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The effect of BITs, a two-sided story

Bachelor thesis NEKH03
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Abstract

Bilateral Investment Treaty is an agreement designed to increase FDI between signatories. Historically the treaty is concluded between a developed country and a developing country, as a risk-lowering instrument. In recent years agreements carried out between developed countries has put more focus on investments and adopted contents of a BIT, examples of this is TTIP, TPP and CETA. Yet there is little evidence that these functions would in fact be beneficial in a developed context. Existing literature is limited to the relationship between developed and developing countries. Through a gravity model analysis this thesis tests the difference in effect of ratifying a BIT on FDI outflows from 31 OECD countries into 187 developing and developed host countries. The main findings confirm that the effect of a BIT between two developed countries is lower and in fact not apparent, in comparison to a BIT between a developed and a developing country in respect to FDI flows. The results are applicable on the debate concerning the content of TTIP and similar agreements. It also opens up for further research on this uncharted subject.

Keywords: BIT, Gravity model, FDI, Developed countries, TTIP

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1. Introduction

As the economy and the world it operates in becomes more globalized, Foreign Direct Investments increase and has done since the late 80's. The investment can boost individual enterprises but also host and home country if operating in an optimal way. As with any investment there is an imbedded risk that the investor has to take on. This risk is determined partly by the expectation that the host country upholds certain standards in order to secure the foreign capital and profit while operating on the hosting market. In order to decrease that risk, countries can sign a Bilateral Investment Treaty, BIT. It is most common that these treaties are signed between a developed and a developing country, since the risk of investing in a developing country is regarded higher due to political or institutional instability. The BIT works as a gateway into these markets for foreign investors whom can rely on the by-laws of the treaty and as a result FDI is assumed to increase. This would suggest that the effects of the agreements are larger when the host party is a transitioning or developing country.

With this in mind I turn to the recent trend towards deeper integration with regard to bilateral and international agreements between developed countries. This also spills over to the area of investment. TTIP (Transatlantic Trade and Investment Partnership), TPP (Trans-Pacific Partnership) and CETA (Comprehensive Economic and Trade Agreement) are all current examples of extensive agreements, containing the elements of a BIT, concluded between developed parties such as the US, Japan and the EU. There has recently been a lot of controversy concerning the content of TTIP, some argue that the settlement and dispute function undermines the sovereignty of states since it is a function detached from domestic courts (Higgott, 2016, p. 5). The critics calls attention to the fact that large enterprises gain opportunities to challenge national laws in countries were the legal system is in no need for a substitute tribunal, drawing upon the fact that the both parties already have fair legal systems with no concern for challengeable objectivity (Allvin and Larsson, 2015, p. 39). Implementing a system were private actors can sue governments for actions that reduced their profit could for example lead to diminished environmental regulations, due to the risk of having to compensate private companies as a consequence of a dispute settlement (Allvin and Larsson, 2015, p. 38).

In this context both the host and home are a developed countries with noticeable lower political risk than in the case of developing countries. If we regard the risk-lowering mechanism of the BIT as the main function for increasing FDIs, will the effect be the same if the host country also is a developed country? If this was the case then low-risk countries as the ones mentioned above theoretically would not gain substantially from signing a BIT or an equivalent investment agreement with each other. This leads to the hypothesis that high-income, developed, countries benefit less from a BIT compared to developing countries. Since the agreements mentioned earlier are put into force recently, I cannot test the effect of these but will use BITs as a proxy instead. I aim to answer the question, in regards to FDI outflow from a developed home country; is the effect of a BIT the same for *developed* host countries as it is for *developing* host countries?

My thesis will therefore look into a subject that is not widely researched, since most articles only include developing countries as hosts. It will also be a contribution to the contemporary debate concerning agreements such as TTIP and its scope covering investments. As mentioned concerning the debate, some argue that there is no need for these regulations and that it in fact would be democratically questionable and diminish the sovereignty of states. Considering the current research it is not evident that an agreement like a Bilateral Investment Treaty would in fact increase FDI within a developed context. In order to capture the effect of these agreements I construct a gravity-model regression using bilateral data on annual FDI flows and ratified BITs.

In the first section I will give a background to the contents of a BIT, describe the current situation and trends concerning international investment and the theoretical context of a BIT. The second section consists of a review of existing research in the area. The third section includes a description of the econometric framework, the models and variables used in this thesis. This section also includes a discussion about the data and sample. In the last part of the thesis I will present the results and discuss these in connection to the hypothesis. I end the thesis with a conclusion part where I summarize the findings of the analysis.

2. Bilateral Investment Treaties

2.1 Historical background

As can be understood from the name, the agreement's purpose is to facilitate investment between two states and provide a legal document, which outline the commitments and privileges for both parties. The historical background of BITs is closely connected to the protection of foreign investment. In the 1930s the Hull rule (also called Hull-formula) stated an argument for a minimum protection of foreign investment in order to handle the occurrence of expropriation since at that time there was no safety net or law against these actions. This was however never put into force but the statements made by Hull are seen as the origin of todays BITs (Sasse, 2011, p. 42-43). The first BIT was signed in 1959 between Germany and Pakistan but the real acceleration of signed treaties did not start until mid 70s when the question of expropriation was highlighted within the context of international law.

Prime movers behind this was developed countries such as the US, Germany, the UK, Japan and Austria. The reason for the expansion of BITs during the 80s and 90s can be explained, some argue, by the fact that developing countries needed to attract FDI and the BIT acted as a tool for liberalizing their investment policies (Vandevelde, 2000, p. 470). The investing developed countries required some guarantees in order to secure and facilitate their investment and in this way the BIT was introduced on a broader scale (Salacuse and Sullivan, 2005, p. 75-76). Over a 30-year period, the total number of BITs signed and in force has risen from 198 in 1985 to 2951 in 2015, according to the Investment Policy Hub provided by UNCTAD (UNCTAD IIA, 2016).

2.2 Outlining the content of a BIT

As of today, taking into account the large number of existing treaties with various countries there are differences in the actual content and scope but existing literature agrees on the fact that the basic disposition is similar (UNCTAD, 2007, p. xi).
The *preamble* displays a summary of the aim and content of the treaty in question. It is not binding and therefore not specified to a larger degree. What can be of interest in this

section is if the treaty's objective is focused on certain sectors or takes a more general approach towards increasing investment. Some treaties also include environmental goals, public policy and promotion of international labour rights, indicating a broader integration beyond the investment itself (Muchlinski, 2009, p. 38) (UNCTAD, 2007, p. xi). *Admission* grants foreign investors the right to enter the host market (Sasse, 2011, p. 50). There is no international law that forces states to allow foreign investors, this is regulated in domestic law and therefore this clause and the extent of it is an essential part of the BIT (Muchlinski, 2009, p. 40).

Through the years two forms of admission has emerged and they can be divided in European and North American treaties (UNCTAD, 2007, p. xiii). The European form states that investment and investor's admission to the host country is to be determined by the existing laws within the host country. If the BIT does not state differently this could in practice mean that the host country is allowed to have legislation that is discriminatory against foreign investors (UNCTAD, 2007, p. 22). The North American model applies a non-discrimination view on admission and hence declaring that any domestic law stating differently should not be valid for investment from the home country (Muchlinski, 2009, p. 41).

Standard of treatment generally comes in three forms: Fair and Equitable Treatment (FET), Most-Favoured-Nation (MFN) Treatment and National Treatment. The definition of FET is not clear since the interpretation of it differs between scholars and between tribunals solving disputes concerning this question (UNCTAD, 2007, p. 28). Some define it as consistent with minimum international law and do not specify it further (Muchlinski, 2009, p. 47). The other standpoint treats FET as closer linked to the BIT in question and take into account transparency and freedom from coercion which entails a form of higher standard that calls for a case-to-case analysis (Sasse, 2011, p. 51). The principle of MFN, in accordance with WTO-standards, means that the contracting countries should treat investors or investment no less favourable than any other investing country in regard to investments (UNCTAD, 2007, p. 38). When referring to National Treatment, also a fundamental cornerstone within the WTO, the treaty guarantees the foreign investor equal treatment as domestic investors within the same sector (Muchlinski, 2009, p. 50).

