investor protection and tax reliefs are only guaranteed through ratification. Treaties ratified before our dataset is treated equally as new treaties since no significance was found when separating them (Barthel, Busse and Neumayer 2010). According to our hypothesis, we expect both BIT_{ijt} and DTT_{ijt} to have a positive impact on FDI since they give MNEs legal protection and tax reliefs.

We choose to include DTT_{ijt} and expect it to have a positive impact although previous research on the subject has been ambiguous. Blonigen and Davies (2004) suggested that aspects of the tax treaties reducing FDI might cancel out the increasing effects and be an explanation to why they did not find any significant impact. In similarity, Egger et al. (2006) claimed decreases of tax evasion to cause a negative impact of DTTs on FDI. However, we believe the ambiguity of the results will be reduced because we exclude possible tax havens and therefore expect the impact of a DTT on FDI to be positive.

To answer our second research question whether the number of ratified IIAs concluded by host countries with other countries affects Swedish MNEs' allocation of investments, the variables $BITNO_{jt}$ and $DTTNO_{jt}$ are introduced. $BITNO_{jt}$ is an unweighted cumulative variable representing the number of ratified BITs by a host country of Swedish outward FDI. Tobin and Rose-Ackerman (2005) included a similar variable although they used number of signed BITs rather than ratified. An alternative would be to weight the cumulative number of BITs by the country's share of total world outward FDI (Neumayer and Spess 2005). It has been shown that the effect of a weighted variable does not differ from an unweigthed (Tobin and Rose-Ackerman 2011) and we therefore keep our variable as a simple count. The second variable, $DTTNO_{jt}$, has never been investigated in the literature, in the extent of our knowledge. We include this variable to investigate whether the number of ratified DTTs by a country affects the country's attractiveness for Swedish investors. The variable takes the

same form as $BITNO_{jt}$. According to our hypothesis, we believe that the number of ratified treaties by a host country will be insignificant. Agreements concluded between other countries do not give legal protection or tax reliefs to Swedish MNEs and should therefore not impact their allocation of investments.

To control for country characteristics that may affect MNE's allocation of FDI, we introduce a number of other independent variables. Market size is generally accepted as a significant determinant of FDI flows and has been included in most empirical studies and economic theory. According to the market size hypothesis, a host country's market size is essential for investment decisions as utilization of resources and economies of scale increase with the size of the market (Scaperlanda and Mauer 1969). The variable is an accepted determinant of trade flows in the gravity model and is also included in the knowledge-capital model developed by Carr, Markusen, and Maskus (2001). The variable is denoted GDP_{jt} in our regression.

The positive impact of real GDP growth on investments is supported by the growth hypothesis stating that rapid growing economies are better in providing opportunities for future profits than those growing at a slow pace. Although findings regarding the effect of a country's growth on FDI have been ambiguous in previous literature (Chakrabarti 2001), we have in line with Busse, Königer, and Nunnenkamp (2010) chosen to include it as an independent variable. The growth rate is calculated on an annual percentage basis and is referred to as $GDPG_{jt}$.

A variable for the geographical distance between Sweden and host countries is included since far distances might discourage firms to invest and instead choose a closer market. However, affiliates established far away may increase their local production and sales to replace export that earlier supplied the market and therefore avoid transportation costs (Navaretti and Venables 2004). We expect the variable to have a negative impact on Swedish outward FDI since geographical distance most likely will discourage investments. The variable is referred to as D_{ij}.

To take the effect of a country's openness toward the rest of the world into account we include an openness variable defined as the sum of a host country's imports and exports divided by its GDP. Barthel, Busse, and Neumayer (2010) argued that openness to trade serves as an approximation for a positive attitude toward foreigners and globalization, we therefore expect the variable's sign to be positive. To avoid multicollinearity, we have excluded tariffs and trade balances and instead chosen to include the openness variable since it is most likely to correlate with FDI (Chakrabarti 2005). The variable is denoted $OPEN_{jt}$ in the regression.

Substandard quality of institutions and poor legal protection of MNE's investments in a host county is likely to discourage FDI. Low quality institutions can increase the cost of doing business in a country and lead to deficient infrastructure that impede investments (Blonigen 2005). To account for this, we introduce a corruption variable with data from Euromonitor International's corruption index. The index ranges from 0 to10 where high values indicate high quality institutions. Since an increase in the corruption level in host governments have shown to reduce FDI (Wei 2000) we expect our variable for corruption, $CORR_{jt}$, to have a positive sign.

The impact of trade barriers and free trade zones on FDI has been debated in the literature. In the case of tariff obstacles, FDI is undertaken to overcome export restrictions known as tariff-jumping FDI (Chakrabarti 2005). On the other hand, it has been argued that free trade zones decrease incentives for investments but the few studies investigating this reasoning have found ambiguous results much due to incomplete data (Blonigen 2005). We have chosen to include a dummy variable for EU membership, EU_{jt}, since the creation of the Single Market[1] in Europe reduced barriers to trade. This made Europe more attractive to MNEs outside the Union that wanted access to the whole European market, leading to large inflows of FDI (Navaretti and Venables 2004). We believe that the establishment of the free trade zone in EU decreased the incentives for MNEs in member states to invest within the union and instead rely on trade. We therefore expect EU_{jt} to have a negative sign.

A dummy variable for WTO membership is also included. Since the organization's goal is to help companies conduct their businesses, we believe membership in the organization to have positive spillover effects on FDI. For example UNCTAD 2012 projects increased FDI flows to transition countries due to improved investor environments through membership in WTO. The variable is denoted WTO_{jt}.

Swedish FDI flows have increased considerably the last 15 years but there have been fairly large year-to-year fluctuations as seen in *Figure 2*. To take this into account we first include year dummies to control for potential variations not captured by our explanatory variables. We choose year dummies instead of a trend variable since we claim that year dummies will better account for the fluctuations. Second, our dependent variable in Model (2) controls for possible yearly variations in Swedish outward FDI.

