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# The Effect of Cultural and Political Factors on FDI

## Between the US and Partner Countries

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# PREFACE AND ACKNOWLEDGEMENTS

# ABSTRACT

Foreign direct investment is a major form of international capital transfer and has increased substantially over the last decades as a consequence of rising global economic integration. It has even grown faster than world GDP and merchandise trade even despite of the large drop in world FDI flows at the turn of the millennium. The two-way flow between developed countries still accounts for the largest part of asset trade. Around 80% of total FDI flows are invested between developed countries. Furthermore, inward FDI stock of developing countries has decreased over the last eight years as a percentage of total inward FDI stock. If developing countries want to reverse this trend it is important for governments and companies of these developing countries to know which factors determine bilateral FDI stock. This paper has tried to contribute empirical findings and results to the question as to what way cultural and political factors influence asset trade and in particular FDI. Therefore, this paper investigated a set of bilateral US inward and outward FDI stock data for the time period 1985-2006 in a panel with 37 countries. Cultural differences proved to have a significant negative effect on bilateral FDI stock. Also, the results demonstrated a significant effect of the type of legal family in a country on FDI. However, the effect of belonging to same legal family is negative. The political situation in a country proved to be a significant determinant of bilateral FDI stock. Countries with a low political rank receive more FDI from the US.

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# 1. INTRODUCTION

Foreign direct investment is a major form of international capital transfer and has increased substantially over the last decades as a consequence of rising global economic integration. It has even grown faster than world GDP and merchandise trade even despite of the large drop in world FDI flows at the turn of the millennium. Over the last 15 years, before the beginning of the crisis, FDI had increased by over 400%. Forces that drive global economic integration true FDI are initiated by prospects of reduced risk true diversification of investment opportunities, reduced costs of capital for businesses and better allocation of capital. All these forces must ultimately lead to increased economic growth (Guerin, 2006).

Large multinational enterprises are the main drivers of this emerging global economy, while they internationalize their production chains and expand internationally by entering new markets to reach more consumers. Currently one-third of world trade is accounted for by MNE's, which is for the largest part intra-firm trade. FDI's most important feature is that it is prominent in industries where the classical competitive paradigm is the most ill fitting (Brouwer *et al*, 2008). The two-way flow between developed countries still accounts for the largest part of asset trade. Around 80% of total FDI flows are invested between developed countries. Furthermore, inward FDI stock of developing countries has decreased over the last eight years as a percentage of total inward FDI stock.

**Table 1.1: FDI Stock Developed & Developing Countries**

| Inward FDI Stock | 1990 | 2000 | 2008 | Outward FDI Stock | 1990 | 2000 | 2008 |
|---|---|---|---|---|---|---|---|
| Developed Countries | 1.412.605 | 3.960.321 | 10.212.893 | Developed Countries | 1.640.405 | 5.186.178 | 13.623.626 |
| Developing Countries | 529.593 | 1.736.167 | 4.275.982 | Developing Countries | 145.179 | 862.358 | 2.356.649 |
| Developing Countries as Percentage of Total | 27,3% | 30,5% | 29,5% | Developing Countries as Percentage of Total | 8,1% | 14,3% | 14,7% |

This development is unfavourable for developing countries, as Foreign Direct Investments are regarded as a substantial contributor to international economic integration and development in general. According to Borensztein *et al.* (1998) Foreign Direct Investments contribute more to growth than domestic investments. In addition, FDI flows are also more advantageous and sustainable than other international asset flows, because of the intent of foreign direct investors to enter into a long-term relationship. Moreover, Brenton *et al.* (1999) conclude in their article that FDI induces managerial and technological knowledge

spill-overs, which lead to expanded export opportunities, increased international linkages, and more domestic competition and consequently increased product variety.

"OECD recommends that a direct investment enterprise be defined as an incorporated or unincorporated enterprise in which a foreign investor owns 10 per cent or more of the ordinary shares or voting power of an incorporated enterprise or the equivalent of an unincorporated enterprise. Foreign Direct Investment is a cross-border investment made by an investor with the intent of obtaining a long-lasting interest in an enterprise resident in another country" (OECD). Basically, a firm can employ a variety of methods when it wishes to make sales abroad. A firm can export its products, it can license a foreign company, appoint agents or can engage in Foreign Direct Investment. By engaging in Foreign Direct Investment it is possible for a firm to produce directly in the country it wishes to sell its products (Petroulas, 2006).

FDI exists in several major forms. The first type is called horizontal FDI, which is market oriented and gives companies access to foreign markets. In this form FDI is acting as a substitute for trade. The second is called vertical FDI, which is production oriented and enables transnational organizations to minimize their costs. These global companies try to gain strategic advantage by shifting low-paid jobs abroad while keeping high value added research at home. By applying this strategy TNOs produce either parts of or the entire final product in low-cost countries. In this form FDI is acting as a complement for trade. FDI flows are often seen as either a substitute for trade (horizontal FDI) or as a complement to trade (vertical FDI). A third type of rationale implies that the mode of outsourcing depends on the market structure, while companies in oligopolistic markets make extra profits, companies in competitive markets can lower their costs. A theoretical explanation of the difference between horizontal and vertical FDI is that firms engaging in horizontal FDI are said to sell their products in foreign markets, unlike firms that engage in vertical FDI which are said to serve the home market (Guerin, 2006).

Besides increasing FDI flows there exists another important feature of global economic integration. The role of cultural and political differences, which is often seen as an interfering factor in realizing global economic integration, has been the subject of many scientific articles (Shenkar, 2001). According to Shenkar (2001) "cultural distance" is a widely used

construct in international business where it has been applied to, amongst others, foreign investment expansion, entry mode choice, and the performance of foreign invested affiliates.

In the middle of the last century Tinbergen (1962) and Pöyhönen(1963) conducted research on bilateral trade and foreign investment and independently introduced a gravity equation framework used in empirical analyses. Since then researchers have applied the gravity equation framework extensively and successfully to a large number of policy issues. They have applied it, for example, to study the effect of exchange rates, a common currency, trade policies or regional integration.

Most recently, the scope of the gravity equation framework has been expanded by researchers who introduced variables that represent political and cultural differences to the gravity model. Their aim is to identify the effect of cultural and political factors on asset trade (Flörkemeier, 2002; Guiso *et al*., 2009; Kalemli-Ozcan and Sorensen, 2007; Heuchemer and Sander, 2007; Heuchemer *et al*., 2008). These studies present empirical results which show that trust in other countries, institutions, trust in these institutions, and cultural differences are important drivers, or on the contrary important barriers, to economic exchange. Heuchemer et al. (2008) investigate the determinants of European banking market integration with a focus on these cultural and political differences. They employ a dataset of European cross-border loans and deposits and use various gravity models that are augmented by societal proxies. These societal proxies consist of variables that measure the Euclidean distance of different cultural and political factors between European countries.

To our knowledge these societal proxies have not yet been used to investigate FDI stock between US and partner countries. This thesis will try to contribute empirical findings and results to the question as to what way cultural and political factors influence asset trade and in particular FDI. In this study I will first test the gravity equation and secondly, the societal proxies, the indicators of differences in culture and political situation to measure the effect of cultural and political factors on FDI stock between the US and their trading partner countries. I will use a set of bilateral US inward and outward FDI stock data for the time period 1985-2006 in a panel with 37 countries. My objective is to answer three questions:

Do cultural differences affect the amount of FDI stock between the US and a trading partner and to what extent is there any difference between the amount of inward and outward stock?

Do political differences affect the amount of FDI stock between the US and a trading partner and to what extent is there any difference between the amount of inward and outward stock?

Does the quality of the political situation in a partner country affect the amount of FDI stock between the US and a trading partner and to what extent is there any difference between the amount of inward and outward stock?

This study could have implications on both theory and policy. If cultural and political variables can explain the patterns of bilateral FDI stock a country's financial integration depends on it. By taking the US as example we could be able to explain which part of FDI stock does not depend on easily changeable policy, like exchange rates or tax rates, but on robust factors like culture and political situation. As we have seen above total outward FDI stock towards developing countries has decreased during the last eight years. Our results could be helpful for governments in developing countries to adapt their policy for attracting FDI.

Before those results can be presented, section 2 will first present the theoretical background, including theory on informational asymmetries, the gravity model, and political and cultural differences. It also defines the hypotheses tested in this thesis. Section 3 discusses the methodology of the empirical research, including an explanation of the variables, the model, and the gravity equations that are being used. In section 4, the empirical results will be presented alongside the different gravity equations that are being used. This will be completed by a robustness check and a Wald-test, followed by a discussion of the results. The thesis will be concluded in section 5.

# 2. THEORY

This chapter will discuss different theories that could explain the influence of political and cultural factors on FDI. Besides Empirical FDI research different articles are mentioned whose subjects are information asymmetry and investment risk caused by political instability. Subsequently, we will try to derive hypotheses out of this theoretical background.

## 2.1 FDI flows depend on international informational asymmetries

Consistent with portfolio diversification theory and the neoclassical model, equity flows should be geographically dispersed to maximize the overall yield. However, it is a stylized fact that FDI flows are geographically concentrated in certain regions and countries. Prospects of more efficient allocation of capital, diversification of investment opportunities, reduced cost of capital for businesses and economic growth drive the forces of financial integration, as they drive the forces of global economic integration. Nevertheless, in international financial markets the problems of information asymmetry are well recognized. Different articles mention the biased foreign asset portfolios of countries towards the domestic market. These biased portfolios are not optimally diversified and cause market frictions (French and Poterba, 1991; Tesar and Werner, 1995).

Lane (2001) accentuates that despite the highly increased pace of globalization, behavioural and informational barriers keep restricting the integration of the global capital market. Furthermore, Portes *et al.* (2001) and Portes and Rey (2000) investigate bilateral equity flows and bonds in a panel data regression model based on a gravity equation. In their sample the information effect dominates the diversification effect. They state that there is only weak support for a diversification motive. Just when they control for informational frictions they find little proof of a diversification motive. In discussions of capital mobility and globalization it is often assumed that international capital markets are frictionless but this seems not to be the case, when looking at informational barriers.

Informational asymmetries appear to be the main cause of capital market segmentation. Theories on asset trade are mainly dominated by models based on autarky prices, factor

endowments and comparative advantage. (Helpman and Razin, 1978; Svensson, 1988; Obstfeld and Rogoff, 1996), while those theories should be dominated by models based on differentiated assets, transaction costs, information asymmetries, and some kind of familiarity effect (Heath and Tversky, 1991; Huberman, 2001). A shift should be made towards these models like the shift in goods trade on theoretical modeling. In finance, literature information asymmetries are more frequently used than in asset trade literature, although it emphasizes on portfolio choice and asset pricing rather than on transaction volumes.

There are, however important factors to learn from finance literature. Gordon and Bovenberg (1996) have developed a model at a macro level between foreign and domestic investors. In their paper they concluded that there was an indirect but substantial support for the informational asymmetry hypothesis. Their paper was based on a relationship between current account deficits and real interest rates. Portes *et al.* (2001) use a sample in their paper, which is strictly US centered, in which they find that an assets required level of information determines the importance of the information variables. For example, assets with high information content, such as corporate bonds, are explained for a greater part by information variables rather than assets with low information content like treasury bonds. According to this theory, information variables should be important explanatory variables for the prediction of FDI flows, because of their high information content.

Ahearne *et al.* (2004) investigate in their paper the importance of a public listing in the US for foreign firms. They conclude that a public listing is an important way to reduce information costs, since public listings are standardized and produce credible financial information. Their results demonstrate that a country's total amount of US publicly listed companies explained for a substantial part a country's weight in US investors' portfolio. Foreign countries in which companies do not commit to the US regulatory environment are presented for a smaller part in US equity portfolios. This is an important factor behind the home bias phenomenon.