Settlements of dispute mechanisms are used in cases of dispute between contracting governments or between investor and host state (Sasse, 2011, p. 58). In most cases treaties refer to ICSID (International Centre for the Settlement of Investment Disputes) in order to reach an arbitrational settlement with the BIT as the legal document in question (Sasse, 2011, p. 60). *Expropriation and compensation* is the part of the treaty that outlines the procedures concerning expropriation and how potential compensation is to be calculated. It is assumed that expropriation is valid under certain conditions;
"a public purpose, performed in a non-discriminatory manner, is followed by prompt, adequate and effective compensation and is in accordance with due process of the law" (Dolzer and Schreuer, 2012, p. 99-100). There is also a distinction between direct expropriation and indirect expropriation, where the first is defined as direct confiscation of foreign assets by the host government. The latter is a situation where domestic policy or law hinders the foreign investor from collecting assets or profits (Sasse, 2011, p. 55).

Some of these functions have recently become a part of agreements that promote trade and investments such as The Transatlantic Trade and Investment Partnership (TTIP) between the EU and the US. This agreement includes a non-discrimination approach towards investors, the formation of a court of arbitration and protection against expropriation, all of these contents are also included in the standard outlining of a BIT. The agreement is under on-going negotiation at the time being. Another broad agreement has recently been concluded (August 2014) between Canada and the EU, CETA. This covers investment protection through a standard of treatment and an investment tribunal as a settlement of dispute (EU 2016).

The Transpacific Partnership (TPP) is an ambitious collaboration between 12 signatories; Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the US and Vietnam. The section concerning investment ensures the principle of national treatment, non-discrimination, free transfer of funds, transparent investor-state dispute settlement (ISDS) arbitration and defines the allowed expropriation as described in section 2.2 (USTR). In the World Investment Report 2015 under 'Trends in the conclusion of IIAs' (International Investment Agreements), agreements like the ones described above, are called 'agreements with BIT-equivalent provisions (WIR, 2015, p.

106). In addition to facilitate trade flows, the goal of these agreements is to increase FDI flows between members.

2.3 The current state of BITs

Overall, there has been an upward trend in FDI since 1995 with peaks in the late 90's and in the middle of 00's followed by declines corresponding to the international economy's booms and recessions (see Fig 1). Fig 1 also illustrates a decrease of FDI inflows to developed economies the last years while the inflow to developing economies has been more constant. In 2014 the global inflow of FDI decreased by 16%, with a divergence between developed and developing economies inflow. The flows into developing economies increased by 2% and into developed economies it fell by 28% (WIR, 2015, p. xi). The notation of 55% stands for the percentage of the world's total FDI going into developing economies (WIR, 2015, p. 2).

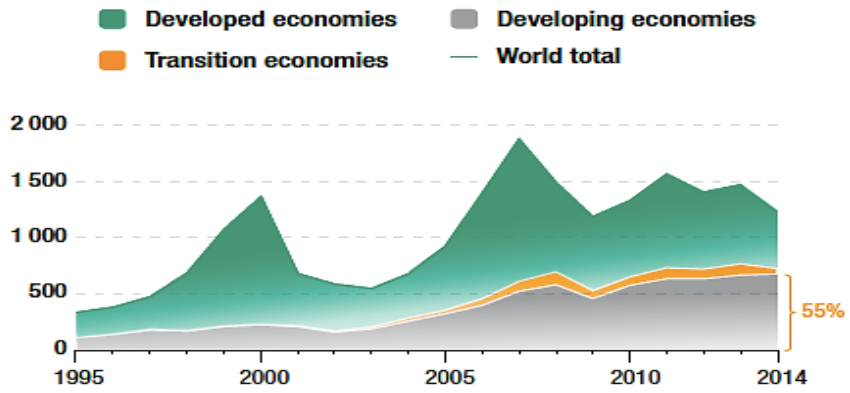

Fig 1 FDI inflows by group of countries 1995-2014, billions USD. Source: World Investment Report 2015, p. 2

In the category for FDI outflows we find the following top 10 countries; USA, Hong Kong, China, Japan, Germany, Russia, Canada, France, Netherlands and Singapore (WIR, 2015, p. 5). Most of them are regarded as developed countries and large economies.

When turning to the development of BITs in Fig 2, it shows that the number of new Bilateral Investment Treaties has decreased in recent years. As breifly mentioned in the introduction of this paper and in the former section, a new form of agreements which include the content of a BIT, often along with trade-related issues has emerged (TTIP,

CETA and TPP are used as exapmles throughout the thesis). These agreements fall under the category 'other IIAs' in Fig 2. It is evident that 'other IIAs' shows signs of expansion while the number of BITs increase as well but at a slower pace. The line for cumulative IIA's indicate a positive trend which has flattened out some what since the early 2000's.

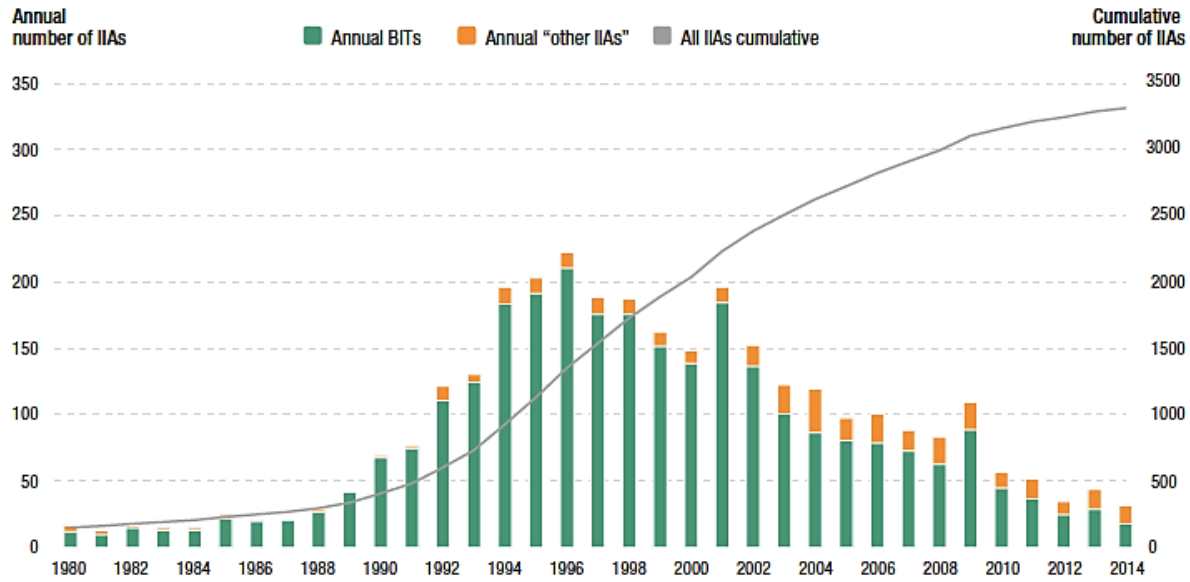

Fig 2. Trends in IIAs signed, 1980-2014. Source: World Investment Report 2015, p. 206

The current distribution patterns of BITs are shown in Fig 3, divided by developing including LDCs (Least Developed Countries) and developed countries as defined by UNCTAD. This is consistent with the historical tendency of BITs where North-South (corresponds to developed-developing) collaborations have increased the most over time (Bandelj and Mahutga, 2013, p. 109). More than half of all BITs are signed between a developed country and a developing country in contrast to the 11% between developed countries only.

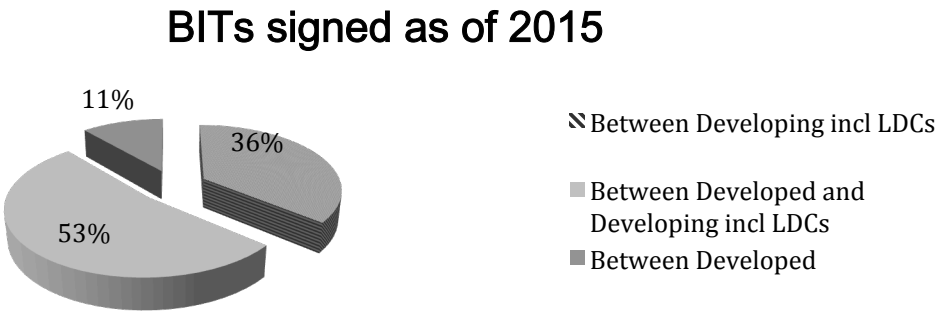

Fig 3. BIT distribution patterns. Source: UNCTAD, Investment Policy Hub. Total BITs concluded (2246) by 2015. Only including Country groupings: Developing incl LDC and Developed.