[1] The European Union has adopted the EU Single Market Act allowing for mutual recognition for laws and regulations of member states. In 1993 internal border controls between EU countries were abolished to create free trade within the EU and to boost the European economy and create jobs.

Dataset

This study covers observations from 1998 to 2011. The data has been collected from SCB, Euromonitor International, europa.eu, OECD, se.avstand.org, UNCTAD, and WORLDBANK. See *Table 1* for references for each variable.

The original dataset consists of more than 19,150 individual observations for 110 countries receiving Swedish outward FDI. Host countries cited as tax havens[2] by OECD (2000) have been excluded from our dataset since these countries are potential targets for tax evasion and could bias the effect of a DTT. Countries included in the dataset consist of both developed, developing, and transition countries. Many studies have chosen to include only developing and transition countries but as most outward FDI is allocated to developed countries (UNCTAD 2012) we have chosen to include them as well. A complete list of countries included is available in *Appendix A*. To test whether the effect of treaties varies among countries with different economic development we will split the dataset into one group of developed countries and one group of developing and transition countries in a robustness check.

In *Table 2* it can be seen that the number of observations varies among the variables. The original dataset consisting of FDI flows from 110 countries over 14 years result in 1694 observations, which is the number of observations for most variables. Due to incomplete data from the early years in the sample, the corruption variable only has 1264 observations. The data for the dependent variables is based on Swedish outward FDI that can take negative, zero, and positive values. The observations take a negative value when Swedish desinvestments are larger than investments in a host country. Zero values are an actual observation of no FDI and do not represent missing data. The FDI data contains a large number of zero and negative observations that are dropped when logging the data, resulting in a significantly lower number of observations for the dependent variables.

[2] A tax haven is defined as a country that offers foreign businesses and individuals little or no tax liabilities. These countries often provide scarce financial information to foreign tax authorities. A list of these countries is included in *Appendix B*.

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
$\log(FDI_{ijt})$	475	6.35	2.42	0	11.7
$\log(FDI_{ijt}/FDI_{it})$	474	-5.22	2.45	-12.4	0.38
$\log(GDP_{jt})$	1694	9.96	2.59	4.54	16.41
$GDPG_{jt}$	1694	3.88	5.15	-59.7	67.8
$\log(D_{ij})$	1694	8.49	0.85	6.01	9.74
$OPEN_{jt}$	1693	0.90	0.62	0	5.72
$CORR_{jt}$	1264	4.41	2.25	0.4	10
$BITNO_{jt}$	1694	19.5	22.5	0	111
$DTTNO_{jt}$	1694	25.9	29.2	0	120
BIT_{ijt}	1694	0.23	0.42	0	1
DTT_{ijt}	1694	0.43	0.50	0	1
EU_{jt}	1694	0.14	0.35	0	1
WTO_{jt}	1694	0.76	0.43	0	1

Some further explanations should be made regarding two variables. The openness variable, $OPEN_{jt}$, is calculated as $(Import_{jt} + Export_{jt})/GDP_{jt}$ in host country j at year t. The corruption variable, $CORR_{jt}$, is based on an index from Euromonitor International that takes on values between 0 and 10, the latter representing the lowest corruption level.

Results

We begin our analysis by testing for multicollinearity among our independent variables presented in *Table 3*. It can be noted that $CORR_{jt}$ and $log(GDP_{jt})$ have a relatively high correlation, which is not surprising since countries with high GDP usually are more developed and has less corruption than countries with low GDP. However, we have theoretical support for including both variables and we therefore keep them in the model.

It is also observed that $BITNO_{jt}$ and $DTTNO_{jt}$ have several high pairwise correlations with other variables. Despite some multicollinearity, we include them as they are relevant for our second hypothesis. To control for the multicollinearity we run four different regressions for each dependent variable where regression *(1.1)* and *(2.1)* exclude both $BITNO_{jt}$ and $DTTNO_{jt}$, *(1.2)* and *(2.2)* include only $BITNO_{jt}$, *(1.3)* and *(2.3)* include only $DTTNO_{jt}$, and *(1.4)* and *(2.4)* include both $BITNO_{jt}$ and $DTTNO_{jt}$.

We find it important to include the variable EU_{jt} despite several high pairwise correlations since excluding the variable might bias the regressions. Sweden's EU membership has most likely affected MNEs' trade and FDI behavior.

Table 3. Pairwise Correlation Matrix

Variable	$\log(GDP_{jt})$	$GDPG_{jt}$	$\log(D_{ij})$	$OPEN_{jt}$	$CORR_{jt}$	$BITNO_{jt}$	$DTTNO_{jt}$	BIT_{ijt}	DTT_{ijt}	EU_{jt}	WTO_{jt}
$\log(GDP_{jt})$	1.00										
$GDPG_{jt}$	-0.08	1.00									
$\log(D_{ij})$	-0.38	0.06	1.00								
$OPEN_{jt}$	-0.09	0.10	-0.04	1.00							
$CORR_{jt}$	0.53	-0.22	-0.31	0.09	1.00						
$BITNO_{jt}$	0.70	-0.08	-0.52	0.06	0.39	1.00					
$DTTNO_{jt}$	0.80	-0.13	-0.58	0.07	0.59	0.85	1.00				
BIT_{ijt}	0.24	0.02	-0.24	0.10	-0.17	0.33	0.21	1.00			
DTT_{ijt}	0.51	-0.14	-0.20	0.06	0.42	0.48	0.54	0.18	1.00		
EU_{jt}	0.43	-0.16	-0.64	0.08	0.49	0.55	0.59	0.02	0.38	1.00	
WTO_{jt}	0.27	-0.12	-0.08	0.07	0.27	0.19	0.24	0.02	0.17	0.23	1.00

We run eight regressions using both fixed and random effects. Fixed effects include year specific fixed effects to eliminate potential biases caused by omitted variables. This is to control for factors that are not captured by other existing variables such as the global business cycle and economic shocks (Rose 2004). When using fixed effects regressions, the distance variable is omitted due to collinearity. In a gravity model approach the distance variable is important and we therefore run the regressions using random effects to see the impact of this factor. The results from the fixed and random effects regressions are presented in *Table 4* and *Table 6* and analyzed with regard to our research questions in *The Effect of Ratified Agreements* and *The Effect of Number of Agreements*. Furthermore, the robustness of our results is tested by splitting the dataset into one group of developed countries and one group of developing and transition countries.