Huberman (2001) researched a sample of shareholders of Regional Bell Operating Companies and his results show that when people invest abroad they often invest in the familiar and by doing that ignore the principals of portfolio theory. So they do not base their

investments purely on diversification principles but one some kind of "familiarity". French and Poterba (1991) also appeal to information asymmetry or some type of 'familiarity' effect. Transaction costs increase with information asymmetry, which reduces international bilateral equity flows. Information asymmetry is directly influenced by a familiarity effect and this familiarity effect declines with economic distance. Economic distance depends mainly on two factors. Firstly, economic distance depends on national and governmental differences, which are explained by differences and dissimilarities of institutions, political situation and culture. This is also the main subject and research question of this paper. Secondly, economic distance depends on geographical distance, which is attended to in the next section.

## 2.2 The link between informational asymmetry and distance; the gravity model

Tesar (1995) studies the portfolio choices of Canadian and US investors and concludes in his article that, to the extent that investors do invest in foreign securities, investors' decisions are not purely made based on diversification motives. Alternatively, geographical distance seems to be an important factor in the explanation of international portfolio investment decision.

Coval (1999) states that investors have easier access to information about companies located near them, preferring them over distant ones on which they have relatively little information. It is easier for investors to talk to employees, managers, and suppliers of the firm if the company is located near them. In short, it is easier for an investor to monitor an investment which is less remote, so distance, also literally, separates an investor from potential investments.

Furthermore, Ghosh and Wolf (1999) study asset holdings in their article and also conclude that informational asymmetries increase with distance.

Rauch (2001) states that geographical distance hinders cultural exchange, which makes interaction between economic agents more difficult. This is probably the most natural explanation that informational asymmetries are positively correlated with geographical distance and it is also related to the next paragraph on cultural factors. Network effects are determined by cultural affinities or similarities, which are directly related to international

economic relations (Rauch, 2001). Also according to Tesar and Werner (1995) the international portfolio allocation decision is for a substantial part determined by geographic proximity. Coval and Moskowitz (1999) explain, in their paper about economic distances, that investment biases depend also on air fares and phone rates, which is perhaps a modern explanation of geographical distance. Distance depends on the amount of money someone has to pay to speak to another person instead of the amount of kilometers someone has to travel, which is obviously strongly correlated.

Also Portes and Rey (2004) analyze in their article gross cross border equity flows. They examine a sample of 14 countries and the bilateral equity flows between those countries and shows a specific geographical pattern of international asset transactions, concluding that geographic distance is positively correlated with informational asymmetry. They conclude that a gravity model, as it is used in goods trade, will also fit in a model on trade of financial assets. In a gravity model distance is used to correct the data for differences in FDI flows.

In addition, De Menil (1999) studies in his article FDI flows between European countries and states that a gravity model explains the differences in FDI flows between those countries.
Moreover, in a substantial amount of papers it is empirically observed that trade and FDI flows are correlated. This could be an argument in favour of a gravity model, in which distance is used to explain equity flows. Most recent studies state that there exists a positive correlation between the bilateral flow of goods and the flow of financial assets. (Brenton *et al.*, 1999)

Furthermore, De Sousa and Lochard (2006) study the relevance of a gravity model, in their article about the trade-off between the benefits of a foreign affiliate of a multinational enterprise and the cost of increasing distance of this affiliate to the head office. They concluded that, in the model's reduced form, FDI depends not only on distance but also on a bilateral inward and outward effect. This is related to both country's GDP and a multilateral effect that is based on the relative attractiveness of alternative locations. (De Sousa and Lochard, 2006)

However, contrary to the abundance of empirical proof there is little theoretical support to find about the gravity equation for international equity flows. Martin and Rey (2004) wrote

one of the few articles which proposes a theory in which equity flows are explained by a gravity model. Thereafter, Portes and Rey (2005) test the model and find that it explains the transfer of equity flows with the same explanatory power as the model based on trade (Martin and Rey, 2004). Also, Bergstrand and Egger (2007) offer a theoretical foundation by trying to estimate a gravity equation to predict FDI flows based on an extending 2x2x2 knowledge-capital model of multinational enterprises. Despite, the scarcity of theoretical fundamentals, today the gravity model is widely used to explain FDI flows. Apparently, distance is an important explaining variable in the basic gravity model supplemented by both countries' GDP and other factors, such as language and trade which I will discuss further in the methodology section. But should cultural and political factors be incorporated in the model and which role do those factors play in explaining bilateral FDI? We will try to answer this question in the next two sections.

## 2.3 The link between informational asymmetry and cultural and political Differ.

To evaluate financial assets, such as corporate shares and bonds, relevant information is needed that is not equally available and straightforward to all market participants. What is meant by this relevant information? It contains knowledge of accounting standards, legal institutions, corporate culture, political situation and alterations, the organization of asset markets and the relevant institutions.

Already in 1874, Cairnes stressed that, as well as geographical distance, the importance of differences in political institutions, language, religion and social customs can be considered as barriers to capital flows.

Pagano *et al.* (2002) and Ahearne *et al*. (2004) also emphasize the informational barriers caused by different national accounting standards and practices. Bekaert (1995), in his article on FDI flows towards emerging markets, studies the importance of indirect barriers to investment and states that they are important when explaining international investment patterns. According to him, these indirect barriers to investment include poor information about those markets such as weak accounting standards, inefficient settlement systems and poor investment protection. Thus, different institutions cause indirect or informational

barriers, which induce information asymmetry and obstruct economic integration. Also, Tesar and Werner (1995) focus on language, institutional and regulatory differences and the cost of obtaining information about foreign markets. According to Tesar (1995) the explanation as to why people tend to have a home bias in their investments will most likely be that first people need to build an extensive model including institutional constraints before they can exclude home bias.

Coval (1999) explains that home bias explanations should focus on the primary factors, which discourage investments abroad, like variations in regulation, culture, taxation, sovereign risk and exchange rates.

Portes (2004) explores a panel data set on bilateral gross cross-border equity flows, between 14 countries, using a gravity model. He focuses on information asymmetry. The results are robust to various sets of variables, such as effectiveness of legal system, language and the presence of a major financial centre. These information variables are still significant in Portes' model even after controlling for trade in goods. This implies that theories which suggest that asset trade and goods trade are perfectly correlated do not capture all the informational asymmetry effects on asset trade. Portes concludes that: "These results may have implications for the home bias literature. Countries have different information sets, which heavily influence their international transactions. We capture different facets of these information sets with our information variables. More work linking transactions and holdings appears necessary, both theoretically and empirically."

As mentioned above political situation may influence the information or transaction costs. De Sousa and Lochard (2006) discussed increased investments and reduced macroeconomic instability in the EMU and concluded that this was also caused by increased transparency and credibility of national rules and policies.

According to French (1991) because investors know less about foreign institutions and markets they impute extra risk to foreign investments and do not base their investment decision solely on returns and standard deviations of returns.

Grinblatt and Keloharju (2001) use a gravity type equation model to examine the effects of culture, language and distance on investments and trade within Finland. Their sample consists of Finnish and Swedish investors and Finnish and Swedish firms operating in Finland, whose behaviour they examine. They find that "investors simultaneously exhibit a preference for nearby firms and for same-language and same-culture firms." (Grinblatt and Keloharju, 2001). Culture and language seem to have a positive relationship with regards to ownership weights in Finnish firms.

Also Sander and kleimeier(2004) mention in their paper the importance of legal and cultural difference in explaining economic convergence between countries.

Guiso (2009) looks into data on bilateral trust between European countries to illustrate the effects of cultural biases on economic exchange. In addition to the general trust level of the population of a country, he finds specific cultural aspects of the match between trusted and trusting country, like genetic and somatic similarities, history of conflicts that influence bilateral trust between countries and that higher bilateral trust leads to more trade between countries and more direct investment. He also finds that goods that are more trust intensive are more affected by this effect. Guiso (2009) concludes that perceptions rooted in culture are important determinants of economic exchange and especially direct investments.

Guerin (2006) expresses in his paper about FDI flows that it is commonly observed that the familiarity effect, which reduces informational frictions and induces investments, stimulates investors to invest in countries with similar characteristics and legal systems and finds in his study that: "The cost of information gathering would likely increase with distance, as familiarity with the host country's investment opportunities, customs and culture decreases." As explained in the introduction researchers have begun including political and cultural differences in the gravity equation framework, such as Flörkemeier 2002, Guiso *et al*. 2005, Heuchemer and Sander 2007, Kalemli-Ozcan and Sørensen 2007. The articles have shown that differences in culture and institutions can be important drivers and barriers to economic exchange. The effect of these variables is even suggested to be more pertinent on FDI flows.

Shenkar (2001) argues, in his paper on cultural distance, three different primary thrusts of cultural differences, mentioned in FDI literature. The first one has been developed to explain

cultural distance and the launch or sequence of foreign investment, a theory in which the subject of familiarity emerges arguing that MNE's are expected to invest less in culturally distant markets.

Osawa (1979) and Yoshino (1976) discussed the lack of Japanese FDI in the West and concluded that this was probably due to cultural differences. Davidson (1980) added to this that the relatively high amount of US FDI investments in Canada could be explained by their cultural similarity. By way of contrast Dunning (1988) argued that cultural differences could also be a reason for increased FDI flows between home and host markets to overcome disruption, transactional and market failures. Shenkar concludes in his literature review that cultural differences can both cause disruption or synergy.

Heuchemer (2008) investigates the determinants of European banking integration with a focus on the potentially limiting role of cultural and political factors. Though this investigation he shows that, besides border and distance effects, legal heritage differences and cultural differences do have a substantial impact on the pattern of bilateral cross-border banking. He also finds that differences in governance, and political factors, have less impact on the explanation of cross-border banking integration.

## 2.4 Political instability causes risk

Ahearne (2004) mentions in his article the influence of differences between countries and the weight of the familiarity effects. Ahearne argues that: "information asymmetries can arise from differences in accounting standards, disclosure requirements, and regulatory environments between countries." If investors are contemplating an FDI investment in a foreign company they must make use of documents published under different accounting standards and regulations as in their home country and the credibility of these documents is determined by regulations, institutions and political situation in that country which differ substantially between countries. These differences induce information costs and transaction costs, which will have to be paid by the investor. So, information costs caused by country differences in accounting principles, disclosure requirements, regulatory environment, institutions and political situation, may be significantly higher in some countries than in others.

Bekaert (1995) develops in his article a return-based measure of market integration for nineteen emerging equity markets. In his article he distinguishes between three kinds of barriers. First are legal barriers which are caused by the different legal institutions, such as ownership restrictions and taxes. Secondly, barriers arise due to differences in available information, investor protection and accounting standards. Third are barriers that are caused by emerging market specific risks (EMSR) that disruption foreign investments and cause de facto segmentation. Political risk, economic policy risk, economic and political instability liquidity risk, and perhaps currency risk are considered EMSR's. Bekaert also mentions in his article that some think that these risks are not priced because they are diversifiable, but refers to Chuhan (1994) to prove that for example liquidity risks are a major impediment to investing in emerging markets. Besides a substantial amount of papers that measure political risk and investments throughout the world, other EMSR's, Bekaert (1995) mentions, are related to specific country risks. He states that: "For example, credit ratings not only reflect assessments of political stability but also incorporate factors related to the economic environment. Unstable macroeconomic policies, for instance, appear to have detrimental effects on stock market performance. Barriers to investment are a direct function of the domestic policies pursued in the various economies."