In short, global FDI inflows have a positive trend and are expected to increase in the years to come along with economic growth forecasts (WIR, 2015, p. 2). It is somewhat more uncertain concerning inflows into developed countries since they have decreased the last couple of years. These countries also seldom sign BITs between each other, an instrument designed to increase FDI. Meanwhile most of the world's FDI originates from developed countries. With this picture in mind one can argue that agreements like TTIP and TPP are trying to reverse the trend and increase FDI into developed countries through the instruments included in a BIT. This notion is relevant in the context of this thesis since it focuses on the question whether a BIT promotes FDI into developed countries in the same extent as into developing countries.

3. Theoretical framework behind BIT

In order to understand why a country might sign a BIT we have to go back to the actual investment and the risk involved with foreign investments. Sasse (2011, p. 17) illustrates it through a game of trust. The issues arising are connected to *expropriation* and *time inconsistency* (also called dynamic inconsistency). The concept of time inconsistency is the situation where the optimal decision can change between ex ante and ex post, meaning before and after an investment has been put into place.

Consider the game of two players, M (Multinational Enterprise, MNE) and H (Host country), see illustration in Fig 4. In the first step, MNE can choose between investing and not investing, payoff of not investing is zero for both players. Since we do not have two private business partners in this game, the risk is interlocked with the political risk of the host country (H) and the occurrence of expropriation (Sasse, 2011, p. 17). If MNE instead chooses to invest, implying a sunk cost, the host country can consecutively expropriate or accommodate the investment. The choice for the host country depends on the payoff for either accommodation or expropriation. Without a contract regulating this situation between the parties, such as an arbitration clause, the conclusion is often that expropriation would give a higher payoff compared to the option of accommodating the investment (Sasse, 2011, p. 18-20). Since it is called a game of trust, in the absence of a treaty like a BIT the investor has to rely on the host government's credibility and previous actions regarding foreign investment. Generally, developing countries are considered riskier and therefore some markets are excluded from potential investments.

The notations are interpreted as follows; C stands for cooperation gains for host and MNE respectively, L stands for the loss for MNE due to expropriation, W is the winning payoff of the host when expropriating (Sasse, 2011, p. 19).

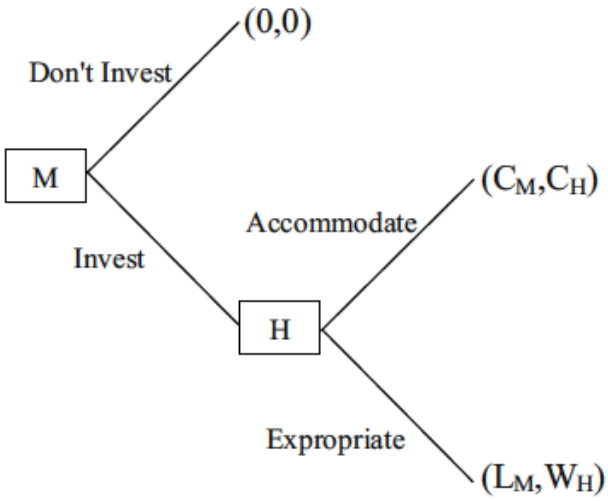

Fig 4. Time Inconsistency. Source: Sasse, 2011, p. 19

A BIT contributes to enhance trust through the *commitment* the state makes when signing the treaty. First of all the BIT clarifies the obligations of the host country. It does so in a more detailed fashion compared to existing international law. The exact obligations differ but the general model is described in section 2.2. The other condition of this treaty is that the parties are host and home government as opposed to private actors which instead is a third party engaging within the scope of the BIT. Generally states tend to focus on the part concerning fair treatment and as a consequence, violating the treaty would cause an issue in the overall foreign policy of the host country. In addition to this, the settlement-function within the BIT works as an enforcement and a guarantee for both parties to uphold the treaty (Elkins et al. 2006, p. 823-824).

The act of signing a BIT can also be viewed as sending a message of adopting a liberalized economic policy that in it self is a political statement (Vandevelde KJ, 1998, p. 628). This explains the high increase in signed BITs during the late 80's and 90's when pressure was put on developing countries to liberalize their economies by institutions like the IMF (Salacuse and Sullivan, 2005, p. 90).

When concluding this section it is evident that a BIT functions as a protection of investment, as a commitment to a more liberalized investment policy and in the end facilitates FDI. This creates an opening for the home country to invest in a new market

and the host country to profit from new foreign investments flowing in. But it is also evident that these expectations are considered in a context were flows goes from developed countries into developing countries (Salacuse and Sullivan, 2005, p. 75). The risk of expropriation is considered higher when the recipient is a developing country. As the theory is based on this assumption, it is not apparent whether the expected effect of the BIT is the same when the host also is a developed country.

The critique towards TTIP touches upon this issue, concluding that it is questionable to implement ISDS between parties with very low, or non-existent risk of expropriation. If there is no need for protection of investments in this sense, what is left is the function of liberalizing economic policy, which in an USA-EU context is difficult to see the need for. The aims of these agreements between high-income parties are to maintain and increase flows that are already apparent. The main functions of a BIT are focused towards lowering barriers for the home country to enter the host market, which is a difference worth noticing.

4. Previous research

In an article from 2010 Matthias Busse, Jens Königer and Peter Nunnenkamp test the effectiveness of BITs on FDI inflow into developing countries from developed source countries (Busse, Königer and Nunnenkamp, 2010, p. 160). They use a gravity model in their analysis, a model which in later years has become a common way to estimate the determinants of FDI flows and not only trade flows as it has done in the past (Busse, Königer and Nunnenkamp, 2010, p. 155). They construct a dependent variable by dividing FDI flow from a developed country *i* into developing country *j* with the total FDI outflow from country *i* to all developing countries in the sample (Busse, Königer and Nunnenkamp, 2010, p. 156). In order to test for BITs they use a dummy variable valued 1 if FDI flow into the host country while having a ratified BIT with the source country (Busse, Königer and Nunnenkamp, 2010, p. 159). They find that BITs have a significantly positive effect on attracting FDI into various developing countries (Busse, Königer and Nunnenkamp, 2010, p. 171).

Egger and Pfaffermeyer use a Knowledge-capital model to explain outward stock of FDI. In addition to variables used in other papers they include: common country size (bilateral GDP), similarity in bilateral country size (measured through GDP) and difference in factor endowments (ratio of skilled to unskilled labour). The first two variables relating to GDP, they hypothesize will affect horizontal FDI positively. With large home and host markets, the probability to cover the high fixed costs related to horizontal FDI increases. The advantage of entering a new market, the host market, is also an objective of horizontal FDI. The variable measuring factor endowments is supposed to increase vertical FDI when the ratio is larger than 0, meaning that the labour force in the home country consists of a higher degree of skilled labour in relation to the host country (Egger and Pfaffermayer, 2004, p. 792). This connects to vertical FDI in the sense that it often requires cheap labour due to labour-intensive production.

In this model they speculate that a BIT will reduce the barriers to both vertical and horizontal FDIs and thereby on their sample as a whole. They also form two BIT-dummies, one that tests for the effect of signing a BIT and one testing for the effect of ratifying. Their sample consists of bilateral flows from OECD members to other

members (intra-OECD) and from OECD members to non-OECD members. In a summary of statistics the researchers conclude that FDI flows are somewhat higher in intra-OECD but in the other group, OECD and non-OECD the ratio of signed and ratified BITs are higher (Egger and Pfaffermayer, 2004, p. 793). Further they find that the effect of ratifying a BIT is significant in all their model specifications using the full sample and the signing-effect of a BIT is small and in all cases smaller then the ratifying-effect (Egger and Pfaffermayer, 2004, p. 797). In one specification they form an interaction term between the dummy for ratifying a BIT and a dummy taking the value 1 for FDI between OECD and non-OECD, to test whether there is a difference between intra-OCED flows and flows into non-OECD countries. Noted here is that the larger part of the intra-OECD BITs were ratified with one country that later became a member, that is ex post ratifying. The test would therefore show if ratifying a BIT has a significant difference on FDI from new members than from old members. The result gave no significant difference in this case (Egger and Pfaffermayer, 2004, p. 799-800).