Table 4. Regression Results Fixed Effects: 1998-2011

Dependent variable	$logFDI_{ijt}$				$log(FDI_{ijt}/FDI_{it})$			
Model	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
$logGDP_{jt}$	2.174***	2.157***	2.200***	2.178***	2.174***	2.157***	2.198***	2.178***
	(2.76)	(2.70)	(2.77)	(2.73)	(2.76)	(2.70)	(2.77)	(2.73)
$GDPG_{jt}$	-0.039*	-0.039*	-0.040*	-0.039*	-0.039*	-0.039*	0.040*	-0.039*
	(-1.70)	(-1.71)	(-1.74)	(-1.74)	(-1.70)	(-1.71)	(-1.74)	(-1.74)
$OPEN_{jt}$	0.400	-0.402	-0.377	0.297	-0.400	-0.402	-0.377	-0.376
	(-1.36)	(-1.38)	(-1.26)	(-1.27)	(-1.36)	(-1.38)	(-1.26)	(-1.27)
$CORR_{jt}$	0.554***	0.549***	0.561***	0.555***	0.554***	0.549***	0.561***	0.555***
	(2.92)	(2.75)	(2.94)	(2.78)	(2.92)	(2.75)	(2.94)	(2.78)
$BITNO_{jt}$		0.003		0.004		0.003		0.004
		(0.17)		(0.25)		(0.17)		(0.25)
$DTTNO_{jt}$			0.008	-0.009			-0.008	-0.009
			(-0.40)	(-0.48)			(-0.40)	(-0.48)
BIT_{ijt}	0.413*	0.394	0.408*	0.380	0.413*	0.394	0.408*	0.380
	(1.70)	(1.44)	(1.67)	(1.37)	(1.70)	(1.44)	(1.67)	(1.37)
DTT_{ijt}	0.645	0.650	0.643	0.649	0.645	0.650	0.643	0.649
	(1.52)	(1.54)	(1.49)	(1.51)	(1.52)	(1.54)	(1.49)	(1.51)
EU_{jt}	-0.431	-0.416	-0.423	-0.399	-0.431	-0.416	-0.423	-0.399
	(-1.25)	(-1.21)	(-1.21)	(-1.14)	(-1.25)	(-1.21)	(-1.21)	(-1.14)
WTO_{jt}	-0.107	-0.118	-0.082	-0.095	-0.107	0.118	-0.082	-0.095
	(-0.26)	(-0.29)	(-0.19)	(-0.22)	(-0.26)	(-0.29)	(-0.19)	(-0.22)
Year control	yes	yes	yes	yes	yes	yes	yes	yes
Hausman test	no	no	yes	yes	yes	yes	yes	yes
R-squared	0.4366	0.4388	0.4229	0.4242	0.4443	0.4466	0.4304	0.4316
Observations	471	471	471	471	470	470	470	470
# Countries	74	74	74	74	73	73	73	73

Absolute values of t-statistics in parentheses. ***p<0.01, **p<0.05, *p<0.1

When interpreting a semi-logarithmic regression a special interpretation of the dummy coefficient is needed to correct for the estimated variance of the variable. Found to be consistent and nearly unbiased, we apply the following estimator of the dummy coefficient:

$$\hat{p}_j = [exp\,(\hat{c}_j)/exp\,(0.5\hat{V}(\hat{c}_j))] - 1$$

where $\hat{c}_j$ is the OLS estimator of the dummy coefficient and $\hat{V}(\hat{c}_j)$ is its estimated variance (Kennedy 1981). The calculated percentage effects and elasticities for fixed effects are presented in *Table 5*. These will be analyzed with regard to our hypotheses.

Table 5. Fixed Effects Calculated Percentages and Elasticities

Dependent variable	$logFDI_{ijt}$				$log(FDI_{ijt}/FDI_{it})$			
Model	(1.1)	(1.2)	(1.3)	(1.4)	(2.1)	(2.2)	(2.3)	(2.4)
$logGDP_{jt}$	(2.174)***	(2.157)***	(2.200)***	(2.178)***	(2.174)***	(2.157)***	(2.198)***	(2.178)***
$GDPG_{jt}$	-3.9%*	-3.9%*	-4.0%*	-3.9%*	-3.9%*	-3.9%*	-4.0%*	-3.9%*
$OPEN_{jt}$	(0.400)	(-0.402)	(-0.377)	(0.297)	(-0.400)	(-0.402)	(-0.377)	(-0.376)
$CORR_{jt}$	55.4%***	54.9%***	56.1%***	55.5%***	55.4%***	54.9%***	56.1%***	55.5%***
$BITNO_{jt}$		0.3%		0.4%		0.3%		0.4%
$DTTNO_{jt}$			0.8%	-0.9%			-0.8%	-0.9%
BIT_{ijt}	13.0%*	9.57%	12.6%*	8.84%	13.0%*	9.57%	12.6%*	8.84%
DTT_{ijt}	6.12%	6.29%	5.89%	6.06%	6.12%	6.29%	5.89%	6.06%
EU_{jt}	-8.25%	-8.05%	-7.90%	-7.54%	-8.25%	-8.05%	-7.89%	-7.54%
WTO_{jt}	2.23%	-2.40%	-1.86%	-2.03%	-2.23%	-2.40%	-1.86%	-2.03%

Elasticities shown in parantheses. ***p<0.01, **p<0.05, *p<0.1

After conducting Hausman tests we conclude that random effects regressions can be applied to six out of eight regressions. The results from the eight regressions are presented with three decimals in *Table 6*.