## 2.5 Hypotheses

The theory and the empirical literature suggest different determinants of FDI, from which some hypotheses can be derived. In addition, according to the theory and empirical literature, discussed above, two main reasons can be identified that cause differences in bilateral asset trade.

Firstly, information asymmetries between countries determine the level of investments between those countries. Information asymmetry induces transaction costs which negatively affect bilateral investment flows. Information asymmetry rises with economic distance and substantial economic distance causes monitoring problems which increases transaction costs and lowers bilateral asset trade. Roughly, two main determinants of economic distance can be identified: geographical distance and "unfamiliarity". Geographical distance is generally

accepted as being a determinant of bilateral FDI flows and is consequently incorporated in the basic gravity model. “Unfamiliarity” or “familiarity” is caused by differences between countries. An example of such a difference is cultural difference, also referred to as cultural distance by, for example, Shenkar (2001) in the previous section. Differences in culture can cause transaction costs which in their turn have a negative effect on bilateral FDI flows, and thus stocks. From this the following hypothesis can be formulated:

**H1:** Cultural differences have a significant effect on FDI stock between the US and their trading partners.

Moreover, familiarity is also affected by differences in regulation, institutions and legal systems, also mentioned in the previous section. Consequently, the type of legal family countries belong to should be a determinant of bilateral asset trade. Is this the same legal family or a particular type of legal family? From this the following hypotheses arise:

**H2:** Belonging to the same legal family, or particular type of legal family, has a significant effect on FDI stock between the US and their trading partners.

As mentioned in the theoretical section, differences in political situation could also determine economic integration between two countries. Heuchemer (2008) tests the Euclidean difference between six different indicators of political situation in his article on cross-border banking and concludes that differences in political situation does not unambiguously determine cross-border banking. From this the following hypothesis is formulated:

**H3:** Differences in political situation/indicators has/have a significant effect on FDI stock between the US and their trading partners.

Secondly, additional risk that comes with investing in a particular country because of instability can determine bilateral asset trade, mentioned above by Bekaert (1995). If a political situation in a country is unstable or it has a low quality this will involve extra risk in

investing in that country. I think that risk that is caused by instability is of more value in explaining FDI stock, than risk that is caused by "unfamiliarity" with a different particular political situation. So, I will test the six different political indicators which are also used by Heuchemer, but instead of measuring the difference between two countries, I will measure the rank or quality of that political indicator and see if it is significant in determining bilateral FDI stock between the US and its partner countries. From this the following hypothesis can be formulated:

**H4:** The quality of the political situation/indicators in a country does not has/have a significant effect on FDI stock between the US and their trading partners.

# 3. METHODOLOGY

This chapter will discuss the empirical approach to test the hypotheses. Accordingly, the data and variables used are discussed and incorporated in the model.

## 3.1 Variables explained

For this research a new dataset is constructed by gathering and combining data from different sources.

**FDI**

As dependent variable we use in our model foreign direct investment data from OECD's international direct investment database. The OECD's database provides nominal bilateral FDI inward and outward stock of the US to and from its partner countries (country i). In this research annual data of 37 partner countries over the period 1985-2006 were used. So we have a total of 814 observations (37x21). To obtain the total FDI position between the US and a partner country inward and outward stock has been added up. Because e few data points were missing we extrapolated some years for some countries. So, three different variables will be explained: total FDI, inward FDI and outward FDI. Total FDI is the sum of inward and outward FDI.

**GDP per capita**

As mentioned in the theoretical part, the gravity equation is the most frequently used workhorse for resolving bilateral investment flows and positions, and possibly the best way to study the effect of third factors, such as cultural an political differences. In the gravity equation model economic masses of both trading countries are used to explain investment flows. So in our research we also use GDP of both US and its partner country. We expect the sign of both US and partner country GDP to be positive.

GDP per capita acts as a proxy for relative factor endowments. Thus a positive coefficient for $\beta 2$ indicates that bilateral trade is inter-industry and driven by comparative advantage as suggested by the "old" trade theory of the Ricardo-Heckscher-Ohlin-Samuelson type. In contrast, a negative value for $\beta 2$ would indicate support for the Linder hypothesis which

suggests that trade volumes are larger the more similar the trading partners are in terms of factor proportions and thus development. (Heuchemer, 2008)

**Population**

Population is also used in a gravity equation. Population acts as a proxy for size of a country and in combination with GDP per capita economic mass is represented in the model. We expect the sign of both US and partner country population to be positive.

**Distance**

Geographical distance is considered to be a proxy of bilateral transaction costs. Firstly, because geographical distance increases transportation costs for people traveling to a distant country to monitor their investment, especially in the case of FDI, which is highly information sensitive. Secondly, because geographical distance increases unfamiliarity and information asymmetries. Distance is measured between the US capital and its partner country's capital. We expect the sign of distance to be negative.

**Border**

Border is a dummy variable which captures shows the existence of a common border between the US and the partner country. We expect the sign of a common border to be negative.

**Language**

In a gravity model it is also a common strategy to use a dummy variable for the existence of a common language. Because a common language induces familiarity and facilitates monitoring, we expect the sign to be positive.

**Trade**

Trade is the sum of import and export between the US and partner countries. Trade can induce familiarity, which decreases information asymmetries and increases FDI investments between countries. On the other hand trade and FDI flows can also act as substitutes. Because of this ambiguity it will be difficult to predict whether the sign of trade will be positive or negative. However, literature has shown that trade is likely to be positive.

**Market Capitalization**

Market capitalization is an important factor in FDI research, because when using a gravity approach it is not only important to know the market size but also to which extent this market is capitalized. A country with a high market capitalization will be able to generate more capital to invest in FDI abroad. Hence, market capitalization in each country is an endogenous variable in the model. higher asset price is implied by higher aggregate demand from foreign countries, which in turn increases the incentives of agents to start new risky projects and list more financial assets. Furthermore, it also offers more investment opportunities to foreign countries, in which to invest FDI in. So market capitalization is expected to have a positive sign.

**Tax Rate**

Corporate tax rates decrease returns in FDI, which takes away incentives to invest in a foreign country with high corporate tax rates. So tax rate is expected to have a negative sign.

**Tax Treaty**

Tax treaty is a mutual agreement or bilateral contract of countries to lower tax for each other. Tax treaty is a dummy variable which is expected to have a positive sign.

**Legal Family**

In our regression model we estimate two different legal family variables. The first one Legalfam01 is a dummy variable which indicates if a partner country belongs to the same legal family as the US. We expect the sign of this parameter to be positive due to a familiarity effect. The second variable is Legalfam and indicates to which legal family a partner country belongs. The options are Scandinavian, French, German and English (same as US). This dummy is successfully applied in La Porta *et al.* (1998).

**Cultural Differences**

Cultural differences are measured as Euclidean distance and are derived from Hofstede's four cultural dimensions and have also been used to examine in Heuchemer *et al.* (2008). Hofstede's four cultural dimensions are based on the result of a broad questioning in more than 50 countries. Hofstede (1980) conducted a factor analysis to identify four different dimensions that can be used to describe national cultures. It is a measure that figures prominently in the management literature. These four dimensions are:

*"Power Distance Index (PDI)* that is the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally. This represents inequality (more versus less), but defined from below, not from above. It suggests that a society's level of inequality is endorsed by the followers as much as by the leaders." (Hofstede, 1980)

*"Individualism (IDV)* on the one side versus its opposite, collectivism, that is the degree to which individuals are integrated into groups. On the individualist side we find societies in which the ties between individuals are loose: everyone is expected to look after him/herself and his/her immediate family. On the collectivist side, we find societies in which people from birth onwards are integrated into strong, cohesive in-groups, often extended families (with uncles, aunts and grandparents) which continue protecting them in exchange for unquestioning loyalty." (Hofstede, 1980)

*"Masculinity (MAS)* versus its opposite, femininity, refers to the distribution of roles between the genders which is another fundamental issue for any society to which a range of solutions are found. The IBM studies revealed that (a) women's values differ less among societies than men's values; (b) men's values from one country to another contain a dimension from very assertive and competitive and maximally different from women's values on the one side, to modest and caring and similar to women's values on the other." (Hofstede, 1980)

*"Uncertainty Avoidance Index (UAI)* deals with a society's tolerance for uncertainty and ambiguity; it ultimately refers to man's search for Truth. It indicates to what extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations. Unstructured situations are novel, unknown, surprising, different from usual. Uncertainty avoiding cultures try to minimize the possibility of such situations by strict laws and rules, safety and security measures, and on the philosophical and religious level by a belief in absolute Truth; 'there can only be one Truth and we have it'. People in uncertainty avoiding countries are also more emotional, and motivated by inner nervous energy. The opposite type, uncertainty accepting cultures, are more tolerant of opinions different from what they are used to; they try to have as few rules as possible, and on the philosophical and religious level they are relativist and allow many currents to flow side by side. People within these cultures

are more phlegmatic and contemplative, and not expected by their environment to express emotions." (Hofstede, 1980)

According to the scores of Hofstede's factor analysis, each country can be characterized by a score on each of the four dimensions and these scores are the basis for the cultural proxy in our analysis. As mentioned above cultural differences are measured as Euclidean distance. We expect the parameter sign to be negative as a consequence of a high cultural distance increasing information asymmetry.

**Political Indicators**

Political differences are expressed in six different political or governance factors.

The World bank defines these six different dimensions of governance and constructs these in units ranging from about -2.5 to 2.5, with higher values corresponding to better governance outcomes. The governance dimensions are also ranked on a scale from 0 to 100. Six political dimensions are defined: *voice and accountability* (VA), *political stability and absence of violence* (PSNV), *government effectiveness* (GE), *regulatory quality* (RQ), *rule of law* (RL), and *control of corruption* (CC). We calculate these dimensions in Euclidean distances Furthermore, we also aggregate all these dimensions into an overall political risk proxy (POLITICAL) that measures the general political dissimilarity between countries in one Euclidean distance. Besides the calculation in Euclidean distances we also use political variables in our regression model based on a partner country's rank on a political dimension measurement list scaling from 0 to 100. So the partner country's performance is measured in a specific governance dimension instead of its Euclidean difference with the US. Six political dimensions are defined: *voice and accountability rank* (VAR), *political stability and absence of violence rank* (PSNVR), *government effectiveness rank* (GER), *regulatory quality rank* (RQR), *rule of law rank* (RLR), and *control of corruption rank*(CCR). Again we also aggregate all these dimensions into an overall political risk proxy (POLITICALR) that measures the general political performance of a country. The political variables measured in Euclidean distance are expected to have a negative sign because with Euclidean distance unfamiliarity increases and information asymmetry rises. The political variables measured in ranks are expected to have a positive sign because a high value indicates a good performance of a partner country on that particular dimension. A good performance in political indicators implicates lower risk of an possible investment and could increase FDI.

## 3.2 Model

In this section we try to outline the functional forms of the models to be estimated and furthermore we try to define the variables which best fit the models. The model will be analyzed as panel data, sometimes called longitudinal data, which is analyzed differently as pure cross sectional data or pooled cross sectional data, because country specific factors can influence the dependent variable and the sample that is analyzed concern data for the same country over time.

Moreover, an equation has to be defined to analyze the FDI flows over time. As mentioned in the theoretical paragraph empirical literature shows that gravity equations are used to model trade flows. The gravity equation is the most frequently used workhorse for resolving bilateral investment flows and positions and possibly the best way to study the effect of third factors, like cultural an political differences. In the gravity equation model economic masses of both trading countries are used to explain investment flows.