Eric Neumayer and Laura Spess (2009) also focuses on BITs effect on FDI flow into developing countries. Their variable of interest is defined as the absolute amount of USD invested in developing countries (FDIs) (Neumayer and Spess, 2009, p. 234). To capture the effect of BITs they use a cumulative calculation of the number of BITs signed between developing countries and OECD-countries. Their results show that those countries with high economic growth, a large population and a large number of signed BITs receive more FDI than others (Neumayer and Spess, 2009, p. 238). More BITs is consistent with higher FDI inflows in all their model variations (Neumayer and Spess, 2009, p. 248).

One model specification contains a variable that accounts for political risk, calculated by an index from 1 to 100 with high values indicating low risk, provided by the International Country Risk Guide (ICRG) (Neumayer and Spess, 2009, p. 237). When interacting the BITs variable with the index variable they conclude a negative coefficient, meaning that the effect of BITs is higher when the index value is lower and vice versa. Their reasoning suggests that this is evidence for the fact that BITs can compensate for some of the risk when investing in a country with relatively high political risk and thereby for filling its purpose (Neumayer and Spess, 2009, p. 241).

Similar research has been constructed by Büthe and Milner (2009, p. 196) with a result affirming that a higher cumulative degree of BITs increase FDI, as percentage of GDP, into developing non-OECD countries. As in the article above they test the effect of BITs when including a variable constructed by an index. They use the Nancy Brune's index for financial openness, measuring the restrictiveness on capital account transactions. It is measured separately from the BIT variable and both were positively significant (Büthe and Milner, 2009, p. 199).

However, there is research pointing towards a weaker and insignificant relationship between BITs and FDI, Hallward-Driemeier (2009, p. 374) concludes that BITs has not accelerated the bilateral FDI flow from OECD countries into developing countries. The function of the BIT, according to her analysis, is to work as a complement to countries already in reform rather than a substitute. Similarly Tobin and Ackerman-Rose (2011, p. 17) finds little evidence that BITs promote FDI in general. When including political risk they reason for the fact that, as mentioned above, the BIT works as a risk-lowering component in some cases but does not substitute for already high-risk countries (Tobin and Ackerman-Rose. 2011, p. 17).

When concluding the current literature on the subject it is clear that most researchers find that BITs increase FDI, often in connection with other variables such as measurement for political risk, meaning that the combination of low risk and a BIT have a positive effect on FDI inflows. This is most evident in the context of developed – developing countries which also is the focus of existing research. I will further denote this by two different income groups; High and Low/middle which is explained in the next section. In this thesis I will follow Busse et al (2010) in using a gravity-model since it is constructed for bilateral data. This model was outlined, as mentioned above, to explain trade flows between home and host countries but is now also common when working with panel data on FDI flows (Blonigen et al, 2007, p.1304). I will also use components of the Knowledge-capital model to incorporate the two broad elements of FDI, horizontal and vertical.

5. Empirical methodology

5.1 The Gravity model

The framework for the econometric model used in this paper is the Gravity model. It was originally constructed for bilateral trade flows between home and host countries. Its basic 'gravity principles' are based on the assumption that countries trade in proportion to the distance between them and their size, estimated by GDP (Bacchetta et al. 2012, p. 103). When analysing trade the basic gravity model is defined;

$$Y_{ij} = \beta_0 + \beta_1 gdp_i + \beta_2 gdp_j + \beta_3 dist_{ij} + \varepsilon_{ijt}$$

Y_{ij} is the dependent variable and stands for exports from *i* to *j.* Y is a function of exporter *i*'s and importer *j*'s GDP respectively and $dist_{ij}$ the bilateral distance, an estimator for trade costs. The intuition as explained above; large bilateral distance has a negative impact on trade, large GDP has a positive effect on trade (Shepard 2012, p. 9). Additional variables are normally included such as dummies for common language, colonial heritage and dummies for specific trade agreements (Bacchetta et al. 2012, p 106). When estimating a gravity model on FDI flow it is done in the same way, specifying the model with host-specific variables and relevant dummies to explain the bilateral flows of FDI from country *i* to country *j.*

5.1.1 The Knowledge-capital model

The Knowledge-capital model of Multinational enterprises includes variables that determine both vertical and horizontal FDI. Vertical FDI implies for example a division of production by locating a plant in a host country with specific comparative advantage within the preferred production factor, it is often related to labour-intensive production and thus cheap labour. Horizontal FDI on the other hand is when a MNE broadens its activities abroad, producing the same good in both home and host country. Horizontal FDI is also called market-seeking, referring to the advantage of having a large common market which can induce sales (Egger and Winner, 2006, p. 460). In general, developing countries rely on vertical FDI and developed countries on horizontal FDI (Hoekman and Kostecki, 2009, p. 15). The Knowledge-capital model uses variables that are designed to capture these two forms of investment and relies on theory concerning the behaviour of

the MNE (Blonigen, 2005, p. 395). The variables used in this thesis are explained in the next section.

The baseline model of this paper is based on the gravity model used by Busse et al (2010) and the Knowledge-capital model used by Egger and Pfaffermayer (2004) presented in the previous section.

5.2 Definition of variables

The baseline model is specified as (1) and the variables are explained below.

$$\begin{aligned} lnFDI_{ijt} = {} & \beta_0 + \beta_1 SumGDP_{ijt} + \beta_2 lnGDP_{jt} + \beta_3 lnPopulation_{jt} + \beta_4 lnTrade_{jt} \\ & + \beta_5 lnGrowth_{jt} + \beta_6 lnInflation_{jt} + \beta_7 lnSkillDiff_{ijt} + \beta_8 PolCon_{jt} \\ & + \beta_9 BIT_{ijt} + \lambda_{ij} + \tau_t + \varepsilon_{ijt} \end{aligned} \quad (1)$$

The dependent variable of the model is FDI outflows in million US dollars. Outward flow is defined as the positive amount of investment from an investor in the home country to an enterprise in a host country minus reverse investments (such as intra-company loans or reinvested earnings) (OECD, 2011). Thus the flow can be negative when the reverse investment exceeds the former post.[1] The investor is explained as an entity that has a minimum of 10% of the voting power in the foreign enterprise which is translated as 'establishing a lasting interest' in the enterprise (OECD, 2008, p. 49). The flows are collected annually between 1985 and 2013.

In order to distinguish the countries according to income classification, all the countries within the sample are divided into two groups; high-income and low/middle-income based on the World Bank classification from 2015 (World Bank 2016). I have combined low and middle-income countries to one category and kept high-income as defined by the World Bank. The division was made in order to simplify the analysis and keep the number of dummies low for the regressions. This forms the *Income-dummy*, taking the value 1 if a host country is high-income and taking the value 0 if it is a low/middle-

[1] By logging the dependent variable when estimating with OLS, this is no concern. When using PPML the negative values are transformed into the value 0. See 5.4.1

income country. This variable is introduced in Model (2) as an interaction dummy with the BIT variabel.

The *SumGDP* variable is constructed, in line with the Knowledge-capital model, to capture the horizontal FDI. It is defined as the bilateral country size, by adding the GDP of home and host. This is based on the assumption that a bigger common market makes it easier to cope with the fixed costs involved with horizontal FDI. This variable is expected to have a bigger impact on high-income country pairs.

Within the host-specific variables host country *GDP* is included. The theory here is connected to the gravity model, large GDP attracts more FDI. *Population* indicates the market-size of the host country. The predicted effect of this variable differs, some predict a positive effect due to a larger host market. Others predict a negative sign when including a variable for partner GDP, I will discuss this further in relation to the results. *Trade as percentage of GDP* is used as a measurement of the host country's openness to trade. Trade is defined as the total sum of exports and imports of the host country at a given year, as percentage of GDP. The expected effect of this variable depends on which type of investment is being made and is therefor also related to the income categories of the host countries. Trade can viewed as a complement to vertical FDI, thus a positive effect that would be apparent for low/middle-income hosts. Horizontal FDI on the other hand can be a substitute for trade, a negative effect for high-income hosts.

GDP growth act as measure of the condition of the host market, positive and large GDP growth is connected to higher FDI flows. Annual *Inflation rate* determinates the macroeconomic stability within the host country, interpreted as high values of inflation result in lower FDI and yields a negative impact.