Table 6. Regression Results Random Effects: 1998-2011

Dependent variable	$logFDI_{ijt}$				$log(FDI_{ijt}/FDI_{it})$			
Model	(1.1)	(1.2)	(1.3)	(1.4)	(2.1)	(2.2)	(2.3)	(2.4)
$logGDP_{jt}$	0.606***	0.585***	0.409***	0.412***	0.640***	0.619***	0.429***	0.432***
	(5.39)	(4.94)	(2.63)	(2.66)	(5.92)	(5.38)	(2.82)	(2.84)
$GDPG_{jt}$	-0.116	0.012	-0.007	-0.006	-0.008	-0.009	-0.003	-0.001
	(-0.53)	(-0.54)	(-0.31)	(-0.27)	(-0.39)	(-0.40)	(-0.13)	(-0.06)
$logD_{ij}$	-.810***	-0.780***	-0.559***	-0.568***	-0.837***	-0.807***	-0.569***	-0.578***
	(-5.01)	(-4.76)	(-2.81)	(-2.90)	(-5.31)	(-5.06)	(-2.90)	(-2.99)
$OPEN_{jt}$	-0.233	-0.242	-0.329*	-0.333*	-0.147	-0.156	-0.249	-0.253
	(-1.30)	(-1.34)	(-1.74)	(-1.76)	(-0.91)	(-0.96)	(-1.46)	(-1.48)
$CORR_{jt}$	0.347***	0.348***	0.322***	0.317***	0.342***	0.343***	0.314***	0.307***
	(3.99)	(4.01)	(4.02)	(3.98)	(4.11)	(4.13)	(4.14)	(4.08)
$BITNO_{jt}$		0.003		-0.006		0.003		-0.007
		(0.47)		(-0.87)		(0.49)		(-1.11)
$DTTNO_{jt}$			.020**	0.0237**			0.021**	0.026***
			(2.27)	(2.38)			(2.46)	(2.65)
BIT_{ijt}	0.356	0.335	0.337	0.376	0.359	0.339	0.338	0.383*
	(1.56)	(1.43)	(1.49)	(1.63)	(1.55)	(1.43)	(1.47)	(1.65)
DTT_{ijt}	0.469	0.457	0.404	0.427	0.502	0.489	0.431	0.449
	(1.48)	(1.44)	(1.33)	(1.36)	(1.59)	(1.54)	(1.43)	(1.47)
EU_{jt}	-0.300	-0.292	-0.258	-0.261	-0.337	-0.330	-0.285	-0.282
	(-0.99)	(-0.97)	(-0.86)	(-0.87)	(-1.12)	(-1.11)	(-0.96)	(-0.94)
WTO_{jt}	0.534	0.513	0.398	0.406	0.5212	0.501	0.366	0.374
	(1.21)	(1.15)	(0.90)	(0.91)	(1.15)	(1.10)	(0.81)	(0.82)
Year control	yes	yes	yes	yes	yes	yes	yes	yes
Hausman test	no	no	yes	yes	yes	yes	yes	yes
R-squared overall	0.5861	0.5847	0.6050	0.6109	0.6058	0.6044	0.6238	0.6305
Observations	471	471	471	471	470	470	470	470
# Countries	74	74	74	74	73	73	73	73

Absolute values of z-statistics in parentheses. ***p<0.01, **p<0.05, *p<0.1

The same estimates used to calculate the percentage effects in the fixed effects regressions are applied when calculating the percentage effects in the random effects regressions, displayed in *Table 7*.

Table 7. Random Effects Calculated Percentages and Elasticities

Dependent variable	$logFDI_{ijt}$				$log(FDI_{ijt}/FDI_{it})$			
Model	(1.1)	(1.2)	(1.3)	(1.4)	(2.1)	(2.2)	(2.3)	(2.4)
$logGDP_{jt}$	(0.606)***	(0.585)***	(0.409)***	(0.412)***	(0.640)***	(0.619)***	(0.429)***	(0.432)***
$GDPG_{jt}$	-1.2%	1.2%	-0.7%	-0.6%	-0.8%	-0.9%	-0.3%	-0.1%
$logD_{ij}$	(-.810)***	(-0.780)***	(-0.559)***	(-0.568)***	(-0.837)***	(-0.807)***	(-0.569)***	(-0.578)***
$OPEN_{jt}$	-23.3%	-24.2%	-32.9%*	-33.3*	-14.7%	-15.6%	-24.9%	-25.3%
$CORR_{jt}$	34.7%***	34.8%***	32.2%***	31.7%***	34.2%***	34.3***	31.4***	30.7%***
$BITNO_{jt}$		0.3%		-0.6%		0.3%		-0.7%
$DTTNO_{jt}$			2.0%**	2.4%**			2.1%**	2.6%***
BIT_{ijt}	12.7%	11.2%	12.2%	13.2%	12.3%	11.1%	11.8%	13.3%*
DTT_{ijt}	8.3%	8.0%	7.8%	7.9%	9.1%	8.7%	8.4%	8.6%
EU_{jt}	-7.5%	-7.5%	-6.7%	-6.8%	-8.4%	-8.4%	-7.4%	-7.3%
WTO_{jt}	4.4%	4.2%	3.0%	3.1%	4.1%	3.8%	3.8%	2.6%

Elasticities shown in parentheses. ***p<0.01, **p<0.05, *p<0.1

The Effect of Ratified Agreements

The eight different regressions show that a ratified BIT between Sweden and a host country had a positive correlation with the amount of Swedish outward FDI to the host country from 1998 to 2011. Comparing the results from fixed and random effects the calculated percentage effects from a ratified BIT on FDI are similar. Depending on the regression, the positive impact is between 8.8 and 13.0 percent for fixed effects and between11.1 and 13.3 percent for random effects.

The results from fixed and random effects are in line with our expectation of a positive sign of the BIT_{ijt} variable but they differ seen to the level of significance. The BIT_{ijt} variable is statistically significant on a 10 percent level in four out of eight fixed effects regressions. The pairwise collinerarity between BIT_{ijt} and $BITNO_{jt}$ could bias the impact of the BIT_{ijt} when both variables are included. The fixed effects regressions including both BIT_{ijt} and $BITNO_{jt}$ show of no significance on a 10 percent level, which may be due to the collinearity. Furthermore, the high pairwise collinearity between $BITNO_{jt}$ and $DTTNO_{jt}$ could bias the regressions that include both variables. Seen to random effects, regression (2.4) has the highest calculated percentage effect and is the only regression significant on a 10 percent level. This contradicts the results from fixed effects where (2.4) has the lowest calculated percentage effect and shows of no significance on a 10 percent level.