In addition to the economic masses, geographical distance (DISTANCE) is also incorporated in the regression equation. The model is completed by the gravitational constant (G):

$$X_{ijt} = G \cdot \frac{GDP_{it} \cdot GDP_{jt}}{(DISTANCE_{ij})^2} \quad (1)$$

where Xijt is defined as bilateral asset trade of country i to country j in year t. To arrive at the regression model the gravity equation is converted into a linear relationship between the explanatory variables and the trade flows, in this case, FDI flows. A logarithmic version of the regression model is shown:

$$\ln(X_{ijt}) = x_0 + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln DISTANCE_{ij} \quad (2)$$

This is the essence of the gravity model but in the empirical literature more variations and extensions of the basic gravity model are presented. We will show and test these variations and extensions after which we will use the model that will best fit our data.

A popular version of the gravity equation used in the empirical trade literature, we find in Baltagi (2003):

$$\ln X_{ijt} = x_0 + \beta_1 \ln SIZE_{ijt} + \beta_2 \ln REL_{ijt} + \beta_3 \ln SIMILAR_{ijt} + \beta_4 \ln DISTANCE_{ij} + \beta_5 BORDER_{ij} + \sum_{k=6}^{K} \beta_k \ln Y_{ijt} + u_{ijt} \quad (3)$$

Baltagi derives the variables SIZE, REL and SIMILAR from the advances of trade theory presented by Krugman (1980) and Helpman & Krugman (1985). Size represents the economic masses of both trading partners and is defined as the product or the sum of the GDPs of the trading partners. REL represents the difference in economic welfare of the trading partners measured in GDP per capita (GDPpc) and serves as a proxy for relative factor endowments and possibly a level of familiarity.

SIMILAR is defined as a similarity index of both trading countries' GDP and serves as a proxy for relative country size. Baltagi expands the gravity model with the dummy variable BORDER, which represent an adjacent country. The remainder stochastic disturbance is represented by $u_{ijt}$

Guerin (2006) also presents a gravity equation in has article in which he tries to explains FDI flows. He specifies the following model:

$$Inflw_{ijt} = a + \beta_1 \ln POP_{it} + \beta_2 \ln GDPpc_{it} + \beta_3 \ln DIST_{ij} + \beta_4 Z_{ij} + t_t + d_j + e_{ij,t} \quad (4)$$

In this gravity equation country size is measured as POP which represents the population in a partner country. Economic prosperity is again measured in GDPpc and also distance is incorporated in the model by Guerin. These variables are in logs, therefore the coefficients can be interpreted as semi-elasticities. A set of control variables are added to the model, $Z_{ij,}$ time dummies, $t_t$, source country dummies, $d_j$, and the remainder stochastic disturbance i.e. the error term, $e_{ij,t}$.

Portes and Rey (2005) use a gravity model in his article on asset trade and arrives at the next model:

$$\log T_{ij} = k_1 \log(M_i M_j) + k_2 \log(\tau_{ij}) + k_3 \quad (5)$$

$M_i$ and $M_j$ represent the economic masses of country i and country j. In this equation economic masses are measured as equity market capitalizations. $\tau_{ij}$ represents the transaction cost between the trading partners. $k_1<0$, $k_2<0$ and $k_3$ are constants to be estimated.

These models will be tested combined and separately, to arrive at the best-fit model for our data, which will be used to estimate the parameters of the variables.

In principle this baseline model that we will be using could be estimated by OLS. However, the estimation results could possibly be biased due to omitted variable effects (Heuchemer, 2008). These omitted variable effects could represent effects that are similar to all country pairs (i) but specific to any year (t) and effects (ii) that are country pair specific but similar for all years respectively. Therefore, panel data techniques should be applied and the error term will be defined as follows:

$$u_{ijt} = \lambda_{ij} + \tau_t + \varepsilon_{ijt} \quad (6)$$

In this equation the error term is explained by $\lambda_{ij,}$ which reflects any time invariant bilateral idiosyncratic effect, and $\tau_t$, which captures the time effect. The equation is completed with an error term.

These unobserved effects can be considered as fixed or random. Therefore, the unobserved time effect can be considered as fixed. To control for events, possible trends or aggregate shocks, such as world business cycles movements, global capital market shocks or movements in the world rate of interest year dummies are included in the model. Incorporating year dummies in the model allows the intercept of the equation to change over time and is able to correct for trends over time. The equation above contains the unobservable time effect or fixed effect, $\tau_{t,}$ where the subscript *t* stands for year *t.* $\lambda ij$ can de considered as a separate intercept to be estimated for each country; it is the country fixed effect. There could be time specific factors which are constant over different countries, which influence the dependent variable. These factors are obtained in $\lambda_{ij}$.

To analyze panel data with unobserved effects a Least Squared Dummy Variable Model (LSDV) is used. This method generates results that are corrected for country and time specific effects and errors.

This fixed effects model allows us to analyze panel data using OLS and meanwhile obtaining comparable results which would be obtained using pure cross sectional data (Wooldridge, 2002).

We expect that the specifications above will capture a substantial amount of variance in the data. However, the fixed effects approaches are not able to estimate models which contain time invariant variables, such as border, distance, language or the political and cultural factors, in which we are interested. They are also unable to estimate models which contain country invariant variables, such as population of the US and GDP per capita of the US. So these fixed effects approaches will be used estimating country and time variant variables for their robustness. We will check for robustness by experimenting with various control variables, normalizations and dummies, which are common in asset trade to arrive at the best conclusion

Furthermore, in our model a substantial amount of country specific differences are measured, most of those variables act as a proxy for political and cultural differences, which are non-time varying. These political and cultural variables are measured as Euclidean distances between two countries:

$$ED = \sqrt{\sum_{k=1}^{K} \left(V_{itk} - V_{jtk}\right)^2} \qquad (7)$$

ED defines Euclidean distance and V are the different variable that are taken into account of country i and of country j.

The modelling strategy is thus as follows: First we develop a baseline gravity equation employing the pure trade-theoretic explanatory variables and estimate these different variables, after which we will define a basic gravity model that best fits our data. Secondly, this model is extended with two more variables that are also often used in empirical asset

trade models and we check the robustness of the variables incorporated in the first model. Thirdly, the augmented model is extended with cultural and political variables separately and run Wald-tests to test the significance of each of these variables. Time and country non-varying variables will be left out of the model and fixed and random panel effects will be tested. Fourthly, all the variables are incorporated to be tested into the gravity model and again these variables will be tested, running Wald-tests. Fifthly, we leave time and country non-varying variables out of the model and test fixed and random panel effects.

Because of the absence of a clear theoretical foundation the model is empirically tested and the variables which best fit our data are selected and placed into the model.

## 3.3 Gravity equations

Different gravity equations are defined to test the effect and robustness of the models and explaining variables.

### 3.3.1 Basic gravity equation

Different models and variables were tested such as GDP, population and GDP per capita for both the US and trading partners. The most appropriate model incorporates population and GDP per capita as shown below. Implicitly this means that GDP is also represented in the model, however population and GDP per capita better fit our data. All variables were also tested with and without log and the most significant was selected. After adding Distance, Border and Language to the gravity model this resulted in the following basic benchmark gravity equation:

$$\ln FDI_{it} = \beta_0 + \beta_1 \ln Pop_{ust} + \beta_2 \ln Pop_{it} + \beta_3 \ln GDPpc_{ust} + \beta_4 \ln GDPpc_{it} + \beta_5 Distance_i + \beta_6 Border_i + \beta_7 Language_i + \varepsilon_{it} \quad (8)$$

$i = 1,\ldots, N ; t = 1,\ldots, T,$

Whereby N is the number of countries and T the number of years, $\varepsilon_{it}$ is the remainder stochastic disturbance, $\varepsilon_{it} \sim IID\ (0, \sigma)$

### 3.3.2 Augmented gravity equation

By adding log Trade and log Market cap to the basic gravity equation we developed the augmented gravity equation. Trade and Market cap are frequently used explaining variables in the empirical asset trade literature and also add significance to our model.
This leads to the following augmented gravity equation:

$$\ln FDI_{it} = \beta_0 + \beta_1 \ln Pop_{ust} + \beta_2 \ln Pop_{it} + \beta_3 \ln GDPpc_{ust} + \beta_4 \ln GDPpc_{it} + \beta_5 Distance_i + \beta_6 Border_i + \beta_7 Language_i + \beta_8 \ln Trade_{it} + \beta_9 \ln Marketcap_{it} + \varepsilon_{it} \quad (9)$$

$i = 1,\ldots, N ; t = 1,\ldots, T,$

Using this model we also test the robustness of the basic gravity model.

### 3.3.3 Augmented gravity equation including explaining variables separately

Explaining variables are added to the augmented gravity equation separately to test if they are significant and add value to the model running Wald-tests. Y represents the following variables: TaxRate, TaxTreaty, LegalFam, LegalFam01, Culture, Political, VA, PSNV, GE, RQ, RL, CC, VAR, PSNVR, GER, RQR, RLR and CCR

$$\ln FDI_{it} = \beta_0 + \beta_1 \ln Pop_{ust} + \beta_2 \ln Pop_{it} + \beta_3 \ln GDPpc_{ust} + \beta_4 \ln GDPpc_{it} + \beta_5 Distance_i + \beta_6 Border_i + \beta_7 Language_i + \beta_8 \ln Trade_{it} + \beta_9 \ln Marketcap_{it} + \beta_{10} Y + \varepsilon_{it} \quad (10)$$

$i = 1,\ldots, N ; t = 1,\ldots, T,$

### 3.3.4 Total gravity equation including all explaining variables

I will conclude specifying the total model including all explaining variables that were tested above. Again we will run Wald-tests to test if the different variables are significant in the extended model.

$$lnFDI_{it} = \beta_0 + \beta_1 lnPop_{ust} + \beta_2 lnPop_{it} + \beta_3 lnGDPpc_{ust} + \beta_4 lnGDPpc_{it} + \beta_5 Distance_i + \beta_6 Border_i + \beta_7 Language_i + \beta_8 lnTrade_{it} + \beta_9 lnMarketcap_{it} + \beta_{10} TaxRate_i + \beta_{11} TaxTreaty_i + \beta_{12} LegalFam01_i + \beta_{13} Culture_i + \beta_{14} VA_i + \beta_{15} PSNV_i + \beta_{16} GE_i + \beta_{17} RQ_i + \beta_{18} RL_i + \beta_{19} CC_i + \varepsilon_{it}$$

$$i = 1,\ldots, N ; t = 1,\ldots, T, \quad (11)$$

### 3.3.5 Time and country fixed effects model

In this model all time and country non-varying variables are left out of the model to test time and country-fixed effects. The following model is specified to test time-fixed effects:

$$lnFDI_{it} = \beta_0 + \beta_1 lnPop_{it} + \beta_2 lnGDPpc_{it} + \beta_3 Distance_i + \beta_4 Border_i + \beta_5 Language_i + \beta_6 lnTrade_{it} + \beta_7 lnMarketcap_{it} + \beta_8 TaxRate_i + \beta_9 TaxTreaty_i + \beta_{10} LegalFam01_i + \beta_{11} Culture_i + \beta_{12} VA_i + \beta_{13} PSNV_i + \beta_{14} GE_i + \beta_{15} RQ_i + \beta_{16} RL_i + \beta_{17} CC_i + \tau_t + \varepsilon_{it}$$

$$i = 1,\ldots, N ; t = 1,\ldots, T, \quad (12)$$

The following model is specified to test country-fixed effects:

$$lnFDI_{it} = \beta_0 + \beta_1 lnPop_{ust} + \beta_2 lnPop_{it} + \beta_3 lnGDPpc_{ust} + \beta_4 lnGDPpc_{it} + \beta_5 lnTrade_{it} + \beta_6 lnMarketcap_{it} + \lambda_i + \varepsilon_{it}$$

$$i = 1,\ldots, N ; t = 1,\ldots, T, \quad (13)$$

# 4. RESULTS

In this chapter the results of the regression models will be explained, according to the equations discussed in the methodology. After which, the estimated parameters of the political and cultural factors are explained. On from this, a Wald test and robustness check will be carried out to test the significance and the robustness of the political and cultural parameters. The chapter is concluded with a discussion of the results.