The *Skill Difference* variable represents the difference between the tertiary school enrolment in the home country and the tertiary school enrolment in the host country. The enrolment for each country is calculated as a ratio between the total enrolments in tertiary education relative to the age group which corresponds to the education level. If the *Skill Difference* variable is positive, the enrolment ratio is higher in the home country and the hypothesis is that vertical FDI increases. This is expected to have a larger impact

on high-income-low/middle income country pairs where the difference in skilled to unskilled labour is supposedly higher. With the same theoretical background I have created a variable for *GDP per capita Difference.* This variable is calculated by taking the difference between GDP per capita in home and GDP per capita in host. The primary reason for including this variable is that data on school enrolment usually is reported seldom and includes many missing values. The *GDP per capita Difference* is used as a complement to the *Skill Difference* variable and is therefore not included in the baseline model. The negative values are transformed into 0 in both variables. These two variables are collected from the Knowledge-capital model.

To implement a measurement of risk I use the Political Constraint index constructed by Witold J. Heinsz (Heinsz, 2000) and form the variable *PolCon*. The purpose of the index is described as;
"A variable of interest to the formation of multinational business strategy: the ease with which a policymaker in a given country can change taxation, regulatory or other policies in a way that reduces expected returns of the subsidiary" (Heinsz, 2000, p. 361).
In other words the index tells the investor whether it is likely that the legislative power will change its policy unexpectedly. Thereby this index can act as a measurement of the risk of investing in a specific country. It was also used in three articles mentioned in section 4 (Busse, Königer and Nunnenkamp, 2010) (Neumayer and Spess, 2009) (Büthe and Milner, 2009). It ranges from 0 to 1, where higher values indicate that the executive power is constrained in policymaking (the actual value 1 is never reached since in reality change in policy is always possible). The index is formed into the variable *PolCon* and is expected to have positive impact on FDI.

The primary variable of interest is my *BIT-dummy.* It is based on data from UNCTADs IIA database, containing information on international investment agreements between members of the UN. I have used data within the time period 1985-2013 and included only agreements ratified during these years. The data includes the date of signing and the date of ratification. The reason for using the date of ratification rather than signing is that from this date the treaty is actually in force. The variable takes the value 1 if a country pair has a ratified treaty a given year and the value 0 if it does not. This dummy

variable therefore captures the effect of a BIT on FDI for a unique country pair. A summary of the predicted effects on FDI outflows are listed in Table 1.

Table 1. Theoretical predictions

Variables	Definition	GM	HOR	VER
lnGDPjt	GDP constant million USD	+		
SumGDPijt	Total bilateral GDP constant million USD	+	+	
lnTradejt	Trade as % of GDP	+/-	-	+
lnGrowthjt	Annual GDP growth %	+		
lnPopulationjt	Total population, in millions	+/-		
lnInflationjt	Consumer price index annual %	-		
lnSkillDiffijt	Difference in tertiary school enrolment	+		+
lnGDPpcDiffijt	Difference in GDP/capita	+		+
PolConijt	Political Constraint Index	+		
BITijt	Dummy for ratified BIT	+	+	+

Notes: Notation i stands for Home, j Host and t Time (year). GM = Gravity model, the main model. HOR, VER = expected impact on horizontal and vertical FDI.

5.3 Estimation method

The main method used to test the regressions in this thesis is Ordinary Least Square (OLS). It is used in most research on this area and in all the articles described in section 4. By using this method I can compare my findings with previous research. In all regressions robust and country pair-clustered standard errors are used.

When using OLS it is customary to log the dependent variable, which also is done in this paper. An issue concerning this is that all negative and zero values are lost. Modifying the data in this way alters it and we are not able to do the estimation including the instances when investment is 0, which is a relevant component of the data. This then can produce biased estimates when dropping observations and a sample selection bias (Gómez-Herrera, 2013, p. 1091). An alternative method to use, proposed by Silva and Tenreyro (2006) in the influential article 'The Log of Gravity' is the Poisson Pseudo-Maximum Likelihood estimator (PPML). In this paper, the PPML method is used for robustness tests. The method estimates the dependent variable in levels and can in this way account for the zero values as well (Silva, JS and Tenreyro, S, 2006, p. 643). Another advantage of PPML is that it is robust in the presence of heteroscedasticity, when using robust standard errors and then performs better than a log-linearized OLS estimation

(Silva, JS and Tenreyro, S. 2006, p. 653). The disadvantage of this model is that it can not handle negative values.

Despite the limitations of the OLS estimator as outlined above, it is still frequently used in the context of FDI, which motivates the choice of using this estimator.

5.4 Data and sample

The sample consists of OECD countries forming 31 home countries, into a total of 187 host countries within the time period 1985-2013. I have chosen to include the OECD home countries as host countries as well, why the total number of unique countries in the sample is 187, this in contrast to many previous studies which exclude high-income hosts. The reason for this is that the aim of the analysis is to find whether the effect is different when both home and host are high-income countries in comparison to the high-low/middle-income context. Since bilateral data is used, the country-groups together form 5766 pairs.[2] Some host countries were excluded during the process due to lack of values in both the dependent variable and the independent variables. These countries mostly consist of small islands entities and for example North Korea which does not report much statistics. Two home countries were also left out, Canada and Mexico. Canada only reports FDI outflows into a few countries such as USA and Mexico, all other flows are accounted for as unallocated. Mexico does not report FDI outflow during the years 1985-2013.

Belgium and Luxembourg has been merged into one home and host country. Before 2002 they reported FDI flows as the BLEU (Belgium Luxembourg Economic Unionon) and not as individual countries. The observation of outflows from these two countries after 2002 has been combined into one, the same with outflows going into Belgium and Luxembourg from the other home countries. The same follows for the independent variables, adding GDP, population size and so on. Since they have the same BIT-partners as well, this was possible. All countries used in the sample are listed in the appendix, divided by home, host and income classification (see A2-A3). Table 2 presents

[2] Since my Home countries also are Hosts, the number of pairs are not $(31 * 187) = 5797$ but $(31 * 156) + (31 * 30) = 5766$. Because of the fact that one OECD-country is left out in every pair. Namely the country which is Home.

descriptive statistics over the variables used in the model variations. The sources used to collect data are found in the appendix (see A1).

Table 2. Descriptive statistics

Variable	Observations	Mean	Min	Max
lnFDIijt	26 559	3.41	-6.91	12.07
SumGDPijt	149 804	13.02	8.91	16.78
lnGDPjt	156 469	9.57	2.78	16.49
lnGrowthjt	130 332	1.36	-6.55	5.01
lnTradejt	148 469	4.27	-3.87	6.28
lnInflationjt	132 782	1.78	-7.40	10.10
lnPopulationjt	166 966	1.56	-4.76	7.21
lnSkillDiffijt	95 708	1.16	0	6.71
lnGDPpcDiffijt	149 717	2.22	0	7.15
PolConjt	14 914	0.25	0	.72
BITijt	167 214	0.15	0	1
BITxHigh	167 214	0,06	0	1

5.5 Estimation issues

5.5.1 Causes of sample bias

Instances of missing observations are not regarded as an issue if they are missing at random. The cause of sample bias can occur when the missing values are non-random, arising attrition bias (Goodman and Blum, 1996, p. 630). Notably in this sample, some countries start reporting FDI outflows after 1985, generating non-random missing observation in the years prior reporting. In the sample this is true for 11 home countries.[3] I will be using country pair (bilateral) fixed effects in the estimations, in this context it means that observations that are constant within pairs will be left out of the regression (see 5.4.4) this includes the observations of missing values from the mentioned home countries during certain years.

Apart from the fact that FDI flows can take the value zero, it can also be negative. Most articles do not discuss this issue when implementing an OLS estimator, since the logarithm of a negative value is undefined along with the logarithm of zero. I will mention it in this thesis since I use PPML for robustness tests. PPML allows for zeros but

[3] Turkey, Slovak Republic, Slovenia, Israel, Iceland, Ireland, Hungary, Greece, Estonia, Czech Republic and Chile.

does not, on the other hand, accept negative values in the dependent variable. In the PPML estimations (robustness test) the negative observations in the dependent variable has been transformed into zeros. This is a limitation of the model that should be taken into account when examining the results of the PPML estimations. Taking the average flows of the dependent variable could have been an alternative but is not recommended in the presence of many missing values and therefore I exclude this method (Bacchetta et al. 2012, p 58).

5.5.2 Multicollinearity

This issue arises when there is correlation between the explanatory variables in a regression. It does not yield a biased estimation, the coefficients are still unbiased in this state but the standard errors are generally large (Doughtery, 2011, p. 166). I have computed a VIF-test (variance inflation factor) between the regressors, a method used to detect signs of multicollinearity. The results are presented in Table 3.