Assuming that collinearity biases some of the fixed effects regressions, the results indicate a positive impact of a ratified BIT since four out of eight regressions are significant on a 10 percent level. This is in line with Egger and Pfaffermayr (2004) and Busse, Königer, and Nunnenkamp (2010) who also found a statistically significant impact of BITs on FDI. However, since Hausman tests show that random effects are more suitable to use in six out of eight regressions and that only one of the random effects regressions are statistically significant on a 10 percent level, the result from fixed effects cannot support our hypothesis that BITs have a positive impact on Swedish FDI.

In similarity with a BIT, a ratified DTT has a consistent positive effect in the eight different regressions, this is in line with our expectation. The impact of a ratified DTT between Sweden and a host country on Swedish outward FDI from 1998 to 2011 was between 5.89 and 6.29 for fixed effects and 8.0 and 9.1 percent for random effects. Our hypothesis that a ratified DTT has a positive impact on FDI cannot be supported since no statistical significance is found on a 10 percent level in any of the regressions. An explanation could be that the negative and positive effects of a DTT cancel one another (Blonigen and Davies 2004).

The results show of a high absolute impact of ratified BITs and DTTs on Swedish outward FDI but only a few regressions have significant coefficients for the two variables. Depending on the regression, the positive effect ranges between 8.8 and 13.3 percent for BITs and between 5.89 and 9.1 percent for DTTs. A heterogeneous impact of treaties with a large variance could be an explanation to the high absolute values of the effect of treaties and why we only find significance on a 10 percent level in a few regressions. This suggests that some treaties have a large effect on Swedish FDI while others have small, no, or even a negative effect.

The Effect of Number of Ratified Agreements

When analyzing our second research question whether the number of ratified BITs and DTTs by a host country has an impact on Swedish outward FDI, the regressions indicate mixed results. Depending on regression specification, the coefficient of $BITNO_{jt}$ has positive signs in the fixed effects regressions and both positive and negative signs in the random effects regressions. Negative signs are obtained in the random effects regressions *(1.4)* and *(2.4)* when all variables are included and could be a result of the high pairwise correlation between $BITNO_{jt}$ and $DTTNO_{jt}$. The estimated effect ranges between 0.3 and 0.4 percent in the fixed effects regressions and between -0.7 and 0.6 percent in the random effects regressions but no coefficient is significant on a 10 percent level. The results support our second hypothesis that the number of ratified BITs by a host country does not affect Swedish outward FDI. Our findings are in line with the results of Tobin and Rose-Ackerman (2005) even though they investigate the number of signed BITs rather than ratified.

The number of ratified DTTs by a host country shows of different impact depending on whether fixed or random effects are used. The impact ranges between -0.9 and 0.8 percent when using fixed effects and no significance is obtained on a 10 percent level, which is in line with our hypothesis that number of DTTs does not affect Swedish outward FDI. In opposition, random effects regressions indicate a positive effect between 2.0 and 2.6 percent significant on a 5 percent level in all the regressions where the variable $DTTNO_{jt}$ is included. An explanation to the different results in the fixed and random effects regressions could be the treatment of the distance variable. The variable is excluded in the fixed effects regressions but is proved to be significant on a 1 percent level in the random effects regressions. Hausman tests show that random effects are preferred for all regressions where the variable $DTTNO_{jt}$ is included. The results from the random effects regressions suggest that Swedish outward FDI increases when host countries ratify DTTs with other countries, which contradicts our hypothesis.

Other Variables

In line with our expectations, the host country market size $logGDP_{jt}$, the distance to a host country $logD_{ij}$, and the corruption variable $CORR_{jt}$ all have positive signs and are significant on a 1 percent level in all regressions. Depending on regression specification, the results indicate that a 1 percent increase in host country GDP increase Swedish outward FDI to that host country with 2.2 percent in the fixed effects regressions and between 0.4 and 0.6 percent in the random effects regressions. The distance elasticity also shows similar results where a 1 percent increase in geographical distance to a host country decrease Swedish outward FDI between 0.6 and 0.8 percent in the random effects regressions. Corruption is found to have a large impact on Swedish outward FDI. Increases in the corruption index imply a decrease in corruption and a positive sign indicates that higher institutional quality in a host country increases Swedish outward FDI. The results show that a rise in the corruption index of a host country increases Swedish outward FDI to that country between 30.7 and 56.1 percent.

Regarding the variable accounting for EU membership we find a negative impact. This is in line with our expectation that the establishment of the free trade zone in EU has decreased incentives for Swedish MNEs to invest within EU. The results indicate a negative impact 7.5 and 8.3 percent in the fixed effects regressions and between 6.7 and 8.4 percent in the random effects regressions, but no significance is found on a 10 percent level. The high correlation with many of the other variables can have affected the results.

Two of the other variables have different signs than expected: $OPEN_{jt}$ shows of negative impact and $GDPG_{jt}$ has different signs depending on regression specification. Hallward-Driemeier (2003) offered an explanation to why openness may have a negative impact on FDI. She claimed that small countries

often have a large openness proportion since they generally depend more on other countries than large ones. This contradicts the theory of market size where large countries attract more FDI than small countries. If large countries have a small openness proportion but attract FDI due to their market size, the openness variable should have a negative sign. However, the variable is not significant in any of our fixed or random effects regressions at a 10 percent level.

When using fixed effects, growth rate in a host country is found to have a negative impact on Swedish outward FDI ranging between -3.9 and -4.0 percent and the coefficients are significant on a 10 percent level. The result of a negative impact on FDI is opposite to our expectation. Seen to random effects, the signs differ between the regressions and no significance is found on a 10 percent level, hence we cannot draw any conclusions whether a host country's growth impacts Swedish FDI.