## 4.1 Results

The models are discussed in the same sequence as in the methodology. First the basic gravity model is explained

### 4.1.1 Basic gravity model

**Table 4.1: Basic Gravity Model**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Method:** | Panel Least Squares | | Panel Least Squares | | Panel Least Squares | |
| **Sample:** | 1985-2006 | | 1985-2006 | | 1985-2006 | |
| **Periods included:** | 22 | | 22 | | 22 | |
| **Cross-sections included:** | 37 | | 37 | | 37 | |
| **Total panel observations** | 814 | | 814 | | 814 | |
| **Dependent variable:** | **ln(Total FDI Stock)** | | **ln(Inward FDI Stock)** | | **ln(Outward FDI Stock)** | |
| | Coefficiënt | Probability | Coefficiënt | Probability | Coefficiënt | Probability |
| **C** | -320,2688 | 0,000 | -364,4429 | 0,000 | -305,7848 | 0,000 |
| **lnGDPPC** | 1,3719 | 0,000 | 2,3303 | 0,000 | 1,0666 | 0,000 |
| **lnPOP** | 0,8305 | 0,000 | 1,1079 | 0,000 | 0,7154 | 0,000 |
| **lnGDPPCUS** | -7,5772 | 0,000 | -10,2759 | 0,000 | -6,8859 | 0,001 |
| **lnPOPUS** | 30,8127 | 0,000 | 35,5072 | 0,000 | 29,3685 | 0,000 |
| **BORDER** | 1,0036 | 0,000 | 0,6882 | 0,001 | 1,1940 | 0,000 |
| **DISTANCE** | 0,0003 | 0,019 | -0,0002 | 0,180 | 0,0003 | 0,002 |
| **LANGUAGE** | 0,8853 | 0,000 | 0,9605 | 0,000 | 1,0016 | 0,000 |
| **R-squared** | 0,7135 | | 0,792 | | 0,661 | |
| **Adjusted R-squared** | 0,7110 | | 0,790 | | 0,658 | |
| **S.E. of regression** | 0,9820 | | 1,222 | | 0,961 | |
| **Sum squared resid** | 777,2803 | | 1117,754 | | 740,224 | |
| **Log likelihood** | -1136,2290 | | -1220,529 | | -1111,983 | |
| **F-statistic** | 286,7927 | | 405,987 | | 223,245 | |
| **Prob(F-statistic)** | 0,0000 | | 0,000 | | 0,000 | |

The results of the basic regression model are shown in table 1. With the exception of the Constant (C) and GDPpc US all parameter signs are positive. This implies that those variables have a positive effect on asset trade between the US and its partner countries, both on inward and outward side. As mentioned above GDPpc US has a negative effect on both inward and outward stock of FDI. Thus, an increase of economic growth in the US causes a

decrease of FDI stock between the US and their partner countries. While economic growth in the partner country has a positive effect on bilateral FDI stocks.

Another remarkable observation is the positive parameter of distance, implying that investments between countries increase if countries are more distant. This could be a consequence of FDI being a substitute for trade. With distance transportation costs rise and it becomes cheaper for a MNE to produce abroad and for example invest in a subsidiary company, which increases FDI. The fact that especially outward FDI stock is significantly influenced by distance emphasizes this argument, because profitability of producing abroad depends on costs and especially labour costs. In contrary to the US, where labour costs are relatively high and so partner countries are less likely to decide to produce in the US and consequently inward FDI stock is insignificant.

With exception of distance for total FDI stock and inward FDI stock, all signs are significant at a 1% level of significance. 71% of total FDI stock, 79% of inward FDI stock and 66% of outward FDI stock is explained by the gravity equation. So, the basic gravity has more value explaining inward FDI stock than outward FDI stock.

### 4.1.2 Augmented gravity model

**Table 4.2: Augmented Gravity Model**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Method:** | Panel Least Squares | | Panel Least Squares | | Panel Least Squares | |
| **Sample:** | 1985-2006 | | 1985-2006 | | 1985-2006 | |
| **Periods included:** | 22 | | 22 | | 22 | |
| **Cross-sections included:** | 37 | | 37 | | 37 | |
| **Total panel observations** | 814 | | 814 | | 814 | |
| **Dependent variable:** | **ln(Total FDI Stock)** | | **ln(Inward FDI Stock)** | | **ln(Outward FDI Stock)** | |
| | Coefficiënt | Probability | Coefficiënt | Probability | Coefficiënt | Probability |
| **C** | -270,3553 | 0,000 | -324,1920 | 0,000 | -259,5891 | 0,000 |
| **lnGDPPC** | 0,7929 | 0,000 | 1,7451 | 0,000 | 0,5611 | 0,000 |
| **lnPOP** | 0,3419 | 0,000 | 0,5421 | 0,000 | 0,2723 | 0,000 |
| **lnGDPPCUS** | -7,1587 | 0,000 | -10,0437 | 0,000 | -6,3707 | 0,000 |
| **lnPOPUS** | 26,7540 | 0,000 | 32,4387 | 0,000 | 25,5000 | 0,000 |
| **BORDER** | -0,4379 | 0,004 | -0,9547 | 0,000 | -0,1218 | 0,443 |
| **DISTANCE** | -0,0003 | 0,002 | -0,0007 | 0,000 | -0,0001 | 0,174 |
| **LANGUAGE** | 0,5517 | 0,000 | 0,5866 | 0,000 | 0,7201 | 0,000 |
| **lnTRADE** | 0,6494 | 0,000 | 0,7695 | 0,000 | 0,5968 | 0,000 |
| **lnMARKETCAP** | 0,1625 | 0,000 | 0,0194 | 0,625 | 0,1158 | 0,000 |
| **R-squared** | 0,8164 | | 0,841 | | 0,756 | |
| **Adjusted R-squared** | 0,8143 | | 0,839 | | 0,753 | |
| **S.E. of regression** | 0,7871 | | 1,069 | | 0,817 | |
| **Sum squared resid** | 498,1560 | | 851,908 | | 533,237 | |
| **Log likelihood** | -955,1598 | | -1117,865 | | -979,312 | |
| **F-statistic** | 397,2367 | | 439,065 | | 274,895 | |
| **Prob(F-statistic)** | 0,0000 | | 0,000 | | 0,000 | |

In the augmented gravity model lnTrade and lnMarketcap variables have been added to the model to increase the model's fit. R-squared increases after adding both variables to 82%, 84% and 76% for total FDI stock, inward FDI stock and outward FDI stock respectively, an overall increase of approximately 10%. Trade and Market Capitalization have obviously a great explaining value. Both variables are significant at a 1% significance level. Except for inward stock, the market capitalization of the partner country is not significant. This suggests that market capitalization of a receiving country is an important explaining factor for FDI and not the market capitalization of the investing country. Also, the sign of Trade is positive possibly because of the theory, as explained before, that trade increases familiarity and consequently familiarity induces investments. When adding Trade and Market capitalization to the model all signs of the remaining variables stay the same except for border and distance which change from positive to negative. This is probably caused by the correlation between trade and both border and distance. When border and distance are corrected for trade only a negative effect remains, meaning that sharing a border and being distant to a partner decreases FDI. This is probably due to the possibility of FDI being a substitute for trade. This effect is only observed for inward FDI stock and total FDI stock. In the augmented gravity equation border and distance are insignificant for outward FDI stock at a 10% significance level.

### 4.1.3 Augmented gravity model including explaining variables separately

The explaining variables will be implemented into the augmented gravity model separately and the results will also be discussed separately per variable. With exception of legal family, culture and the separate political indicators: VA, PSNV, GE, RQ, RL and CC. These are discussed at the end of this chapter when they are analyzed for all models together.

**Tax rate**

Tax rate is not significant in explaining total FDI stock at a 10% significance level. Tax rate is significant in explaining inward FDI stock at a 1% significance level and outward FDI stock at a 5% significance level. The sign of the tax rate for inward FDI is positive. Hence, the higher a corporate tax level in a partner country, the higher the FDI stock to the US from that country. As a consequence of a high corporate tax level at home, countries invest more

abroad. The sign of the tax rate parameter for outward FDI stock is negative as investing in a partner country becomes more expensive with higher corporate tax levels and consequently FDI decreases.

**Tax Treaty**

Tax treaty is significant in explaining total FDI stock and inward FDI stock at a 5% significance level and it is significant in explaining outward FDI stock at a 1% significance level. Looking at total and outward FDI stock a tax treaty has a positive effect on FDI which is in line with the theory that tax breaks have positive effect on investments. The augmented gravity model, however, shows that a tax treaty has a negative effect on inward FDI stock, which suggests that partner countries invest less in the US if there exists a tax treaty between these countries.

**Political Difference**

The political variable representing the difference between the US and a partner country on all six aspects of political situation in a country is significant for total and outward FDI stock at a 5% significance level. In explaining inward FDI stock political variable is insignificant. The sign shown by the augmented gravity model for the parameter is positive. This is remarkable because it suggests that the more different political situations in a country are the investments it breeds, whereas we would expect that similar situations increase familiarity and as a consequence increases investments. The US invests in countries which have a substantial different political situation. An explanation could be that political difference is of less importance than political quality or rank. Higher quality or a higher rank means more stability and less risk. Investment risk increases costs and decreases investment. In three of the six political indicators the US takes a relatively low rank which means more or less political instability. Countries that represent a high rank have a different political situation as the US but are an attractive country, in which to inves, so in this case more political difference could mean more FDI outward stock. This is emphasized by the fact that outward stock is significant and inward stock is not. We will have a closer look at this below where we will explain the different political indicators separately.

**Political Rank**

The variable indicating the quality of the political situation in a partner country of the US measured by six different indicators is significant in the inward FDI stock model at a 5%

significance rate and in the outward at a 1% significance rate. The political rank variable is insignificant in the total FDI stock model. First, in the inward FDI stock model the sign of the political rank parameter is positive indicating that countries with a high rank or quality of total political situation will invest more FDI in the US than countries that have a low rank or quality of total political situation. In general, countries with better developed governments and institutions are better facilitated in investing abroad. Secondly, in the outward FDI stock model the sign of the political rank parameter is negative indicating that the US invests more FDI in countries with a low quality or rank of total political situation. This suggests a strong weight of vertical FDI flows from the US to abroad relative to the total amount from the US to abroad. Vertical FDI flows take place especially from developed to developing country.

### 4.1.4 Total model including all explaining variables

In this paragraph four different models are shown. An important advantage of showing four models is that we can test robustness of the parameters. In all four models all variables are included. They only differ in the following aspects:

Model 3 (Table 4.3): Political indicators measured in *differences* and *Legalfam* are included.

Model 4 (Table 4.4): Political indicators measured in *differences* and *Legalfam* are included.

Model 5 (Table 4.5): Political indicators measured in *ranks* and *Legalfam* are included.

Model 6 (Table 4.6): Political indicators measured in *ranks* and *Legalfam01* are included.