Table 3. VIF test

Variable	**VIF**
SumGDP	1.33
lnGDP	6.19
lnPopulation	4.23
lnTrade	1.58
lnGrowth	1.13
lnInflation	1.23
lnSkillDiff	2.84
PolCon	1.22
BIT	1.15

The rule of thumb when interpreting the test is that VIF greater than 10 indicates issues of multicollinearity (Chatterjee and Price, 2012, p. 250). lnGDP shows the highest value but is still within the recommended range. Multicollinearity is also seldom a problem in a panel structure, due to the variation, and when a large sample is used (Baltagi, 2013, p. 7).

5.5.3 Heteroscedasticity

In contrast to multicollinearity, heterescedasticity is often present in panel data due to large variation in the data. Meaning that the variables in the sample contain very

different values between the observations (Doughtery, 2011, p. 283). Heteroscedasticity violates the rule of the error term being constant or in other words the same for all observations (homoscedasticity) (Doughtery, 2011, p. 281). Not correcting for this can cause a biased estimation (Shepard 2012, p. 52).

To estimate a model without these issues I implement robust and clustered standard errors. In this thesis the standard errors are clustered by country pair, in order to permit correlation of the error term within the specific group, which is often present (Shepard 2012, p. 28-29).

5.5.4 Unobserved heterogeneity

As the heading tells you, we now turn to what is not observed in the model. This is a factor which is not accounted for in the model and that may affect the country pairs differently over time. These variations are imbedded in the error term, but being unobserved, they can cause a biased estimation by correlating the regressors and the error term (Doughtery, 2011, p. 345).

To control for this I use country pair fixed effects and time fixed effects. The within fixed effects leaves out all observations that are constant over time, thus all instances of observations being constant over time within a country pair (Bacchetta et al. 2012, p. 108). What is regarded as constant, depends on the variation of the dependent variable from its mean in terms of the variation of the independent variables for each country pair. With this fixed effect everything considered constant, is not regarded to affect the dependent variable FDI outflow. By using fixed effects the unobserved heterogeneity bias is avoided (Doughtery, 2011, p. 518).

A disadvantage of using fixed effects is that I cannot use variables that are constant over time, such as dummies for common borders or bilateral distance since they are left out of the estimation (Bacchetta et al. 2012, p. 108). The alternative is to use random effects that regard the unobserved factors as random and exogenous (Gómez-Herrera, 2013, p. 1091). It is not likely that this procedure is valid in this context with a sample covering a

large time-period with periods of economic crises. A Hausman-test supports this, rejecting the null hypothesis of random effects.[4]

5.5.5 Endogeneity

When estimating a policy decision like the ratification of a BIT, the possibility of endogeneity occurs. Country pairs that for example have other agreements between each other or a common history are more likely to ratify a BIT. As with unobserved heterogeneity this leads to an omitted variable bias and potential correlation of the BIT variable and the error term. In the same way, I overcome this issue when implementing the bilateral (country pair) fixed effects (Bacchetta et al. 2012, p. 118)

[4] chi2(36) = (b-B)'[(V_b-V_B)^(-1)](b-B)= 576.21 Prob>chi2 = 0.0000

6. Results

This section begins with testing the effect of a BIT and the other independent variables on the full sample. This is to conclude if there is any effect on FDI in the sample containing both high and low/middle-income hosts. Then I move on to test the effect when differentiating between income groups.

6.1 Baseline model regressions

The basic specification of the Gravity Model (1) is defined as follows:

$$lnFDI_{ijt} = \beta_0 + \beta_1 SumGDP_{ijt} + \beta_2 lnGDP_{jt} + \beta_3 lnPopulation_{jt} + \beta_4 lnTrade_{jt} + \beta_5 lnGrowth_{jt} + \beta_6 lnInflation_{jt} + \beta_7 lnSkillDiff_{ijt} + \beta_8 PolCon_{jt} + \beta_9 BIT_{ijt} + \lambda_{ij} + \tau_t + \varepsilon_{ijt} \quad (1)$$

The variables are described in the former section. λ_{ij} denotes the country pair fixed effects, τ_t year dummies for year fixed effects and ε_{ijt} is the error term. Standard errors are robust and clustered by pairs. Results from the regression of the baseline model noted as OLS, using the OLS estimation is found in Table 4, the same specification is run with PPML (noted PPML) as a robustness test. All variables except BIT and PolCon are logged and thus the coefficients are interpreted as elasticises (Doughtery, 2011, p. 197).

6.1.1 Baseline model with OLS

The OLS estimation displays five significant coefficients; SumGDP, lnGDP, lnPopulation, lnInflation and BIT. SumGDP indicates support for the effect of horizontal FDI, 1% increase of the common market increases FDI outflow by 1,6%. The same effect is apparent for host GDP, having a positive effect of 1,1% on the dependent variable. The variable for inflation shows a small negative impact on FDI in line with the predicted effect, indicating that countries with high inflation (lower macroeconomic stability) receive less FDI. The lnSkillDiff variable is not significant and therefore there is no support for the vertical investment of MNE in this test. The results does not change when interacting the lnSkillDiff and lnGDPpcDiff variable (see appendix A4).

Table 4. Regression result of the baseline model

Dependent variable: FDI outflow	OLS	PPML[5]
SumGDP	1.163***	1.089
	(0.327)	(0.824)
lnGDP	1.126***	0.862
	(0.238)	(0.524)
lnPopulation	-2.107***	-2.568**
	(0.418)	(1.219)
lnTrade	0.0716	-0.0384
	(0.141)	(0.373)
lnGrowth	0.0307	-0.00693
	(0.0191)	(0.0445)
lnInflation	-0.0433*	0.00177
	(0.0234)	(0.0500)
lnSkillDiff	0.0671	-0.0839
	(0.103)	(0.202)
PolCon	0.0813	-0.0999
	(0.154)	(0.345)
BIT	0.275***	0.237
	(0.0963)	(0.212)
Observations	15,574	23,019
Number of pair	2,351	2,252
R-squared	0.347	
Country-pair FE	YES	YES
Year FE	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

lnPopulation has a negative sign -2,107 and is significant at a one per cent level. The expected sign of this variable was ambiguous (see Table 1) since it has shown different effects in previous studies. In instances with a positive effect of a large population on FDI, researchers argue that this signals the positive effect of a large host market. The interpretation of a coefficient in a multiple regression is done holding all other coefficients constant. Holding GDP constant while increasing the population would result in a lower GDP per capita, which would have a negative impact on FDI (Büthe and Milner, 2009, p. 194). This interpretation is supported when testing the same specification but replacing lnGDP and lnPopulation with a variable for host GDP per capita. The results can be found in the appendix (see A5) showing a significant positive effect of higher GDP per capita on FDI. From this I draw the conclusion that lower GDP per capita has a negative effect or smaller effect on FDI. GDP per capita is not included as a variable in the baseline model due to the fact that it has a high correlation with lnGDP.

[5] The dependent variable in the PPML estimation is not logged, it is measured in levels.

The number of observations and pairs are reduced due to the use of fixed effects, as mentioned before there are 5766 pairs in the sample and in the baseline specification only 2351 are used.

Notably the BIT coefficient is statistically significant at a one per cent level with a value of 0,275. This OLS estimation thus supports the hypothesis that BIT increases FDI, despite the varying characteristics of the host countries. The results confirms much of the previous research on the effect of BITs on FDI with the exception that this sample is more heterogeneous in respect to the income classification of host economies. The difference in effect on FDI from not having a ratified BIT to ratify a BIT is 31,65%, the effect of the dummy variable going from 0 to 1.[6] In this model specification it is difficult to relate the results to the hypothesis that high-income hosts benefit less from a BIT than low/middle-income hosts. The results does confirm that there is an effect and in section 6.2 I will move on to take a closer look into how the effect is distributed.

6.1.2 Robustness test of the baseline model with PPML

In Table 4 the baseline model is estimated with PPML as a robustness test. In contrast to the OLS estimation, only one variable is significant, lnPopulation. It is significant on a five per cent level and has a value of -2,568 that confirms the result discussed previously concerning the relationship with GDP.

As outlined in section 5.2 the PPML estimator accepts zeros in the dependent variable FDI outflow. This could be an explanation to the different result between OLS and PPML, the fact that the value 0 is occurring in dependent variable in the latter but not in the first. Since the estimated effect is clearly different between the two estimations it does not give much support to the robustness of the findings as a whole. It is therefore difficult to conclude the effect of the BIT in this section, as the results do not hold when using the PPML estimation.