The estimated WTO_{jt} coefficient indicates mixed results between fixed and random regressions. Negative signs are found in the fixed effects regressions and positive signs are found in the random effects regressions. Since the signs differ between regressions and no significance is found on a 10 percent level we cannot draw any conclusions about the effect of WTO membership on Swedish outward FDI.

Robustness Check

To test the robustness of our results and whether the effect of treaties varies among countries with different economic development we split our dataset into one group of developed countries and one group of developing and transition countries. Dividing the countries according to UNCTAD's classification, the dataset results in 28 developed countries and 82 developing and transition countries, a list of the countries included is found in *Appendix C*. After conducting Hausman tests we only apply fixed effects regressions since only three out of eight regressions allow for use of random effects. The results from the regressions is found in *Appendix D* for developed countries and *Appendix E* for developing and transition countries. In comparison to the regressions for developed countries where the whole country sample is included in the regressions, the country sample for developing countries is reduced by half to 41 in Model (1) and to 53 in Model (2) as a result from missing data and a large number of zero FDI flows.

Seen to the effect of ratified agreements, the results are not consistent between the regressions when dividing the dataset into two groups. The BIT variable is not statistically significant on a 10 percent level in any regression and the variable even has a negative sign in two of the regressions for developing and transition countries. When all countries were included, only a few regressions indicated that a BIT has a statistically significant impact on FDI. The results obtained when dividing

the country sample furthermore question the findings in the fixed effects regressions in *Table 4* suggesting that a ratified BIT increases Swedish FDI.

The impact of a ratified DTT on Swedish outward FDI is positive and statistically significant in the eight different regressions for developing and transition countries. Proved positive but not statistically significant on any level for developed countries, the findings suggest that a ratified DTT only has an effect on the allocation of investments to developing and transition countries. However, due to the low number of observations for developing and transition countries further investigation is needed to verify these findings.

Our hypothesis that the number of ratified BITs by a host country should not affect the allocation of Swedish outward FDI is further strengthened when splitting the data. In line with the results obtained when including all countries, the variable $BITNO_{jt}$ has different signs in the regressions from the two datasets. A negative impact is found in the regressions from developed countries and both positive and negative effects are found with regard to developing and transition countries. The coefficients of the $BITNO_{jt}$ variable are not statistically significant in any of the regressions from the two datasets or when regressing all countries.

We obtain mixed results on the impact of the number of ratified DTTs from the regressions where the countries are separated. In line with our findings from our whole dataset, the results suggest that the number of DTTs has a positive impact on Swedish FDI to developed countries, however, the coefficients are not significant on a 10 percent level in any of the regressions. The same positive effect is obtained for developing and transition countries in Model (2) and the coefficient is significant on a 10 percent level in the regression (2.4) including all variables. A negative impact is found in Model (1) for developing and transition countries but the coefficient is not statistically significant on a 10 percent level. It can be noted that more variables are significant and a higher overall R-squared is obtained in Model (2), an explanation could be a higher number of observations and a bigger country sample. The results from splitting the data furthermore strengthen our findings that the number of ratified DTTs has a positive impact on Swedish outward FDI, but as only one coefficient is significant on a 10 percent level the impact cannot fully be supported.

Discussion

One issue when studying the impact of investment treaties is whether the agreements come into force before or after an increase in FDI flows. For example, do investments increase as a consequence of ratified treaties *ex ante*, or are treaties implemented *ex post* by the time a steady flow of FDI to a country is identified? Assuming that investments increase after the ratification of a treaty, as done in this study, it is uncertain how long time it takes for treaties to have an effect. Signed treaties give no legal protection or tax reliefs for investors until they are ratified, theoretically signed treaties would therefore not have a significant impact on attracting investments. Seen from another perspective, MNEs that have identified investment opportunities may invest immediately instead of waiting until a treaty is ratified. The uncertainty whether FDI flows increase before or as a consequence of treaty ratification may cause potential errors in our results.

Another concern in our study is that Sweden had many BITs and DTTs into force before the years in our dataset. Since we treat old and new treaties as equal, our result could be biased if the effects from old treaties are not fully captured. The impact of the treaties could be underestimated and a reason to why we find ambiguous results regarding ratified BITs and DTTs. However, as Barthel, Busse, and Neumayer (2010) found no significance when separating the effect from old and new treaties this concern may not be of importance.

MNEs' investment behaviors depend on their different motives and affect to what extent companies value ratified treaties in a host country. The motives can be divided into horizontal and vertical investments but we have treated all FDI flows as homogenous due to difficulties in splitting the data, which is an issue in our investigation. Busse, Königer, and Nunnenkamp (2010) argued that the protection of foreign investors through BITs is more important for horizontal FDI, where the investor competes directly with local companies, than for vertical FDI. It could also be relevant to study the impact of treaties on FDI flows in different sectors and industries but it is difficult due to poor data availability.

Standards included in treaties are comparable to a great extent but treating them as completely homogenous between country pairs could impact the correctness of our model. Diverse regulation standards could affect the treaties' impact on FDI differently, which gives incentives for further research to divide treaties into categories to more accurately distinguish the effect.

It can be argued that the effectiveness of treaties in the future depends on several factors and could be a topic for further investigation. Today there exist organizations and treaties on a multilateral level, for example WTO and EU, and if these agreements continuously include FDI related regulations BITs and other investment agreements will be excessive. As discussed by Tobin and Rose-Ackerman (2005, 2011), the effectiveness of signing treaties will most likely diminish over time since investments by

MNEs are increasingly covered in contractual arrangements, making governmental treaties less important. Furthermore, the importance of treaties that aim to protect foreign investors is weakened when countries continue to improve and liberalize their domestic institutions.

Conclusions

Policy makers in countries around the world try to attract FDI with different means. Some improve domestic institutions and others ratify investment agreements that aim to protect investors or provide tax reliefs. The ratification of treaties has continued in a steady pace but the effectiveness of the agreements is widely disputed and previous studies have so far provided ambiguous results. This paper investigates the impact of ratified Bilateral Investment Treaties and Double Taxation Treaties on Swedish MNEs' allocation of investments since Sweden is one of the top ten countries in ratified BITs and DTTs in the world.