## Table 4.3: Total Gravity Model; including Legal Family and Political Difference indicators

| | | | | | | |
|---|---|---|---|---|---|---|
| **Method:** | Panel Least Squares | | Panel Least Squares | | Panel Least Squares | |
| **Sample:** | 1985-2006 | | 1985-2006 | | 1985-2006 | |
| **Periods included:** | 22 | | 22 | | 22 | |
| **Cross-sections included:** | 37 | | 37 | | 37 | |
| **Total panel observations** | 814 | | 814 | | 814 | |
| **Dependent variable:** | **ln(Total FDI Stock)** | | **ln(Inward FDI Stock)** | | **ln(Outward FDI Stock)** | |
| | Coefficiënt | Probability | Coefficiënt | Probability | Coefficiënt | Probability |
| **C** | -277,3015 | 0,000 | -295,2990 | 0,000 | -283,5315 | 0,000 |
| **lnGDPPC** | 0,8055 | 0,000 | 1,4855 | 0,000 | 0,6597 | 0,000 |
| **lnPOP** | 0,2283 | 0,000 | 0,4054 | 0,000 | 0,1363 | 0,027 |
| **lnGDPPCUS** | -7,5764 | 0,000 | -8,7367 | 0,000 | -7,4135 | 0,000 |
| **lnPOPUS** | 27,7465 | 0,000 | 29,3791 | 0,000 | 28,3386 | 0,000 |
| **BORDER** | -0,3660 | 0,059 | -0,2846 | 0,250 | -0,0510 | 0,794 |
| **DISTANCE** | 0,0001 | 0,343 | -0,0005 | 0,001 | 0,0004 | 0,000 |
| **LANGUAGE** | -0,1229 | 0,338 | -0,0805 | 0,637 | -0,0329 | 0,799 |
| **lnTRADE** | 0,7554 | 0,000 | 0,7936 | 0,000 | 0,7208 | 0,000 |
| **lnMARKETCAP** | 0,1337 | 0,000 | -0,0394 | 0,344 | 0,0850 | 0,008 |
| **TAXRATE** | -0,0002 | 0,033 | 0,0002 | 0,068 | -0,0003 | 0,000 |
| **TAXTREATY** | 0,0506 | 0,713 | -0,6511 | 0,000 | -0,0293 | 0,833 |
| **LEGALFAM** | -0,1189 | 0,024 | 0,0151 | 0,830 | -0,1904 | 0,000 |
| **CULTURE** | -0,0151 | 0,000 | -0,0130 | 0,000 | -0,0167 | 0,000 |
| **VA** | -0,00001 | 0,086 | -0,00003 | 0,002 | -0,00001 | 0,073 |
| **PSNV** | -0,000001 | 0,855 | 0,00003 | 0,005 | -0,00003 | 0,000 |
| **GE** | 0,0001 | 0,000 | -0,0001 | 0,000 | 0,0001 | 0,000 |
| **RQ** | 0,00003 | 0,085 | 0,0001 | 0,000 | 0,00003 | 0,094 |
| **RL** | -0,00005 | 0,002 | -0,0001 | 0,000 | -0,00003 | 0,031 |
| **CC** | 0,000003 | 0,842 | 0,0001 | 0,000 | -0,00003 | 0,030 |
| **R-squared** | 0,842 | | 0,884 | | 0,805 | |
| **Adjusted R-squared** | 0,838 | | 0,881 | | 0,800 | |
| **S.E. of regression** | 0,730 | | 0,910 | | 0,733 | |
| **Sum squared resid** | 411,563 | | 591,580 | | 412,138 | |
| **Log likelihood** | -864,578 | | -9623,344 | | -862,161 | |
| **F-statistic** | 216,093 | | 286,952 | | 166,182 | |
| **Prob(F-statistic)** | 0,000 | | 0,000 | | 0,000 | |

## Table 4.4: Total Gravity Model; including Legal Family 01 and Political Difference indicators

| | | | | | | |
|---|---|---|---|---|---|---|
| **Method:** | Panel Least Squares | | Panel Least Squares | | Panel Least Squares | |
| **Sample:** | 1985-2006 | | 1985-2006 | | 1985-2006 | |
| **Periods included:** | 22 | | 22 | | 22 | |
| **Cross-sections included:** | 37 | | 37 | | 37 | |
| **Total panel observations** | 814 | | 814 | | 814 | |
| **Dependent variable:** | **ln(Total FDI Stock)** | | **ln(Inward FDI Stock)** | | **ln(Outward FDI Stock)** | |
| | Coefficiënt | Probability | Coefficiënt | Probability | Coefficiënt | Probability |
| **C** | -239,3739 | 0,000 | -273,4102 | 0,000 | -251,6227 | 0,000 |
| **lnGDPPC** | 0,4809 | 0,000 | 1,3217 | 0,000 | 0,3840 | 0,000 |
| **lnPOP** | 0,1146 | 0,047 | 0,3370 | 0,000 | 0,0448 | 0,459 |
| **lnGDPPCUS** | -6,2155 | 0,000 | -7,9900 | 0,000 | -6,2689 | 0,000 |
| **lnPOPUS** | 23,9064 | 0,000 | 27,1894 | 0,000 | 25,0968 | 0,000 |
| **BORDER** | -0,0245 | 0,890 | -0,1348 | 0,575 | 0,2823 | 0,130 |
| **DISTANCE** | 0,0004 | 0,000 | -0,0004 | 0,006 | 0,0008 | 0,000 |
| **LANGUAGE** | 0,5075 | 0,000 | 0,1917 | 0,244 | 0,5345 | 0,000 |
| **lnTRADE** | 0,7994 | 0,000 | 0,8113 | 0,000 | 0,7636 | 0,000 |
| **lnMARKETCAP** | 0,2070 | 0,000 | 0,0050 | 0,903 | 0,1462 | 0,000 |
| **TAXRATE** | -0,0002 | 0,001 | 0,0002 | 0,060 | -0,0003 | 0,000 |
| **TAXTREATY** | -0,4702 | 0,000 | -0,8995 | 0,000 | -0,5010 | 0,000 |
| **LEGALFAM** | -1,2132 | 0,000 | -0,7215 | 0,000 | -0,9079 | 0,000 |
| **CULTURE** | -0,0242 | 0,000 | -0,0181 | 0,000 | -0,0248 | 0,000 |
| **VA** | 0,00001 | 0,112 | -0,00002 | 0,160 | 0,00001 | 0,475 |
| **PSNV** | 0,00002 | 0,008 | 0,00004 | 0,000 | -0,00001 | 0,092 |
| **GE** | 0,00002 | 0,317 | -0,0001 | 0,000 | 0,0001 | 0,000 |
| **RQ** | 0,0001 | 0,000 | 0,0002 | 0,000 | 0,0001 | 0,000 |
| **RL** | -0,0001 | 0,000 | -0,0001 | 0,000 | -0,00005 | 0,001 |
| **CC** | -0,00004 | 0,000 | 0,0001 | 0,000 | -0,0001 | 0,000 |
| **R-squared** | 0,863 | | 0,888 | | 0,817 | |
| **Adjusted R-squared** | 0,860 | | 0,885 | | 0,812 | |
| **S.E. of regression** | 0,679 | | 0,896 | | 0,710 | |
| **Sum squared resid** | 355,653 | | 572,855 | | 386,263 | |
| **Log likelihood** | -806,759 | | -9505,302 | | -836,647 | |
| **F-statistic** | 256,451 | | 297,559 | | 180,018 | |
| **Prob(F-statistic)** | 0,000 | | 0,000 | | 0,000 | |

## Table 4.5: Total Gravity Model; including Legal Family and Political Rank indicators

| **Method:** | Panel Least Squares | | Panel Least Squares | | Panel Least Squares | |
|---|---|---|---|---|---|---|
| **Sample:** | 1985-2006 | | 1985-2006 | | 1985-2006 | |
| **Periods included:** | 22 | | 22 | | 22 | |
| **Cross-sections included:** | 37 | | 37 | | 37 | |
| **Total panel observations** | 814 | | 814 | | 814 | |
| **Dependent variable:** | **ln(Total FDI Stock)** | | **ln(Inward FDI Stock)** | | **ln(Outward FDI Stock)** | |
| | Coefficiënt | Probability | Coefficiënt | Probability | Coefficiënt | Probability |
| **C** | -285,3985 | 0,000 | -287,3239 | 0,000 | -296,8237 | 0,000 |
| **lnGDPPC** | 0,8229 | 0,000 | 1,4107 | 0,000 | 0,7966 | 0,000 |
| **lnPOP** | 0,3402 | 0,000 | 0,3390 | 0,000 | 0,4068 | 0,000 |
| **lnGDPPCUS** | -8,1606 | 0,000 | -8,9919 | 0,000 | -8,1486 | 0,000 |
| **lnPOPUS** | 28,7541 | 0,000 | 28,8700 | 0,000 | 29,7567 | 0,000 |
| **BORDER** | -0,0668 | 0,680 | -0,9346 | 0,000 | 0,4348 | 0,009 |
| **DISTANCE** | 0,0010 | 0,000 | 0,0002 | 0,348 | 0,0012 | 0,000 |
| **LANGUAGE** | 0,1995 | 0,117 | 0,4852 | 0,010 | 0,3035 | 0,020 |
| **lnTRADE** | 0,8729 | 0,000 | 1,0207 | 0,000 | 0,7226 | 0,000 |
| **lnMARKETCAP** | 0,1468 | 0,000 | -0,0060 | 0,883 | 0,1262 | 0,000 |
| **TAXRATE** | -0,0005 | 0,000 | -0,0002 | 0,065 | -0,0007 | 0,000 |
| **TAXTREATY** | 0,0597 | 0,650 | -0,7217 | 0,000 | 0,0289 | 0,831 |
| **LEGALFAM** | -0,1219 | 0,004 | 0,0588 | 0,359 | -0,2542 | 0,000 |
| **CULTURE** | -0,0060 | 0,004 | -0,0089 | 0,005 | -0,0041 | 0,050 |
| **VA** | 0,0255 | 0,000 | 0,0307 | 0,000 | 0,0248 | 0,000 |
| **PSNV** | 0,0001 | 0,970 | -0,0132 | 0,000 | 0,0029 | 0,169 |
| **GE** | -0,0648 | 0,000 | 0,0127 | 0,138 | -0,0683 | 0,000 |
| **RQ** | -0,0272 | 0,000 | -0,0510 | 0,000 | -0,0284 | 0,000 |
| **RL** | 0,0180 | 0,002 | 0,0262 | 0,005 | 0,0089 | 0,142 |
| **CC** | 0,0365 | 0,000 | -0,0019 | 0,887 | 0,0450 | 0,000 |
| **R-squared** | 0,870 | | 0,880 | | 0,833 | |
| **Adjusted R-squared** | 0,866 | | 0,877 | | 0,829 | |
| **S.E. of regression** | 0,663 | | 0,927 | | 0,677 | |
| **Sum squared resid** | 339,290 | | 613,423 | | 351,356 | |
| **Log likelihood** | -788,108 | | -9756,409 | | -799,376 | |
| **F-statistic** | 270,778 | | 275,396 | | 201,913 | |
| **Prob(F-statistic)** | 0,000 | | 0,000 | | 0,000 | |