[6] Calculated as $e^{0,275} - 1$

6.2 Testing the effect depending on income category

In the previous section I tested the effect of the BIT along with the other variables on FDI outflow without differentiating between high and low/middle-income hosts. Now I move on to modify the model, forming Model (2), in order to test for the differences in effect when controlling for income classification.

$$lnFDI_{ijt} = \beta_0 + \beta_1 SumGDP_{ijt} + \beta_2 lnGDP_{jt} + \beta_3 lnPopulation_{jt} + \beta_4 lnTrade_{jt} + \beta_5 lnGrowth_{jt} + \beta_6 lnInflation_{jt} + \beta_7 SkillDiff_{ijt} + \beta_8 PolCon_{jt} + \beta_9 BIT_{ijt} + \beta_{10} BITxHigh_{ijt} + \lambda_{ij} + \tau_t + \varepsilon_{ijt} \quad (2)$$

In this specification I use the same variables as in Model (1) but includes an interaction of the BIT dummy with the income dummy taking the value 1 if the host is a high-income country, taking the value 0 if the host is an low/middle-income country. All home countries in this analysis are categorized as high-income countries, meaning that the value 1 stands for a high-income country pair with a ratified BIT.[7] The use of an interaction dummy enables the interpretation of the effect between the two income categories. β_9 the coefficient for BIT, shows the effect for the reference group: flows from high-income home countries into low/middle-income hosts. β_{10} the coefficient for BITxHigh shows the difference in effect between high and low/middle-income hosts on the dependent variable. The full effect for high-income hosts is $\beta_9 + \beta_{10}$.

6.2.1 Model 2 estimated with OLS

Turning to the results of regression Model (2) in Table 5, the same independent variables as in Table 4 are significant. The coefficient for BIT now has a higher value, 0,433 and is significant on a one per cent level. This means that the effect for flows from high-income home countries into low/middle-income hosts is higher compared to the sample as a whole. It is also in line with previous research and confirms the positive relationship between ratifying a BIT and an increase in FDI when the home country is high-income and the host is a low/middle-income country. The interaction variable

[7] In regressions using Model (2) Turkey is excluded as a Home country since it is classified as a low/middle-income country. See appendix A2

BITxHigh is also significant, on a five per cent level. As outlined above the interpretation of this coefficient is the difference in effect between the host country being high-income compared to being low/middle-income.

Table 5. Regression result of Model 2

Dependent variable: FDI outflow	OLS	PPML[8]
SumGDP	1.133***	1.062
	(0.331)	(0.828)
lnGDP	1.155***	0.876*
	(0.240)	(0.527)
lnPopulation	-2.200***	-2.618**
	(0.423)	(1.232)
lnTrade	0.0527	-0.0365
	(0.141)	(0.374)
lnGrowth	0.0277	-0.00784
	(0.0194)	(0.0446)
lnInflation	-0.0442*	0.00276
	(0.0237)	(0.0501)
lnSkillDiff	0.0751	-0.0802
	(0.104)	(0.203)
PolCon	0.0884	-0.104
	(0.155)	(0.346)
BIT	0.433***	0.461*
	(0.120)	(0.263)
BITxHigh	-0.404**	-0.523**
	(0.186)	(0.264)
Observations	15,280	22,376
R-squared	0.349	
Number of pair	2,283	2,184
Country-pair FE	YES	YES
Year FE	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results show that this coefficient is negative, -0.404. This leads to the conclusion that high-income hosts benefit less from ratifying a BIT, compared to the low/middle-income hosts in this sample. The aim of the thesis is too look into this question and the regression results in Table 5 confirms the hypothesis that high-income countries, in other words low-risk countries, do not have the same positive effect from a BIT as low/middle-income countries. To further establish this difference in effects, a Wald-test was conduced to test if the two coefficients were equal. This test rejected the null hypothesis BIT = BITxHigh on a one per cent level (see appendix A6). Reconnecting this

[8] The dependent variable in the PPML estimation is not logged, it is measured in levels.

to the question asked in the introduction, if the was a difference in effect depending on income category in relation to FDI.

A second Wald-test was run to test the full effect for high-income hosts, the effect for $\beta_9 + \beta_{10}$. The null hypothesis that the added values of these two coefficients are equal to zero was not rejected, with a high p-value. It does not mean that the effect is exactly zero but the test indicates that there is little evidence that there is any effect for the group of high-income host countries in the sample. The test statistics and p-value are reported in the appendix A6. Both tests thus give support to the hypothesis outlined in this thesis, that the effect of a BIT between a high-income country pair is not the same as for a high-low/middle income country pair. It also confirms that the effect for high-income pairs is smaller and not statistically significant.

In addition to this, both Model (1) and (2) were run without the insignificant variables lnTrade, lnGrowth, lnSkillDiff and PolCon. This did not have any effect on the results and in the interest of brevity these specifications are not presented.[9]

6.2.2 Robustness test of Model 2 with PPML

The result of the PPML estimation on Model (2) is presented in Table 5. As with the previous PPML estimation (Table 4) very few coefficients are significant. But an important difference is that both the BIT variable and BITxHigh are significant, showing the same result as in the OLS estimation. The coefficient for BIT is positive with a value of 0.461 and BITxHigh is negative, -0.523. This robustness test confirms the difference in effect between the high income pairs and high-low/middle-income pairs in the estimation.

6.2.3 Robustness tests with time variations on Model 2

A second implementation of robustness tests of Model (2) is presented in Table 6. In the three estimations I have used different time-periods to see if the results are robust when excluding the first years of the sample, using the OLS estimation. The full time-period is 1985-2013.

[9] The results of these estimations are available upon request

In the robustness tests the first five, ten and fifteen years (corresponds to >= 1990, 1995, 2000) are excluded. In the first regression from 1990 the results hold and the same coefficients that are significant in Table 5 are significant in this specification. The values are lower but the relationship between high and low/middle-income hosts are still the same, establishing the difference in the effect of a ratified BIT on FDI outflow.

Table 6. Robustness test: Time variation

Dependent variable: FDI outflow	Year>=1990	Year>=1995	Year>=2000
SumGDP	0.873**	0.732*	1.268***
	(0.353)	(0.403)	(0.441)
lnGDP	1.296***	1.246***	1.544***
	(0.259)	(0.303)	(0.350)
lnPopulation	-2.031***	-2.267***	-0.767
	(0.465)	(0.542)	(0.581)
lnTrade	0.0548	-0.187	-0.0294
	(0.153)	(0.167)	(0.185)
lnGrowth	0.0340*	0.0378*	0.0247
	(0.0202)	(0.0219)	(0.0236)
lnInflation	-0.0502**	-0.0577**	-0.0812**
	(0.0255)	(0.0273)	(0.0318)
lnSkillDiff	0.0546	-0.0328	-0.0524
	(0.115)	(0.133)	(0.158)
PolCon	0.138	0.115	0.114
	(0.160)	(0.163)	(0.176)
BIT	0.424***	0.204*	-0.0623
	(0.127)	(0.116)	(0.142)
BITxHigh	-0.337*	-0.179	-0.261
	(0.195)	(0.214)	(0.287)
Observations	14,174	12,479	10,310
R-squared	0.285	0.231	0.186
Number of pair	2,280	2,257	2,117
Country-pair FE	YES	YES	YES
Year FE	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The second specification excluding the first ten years =>1995 only confirms the positive effect for low/middle-income hosts since the BITxHigh coefficient is not significant. In the last specification none of the BIT variables are significant. SumGDP, lnGDP and lnInflation are the only variables holding over time in Model (2). Notably lnGrowth is

significant in the first two specifications from 1990 and 1995. This variable is not significant in any other specification and thus this could be a seasonal effect.

The loss of efficiency could be caused by loss of observations in this case since excluding time periods also excludes parts of the sample. The previous findings only hold for the first time period and therefore it does not hold very well over time. It could also indicate that the effect of BITs, is not apparent in recent years and that the effect was concentrated to the early parts of the sample. Many treaties were signed during the middle 90's (Fig 2) and the subsequent effect of them would be more apparent in the specification from 1995 and 2000. It is worth pointing out but is not investigated further in this thesis.

Throughout this section I find evidence that support the initial hypothesis, high-income (developed) countries gain less from ratifying a BIT compared to low/middle-income (developing) countries. The results are fairly robust through the tests. In the conclusion I will discuss these findings, its implications and mention further research in this area.