Using a gravity model approach we find positive correlations between both ratified BITs and DTTs with the amount of Swedish outward FDI. Each of the eight different regressions indicates a positive impact of both BITs and DTTs, in line with our expectations. Although positive correlations, our findings question the importance of ratifying new investment treaties since these treaties do not have a significant impact on Swedish MNEs' allocation of investments. When including the whole country sample, the impact of a ratified DTT is not statistically significant and the BIT variables are not consistently significant on a 10 percent level. This is in line with Hallward-Driemeier (2003) and Blonigen and Davies (2004) who did not find any significant impact of BITs and DTTs respectively.

The high absolute values of the effect of treaties and only a few BIT and DTT coefficients significant on a 10 percent level could be explained by a heterogeneous impact of treaties. This suggest a high variance where some treaties have a large effect on Swedish FDI while others have small, no, or even negative effect. When testing the robustness of the results, the argument that ratified BITs do not have a significant impact on Swedish outward FDI is strengthened. The findings from the robustness check also suggest that DTTs have an impact in developing and transition countries but further research is needed to verify these results.

When investigating the impact of the number of ratified BITs and DTTs on Swedish FDI we find ambiguous results. Seen to the number of ratified BITs our hypothesis that ratified agreements with other countries do not increase a country's attractiveness to Swedish investors is supported. None of the regressions indicate a significant relationship, which is in line with Tobin and Rose-Ackerman

(2005) although they investigated the number of signed BITs rather than ratified. The findings are further supported when conducting a robustness check.

Our findings regarding the impact of the number of ratified DTTs are different in the fixed and random effects regressions. Hausman tests show that random effects are preferred and the results suggest that Swedish outward FDI increases between 2.0 and 2.6 percent when host countries ratify new DTTs with other countries, significant on a 5 percent level. These findings contradict our hypothesis and are surprising since Swedish MNEs do not enjoy tax benefits from other countries' treaties. The results from splitting the data in the robustness check strengthen our findings that the number of ratified DTTs has a positive impact on Swedish outward FDI, but as only one coefficient is significant on a 10 percent level the impact cannot fully be supported. Some studies have shown that the number of ratified BITs increases the attractiveness of a host country but no previous research has included the number of ratified DTTs as a variable. Since we find statistical significance, results from previous studies ignoring this variable could be biased and further investigation regarding this variable would be of interest to verify its potential impact.

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Appendix A

Host Countries of Swedish Outward FDI Included in the Dataset

Albania	Cuba	Lesotho	Saudi Arabia
Algeria	Czech republic	Libya	Singapore
Angola	Democratic Republic of Congo	Lithuania	Slovakia
Argentina	Denmark	Macao	Slovenia
Armenia	Djibouti	Madagascar	Solomon Islands
Australia	Dominican Republic	Malawi	South Africa
Austria	Equatorial Guinea	Malaysia	Spain
Azerbaijan	Estonia	Mauretania	Sudan
Bangladesh	Ethiopia	Mexico	Suriname
Belarus	Finland	Moldova	Swaziland
Belgium	France	Mongolia	Switzerland
Benin	Germany	Mozambique	Syria
Bhutan	Greece	Myanmar	Taiwan
Brazil	Guinea	Namibia	Thailand
Brunei Darussalem	Guinea Bissau	Nepal	The Philippines
Burkina Faso	Guyana	Netherlands	Togo
Burundi	Haiti	New Zealand	Trinidad and Tobago
Cambodia	Hungary	Nicaragua	Turkey
Canada	India	Niger	Uganda
Cape Verde	Iran	Norway	United Arab Emirates
Central African Republic	Ireland	Papua New Guinea	United Kingdom
Chad	Italy	Peru	USA
Chile	Jamaica	Poland	Vietnam
China	Japan	Portugal	Yemen
Comoros	Jordan	Romania	Zimbabwe
Congo	Kiribati	Russia	
Cote d´Ivoire	Kuwait	Rwanda	
Croatia	Kyrgyzstan	Sao Tomé and Principe	

Appendix B

Tax Haven Countries

Andorra	Cook Islands	Maldives	Seychelles
Anguilla	Dominica	Marshall Islands	St Lucia
Antigua and Barbuda	Gibraltar	Monaco	St. Christopher & Nevis
Aruba	Grenada	Montserrat	St. Vincent and the Grenadines
Bahamas	Guernsey	Nauru	Tonga
Bahrain	Isle of Man	Netherlands Antilles	Turks & Caicos
Barbados	Jersey	Niue	US Virgin Islands
Belize	Liberia	Panama	Vanuatu
British Virgin Islands	Liechtenstein	Samoa	

Classification OECD 2000

Appendix C

Developed Countries Included in the Dataset

Australia	Finland	Japan	Romania
Austria	France	Lithuania	Slovakia
Belgium	Germany	Netherlands	Slovenia
Canada	Greece	New Zealand	Spain
Czech republic	Hungary	Norway	Switzerland
Denmark	Ireland	Poland	United Kingdom
Estonia	Italy	Portugal	United States

Classification UNCTAD STAT 2013

Developing and Transition Countries Included in the Dataset

Albania	Cote d'Ivoire	Madagascar	South Africa
Algeria	Croatia	Malawi	Sudan
Angola	Cuba	Malaysia	Suriname
Argentina	Democratic Republic of Congo	Mauretania	Swaziland
Armenia	Djibouti	Mexico	Syria
Azerbaijan	Dominican Republic	Moldova	Taiwan
Bangladesh	Equatorial Guinea	Mongolia	Thailand
Belarus	Ethiopia	Mozambique	The Philippines
Benin	Guienea	Myanmar	Togo
Bhutan	Guinea Bissau	Namibia	Trinidad and Tobago
Brazil	Guyana	Nepal	Turkey
Brunei Darussalem	Haiti	Nicaragua	Uganda
Burkina Faso	India	Niger	United Arab Emirates
Burundi	Iran	Papua New Guinea	Vietnam
Cambodia	Jamaica	Peru	Yemen
Cape Verde	Jordan	Russia	Zimbabwe
Central African Republic	Kiribati	Rwanda	
Chad	Kuwait	Saint Vincent	
Chile	Kyrgyzstan	Sao Tomé and Principe	
China	Lesotho	Saudi Arabia	
Comoros	Libya	Singapore	
Congo	Macao	Solomon Islands	