## Table 4.6: Total Gravity Model; including Legal Family 01 and Political Rank indicators

| **Method:** | Panel Least Squares | | Panel Least Squares | | Panel Least Squares | |
|---|---|---|---|---|---|---|
| **Sample:** | 1985-2006 | | 1985-2006 | | 1985-2006 | |
| **Periods included:** | 22 | | 22 | | 22 | |
| **Cross-sections included:** | 37 | | 37 | | 37 | |
| **Total panel observations** | 814 | | 814 | | 814 | |
| **Dependent variable:** | **ln(Total FDI Stock)** | | **ln(Inward FDI Stock)** | | **ln(Outward FDI Stock)** | |
| | Coefficiënt | Probability | Coefficiënt | Probability | Coefficiënt | Probability |
| **C** | -266,8515 | 0,000 | -286,5920 | 0,000 | -284,6221 | 0,000 |
| **lnGDPPC** | 0,6484 | 0,000 | 1,4034 | 0,000 | 0,6711 | 0,000 |
| **lnPOP** | 0,2365 | 0,000 | 0,3289 | 0,000 | 0,3486 | 0,000 |
| **lnGDPPCUS** | -7,5245 | 0,000 | -8,9376 | 0,000 | -7,7686 | 0,000 |
| **lnPOPUS** | 26,9029 | 0,000 | 28,7858 | 0,000 | 28,5450 | 0,000 |
| **BORDER** | -0,2919 | 0,082 | -0,9422 | 0,000 | 0,2747 | 0,120 |
| **DISTANCE** | 0,0009 | 0,000 | 0,0001 | 0,460 | 0,0012 | 0,000 |
| **LANGUAGE** | 0,5303 | 0,000 | 0,4318 | 0,014 | 0,7122 | 0,000 |
| **lnTRADE** | 0,9317 | 0,000 | 1,0164 | 0,000 | 0,7812 | 0,000 |
| **lnMARKETCAP** | 0,1641 | 0,000 | -0,0098 | 0,810 | 0,1420 | 0,000 |
| **TAXRATE** | -0,0004 | 0,000 | -0,0002 | 0,096 | -0,0006 | 0,000 |
| **TAXTREATY** | -0,0555 | 0,677 | -0,7203 | 0,000 | -0,0659 | 0,637 |
| **LEGALFAM** | -0,3900 | 0,001 | -0,0778 | 0,642 | -0,1108 | 0,343 |
| **CULTURE** | -0,0093 | 0,000 | -0,0094 | 0,009 | -0,0051 | 0,029 |
| **VA** | 0,0197 | 0,000 | 0,0300 | 0,000 | 0,0219 | 0,000 |
| **PSNV** | -0,0036 | 0,075 | -0,0125 | 0,000 | -0,0017 | 0,426 |
| **GE** | -0,0567 | 0,000 | 0,0153 | 0,108 | -0,0689 | 0,000 |
| **RQ** | -0,0201 | 0,002 | -0,0510 | 0,000 | -0,0217 | 0,002 |
| **RL** | 0,0170 | 0,004 | 0,0268 | 0,004 | 0,0067 | 0,281 |
| **CC** | 0,0313 | 0,001 | -0,0036 | 0,792 | 0,0451 | 0,000 |
| **R-squared** | 0,870 | | 0,880 | | 0,826 | |
| **Adjusted R-squared** | 0,867 | | 0,877 | | 0,822 | |
| **S.E. of regression** | 0,661 | | 0,927 | | 0,691 | |
| **Sum squared resid** | 337,617 | | 613,961 | | 366,745 | |
| **Log likelihood** | -786,150 | | -9759,628 | | -816,243 | |
| **F-statistic** | 272,322 | | 275,121 | | 191,747 | |
| **Prob(F-statistic)** | 0,000 | | 0,000 | | 0,000 | |

If we compare those four models we see that the best fit or the highest R-squared (adjusted) is produced in model 6, namely 0.867%, followed by model 5, model 4 and model 3, with 0.866%, 0.860% and 0.838% respectively. This proves that political ranks over political differences explain the data more precisely. In addition, Legalfam01 fits the data more precise than Legalfam shown by the adjusted R-squared.

If we have a closer look at the different explaining variables and compare the four different extended models we see that the first five explaining variables in the model: C, lnGDPpc, lnPop, lnGDPpcUS and PopUS have approximately the same parameter and are all significant, with the exception of lnPop in model 3 and 4. This shows that the first five parameters in the model are rather robust.

If we do the same for the variable border we see that border is not significant in every model, but has the same signs in all models, with the exception of the outward FDI stock model 3. Sharing a border has a positive effect on outward FDI stock and a negative effect on total and inward FDI stock.

Distance has in all four models a positive effect on total and outward FDI stock. In models (5&6) including the political rank variables distance also has a positive effect on inward FDI stock but in models (3&4) including the political difference variables it has a negative effect on inward FDI. So distance has a positive effect on total and outward FDI stock but the effect on inward FDI stock is ambiguous. In addition, distance is in almost every model significant.

Language is in all models significant, except for model 3. In the remaining models language has an unambiguous positive effect on FDI stock.

lnTrade is in all models significant and has a positive effect on FDI stock between the US and partner countries.

LnMarketCap of a partner country is in all models significant in explaining total and outward FDI stock on which it has a positive effect. So market capitalization of a particular country

explains, according our model, FDI to that particular country and not from that particular country.

The corporate tax rate of a partner country has a negative effect on total and outward FDI stock and the effect on inward FDI stock is ambiguous and insignificant and depending on the model.

The existence of a tax treaty between the US and its partner country is only significant in all models explaining inward FDI stock, in which it has a negative effect. Only in model 4 does it have a significant effect on total and outward stock and also for these explained variables the effect is negative.

### 4.1.5 Time and country fixed effects models

In this paragraph five different fixed effects models are shown. An important advantage of showing these five models is that we can test robustness of the parameters. The models are tested with time fixed effects or year dummies. The first four models contain the same variables as models 3-6 excluding population US and GDP per capita US. Because these variables are the same for each country they only differ in time. Thus, it is impossible to incorporate these variables into a time-fixed model. The fifth model (11) is tested with cross-section fixed effects or country dummies and therefore all the time invariant variables are excluded. The following five fixed effects models are shown:
Model 7 (Table 4.7): Political indicators measured in *differences* and *Legalfam* are included.
Model8(Table 4.8): Political indicators measured in *differences* and *Legalfam01* are included.
Model 9 (Table 4.9): Political indicators measured in *ranks* and *Legalfam* are included.
Model 10 (Table 4.10): Political indicators measured in *ranks* and *Legalfam01* are included.
(all time-fixed)
Model 11 (Table 4.11): Basic gravity model (country-fixed).

| Table 4.7: Total Gravity Model; including Legal Family and Political Difference (Time Fixed) | | | | | | |
|---|---|---|---|---|---|---|
| **Method:** | Panel Least Squares | | Panel Least Squares | | Panel Least Squares | |
| **Sample:** | 1985-2006 | | 1985-2006 | | 1985-2006 | |
| **Periods included:** | 22 | | 22 | | 22 | |
| **Cross-sections included:** | 37 | | 37 | | 37 | |
| **Total panel observations** | 814 | | 814 | | 814 | |
| **Dependent variable:** | **ln(Total FDI Stock)** | | **ln(Inward FDI Stock)** | | **ln(Outward FDI Stock)** | |
| | Coefficiënt | Probability | Coefficiënt | Probability | Coefficiënt | Probability |
| **C** | -8,0187 | 0,000 | -17,6824 | 0,000 | -5,0750 | 0,000 |
| **lnGDPPC** | 0,8367 | 0,000 | 1,5357 | 0,000 | 0,6854 | 0,000 |
| **lnPOP** | 0,2452 | 0,000 | 0,4349 | 0,000 | 0,1499 | 0,018 |
| **BORDER** | -0,3543 | 0,070 | -0,2511 | 0,314 | -0,0388 | 0,844 |
| **DISTANCE** | 0,0001 | 0,305 | -0,0005 | 0,001 | 0,0004 | 0,000 |
| **LANGUAGE** | -0,1143 | 0,376 | -0,0783 | 0,648 | -0,0251 | 0,847 |
| **lnTRADE** | 0,7462 | 0,000 | 0,7767 | 0,000 | 0,7131 | 0,000 |
| **lnMARKETCAP** | 0,1343 | 0,000 | -0,0389 | 0,361 | 0,0822 | 0,013 |
| **TAXRATE** | -0,0002 | 0,026 | 0,0002 | 0,102 | -0,0003 | 0,000 |
| **TAXTREATY** | 0,0604 | 0,663 | -0,6220 | 0,001 | -0,0238 | 0,866 |
| **LEGALFAM** | -0,1262 | 0,017 | 0,0029 | 0,967 | -0,1965 | 0,000 |
| **CULTURE** | -0,0148 | 0,000 | -0,0126 | 0,000 | -0,0164 | 0,000 |
| **VA** | 0,0000 | 0,089 | 0,0000 | 0,003 | -0,000015 | 0,077 |
| **PSNV** | 0,0000 | 0,951 | 0,0000 | 0,003 | -0,000029 | 0,000 |
| **GE** | 0,0001 | 0,000 | -0,0001 | 0,000 | 0,000101 | 0,000 |
| **RQ** | 0,0000 | 0,081 | 0,0001 | 0,000 | 0,000029 | 0,091 |
| **RL** | 0,0000 | 0,002 | -0,0001 | 0,000 | -0,000033 | 0,031 |
| **CC** | 0,0000 | 0,812 | 0,0001 | 0,000 | -0,000031 | 0,033 |
| **R-squared** | 0,8440 | | 0,8863 | | 0,8064 | |
| **Adjusted R-squared** | 0,8361 | | 0,8801 | | 0,7966 | |
| **S.E. of regression** | 0,7340 | | 0,9140 | | 0,7388 | |
| **Sum squared resid** | 405,7222 | | 580,6474 | | 408,2552 | |
| **Log likelihood** | -858,9178 | | -955,4888 | | -858,4365 | |
| **F-statistic** | 107,1898 | | 142,6316 | | 81,9905 | |
| **Prob(F-statistic)** | 0,0000 | | 0,0000 | | 0,0000 | |