7. Conclusion

This thesis has looked into the question of how a BIT affect FDI outflow from developed countries depending on the income characteristics of the host country. The initial hypothesis stated that the effect would differ, when the host is a high-income country compared to being a low/middle-income country. The area of research was drawn from the notion that large high-income countries recently has included the contents of a BIT within agreements between each other and by the fact that this was not apparent in the field of research on BITs and FDI.

The first results confirm previous research in the sense that ratifying a BIT leads to an increase in FDI, despite the heterogeneous nature of the host countries in the sample. It was however not affirmed by the robustness test. In order to test the main hypothesis the model was altered so that the effect for the two income categories could be analysed separately. The results of these tests indicate support for the fact that high-income countries do not benefit from BITs in the way that low/middle-income countries do, confirming the difference in effect. The Wald-test also established that there was no significant effect for the high-income host countries at all. This leads me to conclude that we cannot view the previous research in this area as groundwork for the effect of high-income hosts.

As stated concerning the theoretical framework of the BIT, the instrument is used to liberalize investment policy and lower the risk of investing abroad. My findings confirm this since the effect is higher for low/middle-income countries then for high-income countries. If the findings hold, there are little grounds for implementing a BIT-structure within a high-income context. Applying this to the agreements mentioned such as TTIP and CETA, a lot of time and effort could be saved disregarding this part of the agreement and putting focus on other areas. It also gives support for the criticism towards TTIP, concerning the implementation of regulations such as ISDS in a high-income context. Thus implying that other areas instead should be of concern when aiming to increase FDI into high-income countries.

Therefore further research in this area can explore the specific processes generating an increase in FDI flows into developed countries from other developed parties. Since the trend is pointing towards more agreements including elements of a BIT, it is evident that developed countries aim to increase FDI between fellow partners. I suggest that the academic world follows this trend in order to get a deeper understanding concerning this subject. One angle not mentioned in this thesis is how a BIT could affect specific sectors, some treaties are in fact limited to certain sectors. This can be an objective for further research, in order to establish whether these specific treaties have any other effects compared to the results found in this thesis.

Since BITs are seldom signed between two high-income parties the existing data is limited, Fig 3 displayed that only 11% of all BITs are signed between developed countries. This does however open up for a more qualitative analysis on these instances and can in this way isolate the effect within a high-income context. By doing so, covering the existing treaties and the relationship between the specific high-income country pairs. In this thesis the income categories are constant and based on information from 2015. A more appealing approach would be to use the correct income classification for each year to see how the results would differ. The actual effect of TTIP and the other agreements mentioned remains to be seen, it does however stand clear that we have to take into account the different characteristics of countries and not putting them all under one roof.

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8. Appendix

A1. Definition and data source

Variable	Definition	Source
FDI outflow	Bilateral FDI outflow in million USD	OECD iLibrary Statistics. International Direct Investments database
GDP	GDP constant USD in millions	The World Bank: World Development Indicators (WDI)
GDP growth	Annual GDP growth %	The World Bank: World Development Indicators (WDI)
Trade openness	Trade as % of GDP	The World Bank: World Development Indicators (WDI)
Inflation	Annual CPI %	The World Bank: World Development Indicators (WDI)
Population	Total population in millions	The World Bank: World Development Indicators (WDI)
Skill Difference	Enrolments in tertiary education as a percentage of the total population of the five-year age group following on from secondary school leaving.	The World Bank: World Development Indicators (WDI)
GDP per capita Difference	GDP/capita in home minus GDP/capita in host	The World Bank: World Development Indicators (WDI)
PolCon	Index 0-1 indicating political constraint	The Wharton School of the University of Pennsylvania
BIT dummy	Dummy variable, 0 = no BIT ratified 1= BIT ratified	UNCTAD IIA Database
Income dummies	Dummy variables indicating income-group in relation to GNI per capita. 2015 classification	The World Bank: Country and Lending Groups

A2. Table of Home countries

Home countries	*= high-income
Australia*	Poland*
Austria*	Portugal*
BLEU*	Slovak Republic*
Switzerland*	Slovenia*
Chile*	Sweden*
Czech Republic*	Turkey
Germany*	United States*
Denmark*	
Spain*	
Estonia*	
Finland*	
France*	
United Kingdom*	
Greece*	
Hungary*	
Ireland*	
Iceland*	
Israel*	
Italy*	
Japan*	
Republic of Korea*	
Netherlands*	
Norway*	
New Zealand*	

A3. Table of Host countries

Host countries[10]	*= high-income			
Aruba*	Comoros	Jamaica	Malaysia	Togo
Andorra*	Cabo Verde	Jordan	Namibia	Thailand
Afghanistan	Costa Rica	Kazakhstan	Niger	Tajikistan
Albania	Cuba	Kenya	Nigeria	Turkmenistan
United Arab Emirates*	Cyprus*	Kyrgyzstan	Nicaragua	Timor-Leste
Argentina*	Djibouti	Cambodia	Nepal	Tonga
Armenia	Dominica	Kiribati	Oman*	Trinidad and Tobago*
Antigua and Barbuda*	Dominican Rep	St. Kitts and Nevis*	Pakistan	Tunisia
Azerbaijan	Algeria	Kuwait*	Panama	Tuvalu
Burundi	Ecuador	Laos	Peru	Tanzania
Benin	Egypt	Lebanon	Philippines	Uganda
Burkina Faso	Eritrea	Liberia	Palau	Ukraine
Bangladesh	Ethiopia	Libya	Papua New Guinea	Uruguay*
Bulgaria	Fiji	St. Lucia	Paraguay	Uzbekistan
Bahrain*	Micronesia	Sri Lanka	Qatar*	St. Vincent and the Grenadines
Bahamas*	Gabon	Lesotho	Romania	Venezuela
Bosnia and Herzegovina	Georgia	Lithuania*	Russia	Vietnam
Belarus	Ghana	Latvia*	Rwanda	Vanuatu
Belize	Guinea	Morocco	Saudi Arabia*	Samoa
Bermuda*	Gambia	Moldova	Sudan	Yemen
Bolivia	Guinea-Bissau	Madagascar	Senegal	South Africa
Brazil	Equatorial Guinea	Maldives	Singapore*	Congo, Dem. Rep.
Barbados*	Grenada	Mexico	Solomon Islands	Zambia
Brunei*	Guatemala	Marshall Islands	Sierra Leone	Zimbabwe
Bhutan	Guyana	Macedonia	El Salvador	
Botswana	Hong Kong*	Mali	San Marino*	
Central African Rep	Honduras	Malta*	Serbia	
Canada*	Croatia*	Myanmar	Sao Tome and Principe	
China	Haiti	Mongolia	Suriname	
Cote d'Ivoire	Indonesia	Mozambique	Swaziland	
Cameroon	India	Mauritania	Seychelles*	
Congo	Iran	Mauritius	Syrian Arab Republic	
Colombia	Iraq	Malawi	Chad	

[10] Excluding countries also categorized as Home

A4. Diff-interaction

Dependent variable: FDI outflow	Diff Interaction
SumGDP	1.171***
	(0.327)
lnGDP	1.082***
	(0.249)
lnPopulation	-2.088***
	(0.419)
lnTrade	0.0681
	(0.141)
lnGrowth	0.0307
	(0.0192)
lnInflation	-0.0410*
	(0.0234)
lnSkillDiffxPcDiff	0.00224
	(0.0313)
PolCon	0.0831
	(0.154)
BIT	0.277***
	(0.0961)
Observations	15,574
Number of pair	2,351
R-squared	0.347
Country-pair FE	YES
Year FE	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

A5. Regression with GDP per capita

Dependent variable: FDI outflow	GDPpc
SumGDP	0.983***
	(0.315)
lnGDPpc	1.956***
	(0.395)
lnTrade	0.245*
	(0.144)
lnGrowth	0.0348*
	(0.0188)
lnInflation	-0.0380
	(0.0235)
lnSkillDiff	-0.279***
	(0.0975)
PolCon	0.160
	(0.158)
BIT	0.207**
	(0.0953)
Observations	15,575
Number of pair	2,351
R-squared	0.346
Country-pair FE	YES
Year FE	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

A6. Wald-tests

BIT - BITxHigh = 0
F(1, 2282) = 9.30
Prob > F = 0.0023

BIT + BITxHigh = 0
F(1, 2282) = 0.04
Prob > F = 0.8474