Classification UNCTAD STAT 2013

Appendix D

Developed Countries Regression Results Fixed Effects: 1998-2011

Dependent variable	$logFDI_{ijt}$				$log(FDI_{ijt}/FDI_{it})$			
Model	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
$logGDP_{jt}$	-2.617	-3.256	-2.671	-3.446	-2.538	-3.261	-2.549	-3.402
	(-1.36)	(-1.32)	(-1.37)	(-1.34)	(-1.32)	(-1.33)	(-1.31)	(-1.33)
$GDPG_{jt}$	-0.042	-0.040	-0.042	-0.039	-0.044	-0.042	-0.044	-0.041
	(-0.97)	(-0.91)	(-0.95)	(-0.87)	(-1.03)	(-0.96)	(-1.02)	(-0.93)
$OPEN_{jt}$	0.456	0.610	0.441	0.587	0.410	0.585	0.407	0.568
	(0.77)	(0.99)	(0.69)	(0.90)	(0.69)	(0.94)	(0.64)	(0.87)
$CORR_{jt}$	0.616***	0.623***	0.615**	0.620***	0.599**	0.609**	0.599**	0.605**
	(2.76)	(2.79)	(2.74)	(2.77)	(2.64)	(2.69)	(2.63)	(2.68)
$BITNO_{jt}$		-0.018		-0.019		-0.020		-0.021
		(-0.78)		(-0.81)		(-0.88)		(-0.89)
$DTTNO_{jt}$			0.004	0.011			0.001	0.08
			(0.15)	(0.35)			(0.03)	(0.27)
BIT_{ijt}	0.701	0.753	0.699	0.753	0.708	0.767	0.708	0.767
	(1.27)	(1.42)	(1.26)	(1.39)	(1.28)	(1.45)	(1.27)	(1.42)
DTT_{ijt}	0.498	0.438	0.504	0.448	0.506	0.438	0.508	0.446
	(0.79)	(0.68)	(0.80)	(0.71)	(0.78)	(0.66)	(0.78)	(0.68)
EU_{jt}	-0.132	-0.180	-0.130	-0.180	-0.091	-0.145	-0.091	-0.146
	(-0.29)	(-0.41)	(-0.29)	(-0.41)	(-0.20)	(-0.33)	(-0.20)	(-0.33)
WTO_{jt}	0.756	0.942	0.744	0.929	0.759	0.970	0.756	0.960
	(1.50)	(1.60)	(1.47)	(1.57)	(1.51)	(1.64)	(1.50)	(1.63)
Year control	yes	yes	yes	yes	yes	yes	yes	yes
Hausman test	no	no	yes	no	no	no	no	no
R-squared	0.1342	0.1570	0.1298	0.1499	0.1191	0.1443	0.1182	0.1393
Observations	231	231	231	231	231	231	231	231
# Countries	28	28	28	28	28	28	28	28

Absolute values of t-statistics in parentheses. ***p<0.01, **p<0.05, *p<0.1

Appendix E

Developing and Transition Countries Regression Results Fixed Effects: 1998-2011

Dependent variable	$logFDI_{ijt}$				$log(FDI_{ijt}/FDI_{it})$			
Model	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
$logGDP_{jt}$	1.956	1.323	1.982*	1.303	3.269***	3.687***	2.929***	3.521***
	(1.66)	(1.03)	(1.72)	(1.06)	(3.80)	(4.19)	(3.89)	(5.15)
$GDPG_{jt}$	-0.034	-0.034	-0.035	-0.035	-0.009	-0.011	-0.003	-0.005
	(-1.33)	(-1.32)	(-1.39)	(-1.45)	(-0.37)	(-0.46)	(-0.13)	(-0.20)
$OPEN_{jt}$	-0.789*	-0.754*	-0.776*	-0.716	-0.432	-0.444	-0.602	-0.670
	(-1.88)	(-1.81)	(-1.82)	(-1.66)	(-0.90)	(-0.91)	(-1.29)	(-1.45)
$CORR_{jt}$	0.563	0.487	0.572	0.500	0.394*	0.422*	0.359	0.395*
	(1.62)	(1.39)	(1.61)	(1.43)	(1.77)	(1.84)	(1.57)	(1.71)
$BITNO_{jt}$		0.027		0.031		-0.023		-0.038
		(0.89)		(0.98)		(-0.82)		(-1.36)
$DTTNO_{jt}$			-0.005	-0.014			0.041	0.053*
			(-0.20)	(-0.48)			(1.35)	
BIT_{ijt}	0.263	-0.040	0.255	-0.105	0.136	0.412	0.189	0.661
	(0.62)	(-0.07)	(0.57)	(-0.18)	(0.25)	(0.74)	(0.35)	(1.20)
DTT_{ijt}	0.830**	0.845**	0.841***	0.879***	2.382*	2.405*	2.332**	2.356*
	(2.64)	(2.65)	(2.70)	(2.77)	(1.96)	(1.87)	(2.01)	(1.86)
WTO_{jt}	-0.027	-0.061	-0.011	-0.023	0.566	0.645	0.406	0.489
	(-0.04)	(-0.10)	(-0.02)	(-0.04)	(1.00)	(1.09)	(0.84)	(1.01)
Year control	yes	yes	yes	yes	yes	yes	yes	yes
Hausman test	no	no	no	yes	no	yes	no	yes
R-squared	0.3145	0.3739	0.3638	0.3440	0.5064	0.5035	0.5311	0.5335
Observations	232	232	232	232	273	273	273	273
# Countries	41	41	41	41	53	53	53	53

Absolute values of t-statistics in parentheses. ***p<0.01, **p<0.05, *p<0.1