| Table 4.8: Total Gravity Model; incl. Legal Family 01 and Political Difference (Time Fixed) | | | | | | |
|---|---|---|---|---|---|---|
| **Method:** | Panel Least Squares | | Panel Least Squares | | Panel Least Squares | |
| **Sample:** | 1985-2006 | | 1985-2006 | | 1985-2006 | |
| **Periods included:** | 22 | | 22 | | 22 | |
| **Cross-sections included:** | 37 | | 37 | | 37 | |
| **Total panel observations** | 814 | | 814 | | 814 | |
| **Dependent variable:** | **ln(Total FDI Stock)** | | **ln(Inward FDI Stock)** | | **ln(Outward FDI Stock)** | |
| | Coefficiënt | Probability | Coefficiënt | Probability | Coefficiënt | Probability |
| **C** | -4,0576 | 0,000 | -15,5551 | 0,000 | -1,8874 | 0,072 |
| **lnGDPPC** | 0,4979 | 0,000 | 1,3694 | 0,000 | 0,3980 | 0,000 |
| **lnPOP** | 0,1227 | 0,038 | 0,3651 | 0,000 | 0,0508 | 0,413 |
| **BORDER** | -0,0239 | 0,894 | -0,1066 | 0,661 | 0,2839 | 0,133 |
| **DISTANCE** | 0,0005 | 0,000 | -0,0004 | 0,010 | 0,0008 | 0,000 |
| **LANGUAGE** | 0,5079 | 0,000 | 0,1893 | 0,253 | 0,5345 | 0,000 |
| **lnTRADE** | 0,7968 | 0,000 | 0,7969 | 0,000 | 0,7618 | 0,000 |
| **lnMARKETCAP** | 0,2073 | 0,000 | 0,0053 | 0,899 | 0,1433 | 0,000 |
| **TAXRATE** | -0,0002 | 0,001 | 0,0001 | 0,099 | -0,0003 | 0,000 |
| **TAXTREATY** | -0,4623 | 0,000 | -0,8688 | 0,000 | -0,4962 | 0,000 |
| **LEGALFAM01** | -1,1997 | 0,000 | -0,6868 | 0,000 | -0,8950 | 0,000 |
| **CULTURE** | -0,0241 | 0,000 | -0,0177 | 0,000 | -0,0246 | 0,000 |
| **VA** | 0,0000 | 0,124 | 0,0000 | 0,152 | 0,000006 | 0,498 |
| **PSNV** | 0,0000 | 0,008 | 0,0000 | 0,000 | -0,000013 | 0,097 |
| **GE** | 0,0000 | 0,289 | -0,0001 | 0,000 | 0,000069 | 0,000 |
| **RQ** | 0,0001 | 0,000 | 0,0002 | 0,000 | 0,000094 | 0,000 |
| **RL** | -0,0001 | 0,000 | -0,0001 | 0,000 | -0,000048 | 0,001 |
| **CC** | 0,0000 | 0,000 | 0,0001 | 0,000 | -0,000080 | 0,000 |
| **R-squared** | 0,8646 | | 0,8896 | | 0,8179 | |
| **Adjusted R-squared** | 0,8578 | | 0,8836 | | 0,8086 | |
| **S.E. of regression** | 0,6837 | | 0,9007 | | 0,7165 | |
| **Sum squared resid** | 352,0063 | | 563,8317 | | 384,0555 | |
| **Log likelihood** | -802,6780 | | -944,7034 | | -834,3915 | |
| **F-statistic** | 126,5707 | | 147,4309 | | 88,3971 | |
| **Prob(F-statistic)** | 0,0000 | | 0,0000 | | 0,0000 | |

| Table 4.9: Total Gravity Model; including Legal Family and Political Rank (Time Fixed) | | | | | | |
|---|---|---|---|---|---|---|
| **Method:** | Panel Least Squares | | Panel Least Squares | | Panel Least Squares | |
| **Sample:** | 1985-2006 | | 1985-2006 | | 1985-2006 | |
| **Periods included:** | 22 | | 22 | | 22 | |
| **Cross-sections included:** | 37 | | 37 | | 37 | |
| **Total panel observations** | 814 | | 814 | | 814 | |
| **Dependent variable:** | **ln(Total FDI Stock)** | | **ln(Inward FDI Stock)** | | **ln(Outward FDI Stock)** | |
| | Coefficiënt | Probability | Coefficiënt | Probability | Coefficiënt | Probability |
| **C** | -9,4423 | 0,000 | -18,5486 | 0,000 | -8,1894 | 0,000 |
| **lnGDPPC** | 0,8549 | 0,000 | 1,4544 | 0,000 | 0,8297 | 0,000 |
| **lnPOP** | 0,3572 | 0,000 | 0,3623 | 0,000 | 0,4258 | 0,000 |
| **BORDER** | -0,0449 | 0,783 | -0,9000 | 0,000 | 0,4627 | 0,006 |
| **DISTANCE** | 0,0010 | 0,000 | 0,0002 | 0,252 | 0,0012 | 0,000 |
| **LANGUAGE** | 0,2153 | 0,092 | 0,5002 | 0,008 | 0,3190 | 0,015 |
| **lnTRADE** | 0,8657 | 0,000 | 1,0108 | 0,000 | 0,7130 | 0,000 |
| **lnMARKETCAP** | 0,1477 | 0,000 | -0,0044 | 0,916 | 0,1247 | 0,000 |
| **TAXRATE** | -0,0005 | 0,000 | -0,0003 | 0,043 | -0,0007 | 0,000 |
| **TAXTREATY** | 0,0613 | 0,644 | -0,7028 | 0,001 | 0,0255 | 0,852 |
| **LEGALFAM** | -0,1265 | 0,003 | 0,0540 | 0,403 | -0,2590 | 0,000 |
| **CULTURE** | -0,0057 | 0,006 | -0,0086 | 0,008 | -0,0038 | 0,070 |
| **VA** | 0,0257 | 0,000 | 0,0309 | 0,000 | 0,0250 | 0,000 |
| **PSNV** | -0,0002 | 0,922 | -0,0136 | 0,000 | 0,0027 | 0,214 |
| **GE** | -0,0652 | 0,000 | 0,0121 | 0,160 | -0,0687 | 0,000 |
| **RQ** | -0,0284 | 0,000 | -0,0523 | 0,000 | -0,0296 | 0,000 |
| **RL** | 0,0186 | 0,002 | 0,0278 | 0,003 | 0,0093 | 0,130 |
| **CC** | 0,0370 | 0,000 | -0,0022 | 0,870 | 0,0458 | 0,000 |
| **R-squared** | 0,872 | | 0,882 | | 0,836 | |
| **Adjusted R-squared** | 0,866 | | 0,876 | | 0,827 | |
| **S.E. of regression** | 0,665 | | 0,931 | | 0,681 | |
| **Sum squared resid** | 332,745 | | 602,498 | | 346,562 | |
| **Log likelihood** | -780,394 | | -969,046 | | -793,970 | |
| **F-statistic** | 135,045 | | 136,796 | | 100,090 | |
| **Prob(F-statistic)** | 0,000 | | 0,000 | | 0,000 | |

| Table 4.10: Total Gravity Model; including Legal Family 01 and Political Rank (Time Fixed) | | | | | | |
|---|---|---|---|---|---|---|
| **Method:** | Panel Least Squares | | Panel Least Squares | | Panel Least Squares | |
| **Sample:** | 1985-2006 | | 1985-2006 | | 1985-2006 | |
| **Periods included:** | 22 | | 22 | | 22 | |
| **Cross-sections included:** | 37 | | 37 | | 37 | |
| **Total panel observations** | 814 | | 814 | | 814 | |
| **Dependent variable:** | **ln(Total FDI Stock)** | | **ln(Inward FDI Stock)** | | **ln(Outward FDI Stock)** | |
| | Coefficiënt | Probability | Coefficiënt | Probability | Coefficiënt | Probability |
| **C** | -7,600 | 0,000 | -18,524 | 0,000 | -7,349 | 0,000 |
| **lnGDPPC** | 0,682 | 0,000 | 1,462 | 0,000 | 0,709 | 0,000 |
| **lnPOP** | 0,255 | 0,000 | 0,363 | 0,000 | 0,371 | 0,000 |
| **BORDER** | -0,266 | 0,117 | -0,888 | 0,000 | 0,310 | 0,085 |
| **DISTANCE** | 0,001 | 0,000 | 0,000 | 0,313 | 0,001 | 0,000 |
| **LANGUAGE** | 0,536 | 0,000 | 0,436 | 0,013 | 0,718 | 0,000 |
| **lnTRADE** | 0,926 | 0,000 | 1,003 | 0,000 | 0,772 | 0,000 |
| **lnMARKETCAP** | 0,165 | 0,000 | -0,010 | 0,816 | 0,140 | 0,000 |
| **TAXRATE** | 0,000 | 0,000 | 0,000 | 0,057 | -0,001 | 0,000 |
| **TAXTREATY** | -0,047 | 0,728 | -0,692 | 0,001 | -0,061 | 0,664 |
| **LEGALFAM01** | -0,360 | 0,002 | -0,028 | 0,868 | -0,077 | 0,515 |
| **CULTURE** | -0,009 | 0,000 | -0,009 | 0,019 | -0,005 | 0,054 |
| **VA** | 0,020 | 0,000 | 0,0308 | 0,000 | 0,022 | 0,000 |
| **PSNV** | -0,004 | 0,065 | -0,0128 | 0,000 | -0,002 | 0,389 |
| **GE** | -0,058 | 0,000 | 0,0134 | 0,163 | -0,070 | 0,000 |
| **RQ** | -0,021 | 0,002 | -0,0528 | 0,000 | -0,023 | 0,001 |
| **RL** | 0,017 | 0,003 | 0,0283 | 0,003 | 0,007 | 0,264 |
| **CC** | 0,032 | 0,001 | -0,0031 | 0,823 | 0,046 | 0,000 |
| **R-squared** | 0,872 | | 0,882 | | 0,828 | |
| **Adjusted R-squared** | 0,866 | | 0,875 | | 0,819 | |
| **S.E. of regression** | 0,664 | | 0,932 | | 0,696 | |
| **Sum squared resid** | 332,217 | | 603,082 | | 362,741 | |
| **Log likelihood** | -779,765 | | -969,402 | | -811,924 | |
| **F-statistic** | 135,291 | | 136,645 | | 94,748 | |
| **Prob(F-statistic)** | 0,000 | | 0,000 | | 0,000 | |

If we compare those four models we see that the best fit or the highest R-squared (adjusted) is produced in model 9, namely 0.872%. Followed by model 10, model 8 and model 7, with 0.872%, 0.865% and 0.844%, respectively. Furthermore, Inward FDI stock is better explained by the models than outward FDI stock

If we have a closer look at the different explaining variables and compare the four different fixed-effects models we see that the first three explaining variables in the model, namely C, lnGDPpc, and lnPop have approximately the same parameter and are all significant at a 5% significance level with the exception of lnPop in model 8 where it explains outward stock. Also, all the parameters of the first three parameters have the same sign, which shows that the first three parameters in the model are rather robust.

If we do the same for border we see that border is not significant in most of the models but has the same signs in all models with the exception of the outward FDI stock model 7. Sharing a border has a positive effect on outward FDI stock and a negative effect on total and inward FDI stock.

Distance has in all four models a positive effect on total and outward FDI stock. In models (9&10) including the political rank variables distance also has  a positive effect on inward FDI stock but these are insignificant in models (7&8) and including the political difference variables it has a negative effect on inward FDI. So distance has a positive effect on total and outward FDI stock but the effect on inward FDI stock is ambiguous. In addition, distance is in almost every model significant.

Language is in almost all models significant, except for model 7 and model 8 inward stock. In the remaining models language has an unambiguous positive effect on FDI stock.

lnTrade is in all models significant and has a positive effect on FDI stock between the US and partner countries.

LnMarketCap of a partner country is in all models significant in explaining total and outward FDI stock on which it has a positive effect. So, according our model, market capitalization of a country explains FDI to that country and not from that country.

The corporate tax rate of a partner country is significant and has a negative effect on total and outward FDI stock and the effect on inward FDI stock is ambiguous, mostly insignificant and depending on the model.

The existence of a tax treaty between the US and its partner country is only significant in explaining inward FDI stock in all models, in which it has a negative effect. Only in model 8 does it have a significant effect on total and outward stock and also for these explained variables the effect is negative.

Finally, in model 11 country dummies are included and the basic gravity equation is tested. This model arrives at a high R-squared, namely 0,963%, 0,965% and 0,944% for total, inward, and outward stock respectively.

**Table 4.11: Augmented Gravity Model; (Country Fixed)**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Method:** | Panel Least Squares | | Panel Least Squares | | Panel Least Squares | |
| **Sample:** | 1985-2006 | | 1985-2006 | | 1985-2006 | |
| **Periods included:** | 22 | | 22 | | 22 | |
| **Cross-sections included:** | 37 | | 37 | | 37 | |
| **Total panel observations** | 814 | | 814 | | 814 | |
| **Dependent variable:** | **ln(Total FDI Stock)** | | **ln(Inward FDI Stock)** | | **ln(Outward FDI Stock)** | |
| | Coefficiënt | Probability | Coefficiënt | Probability | Coefficiënt | Probability |
| **C** | -235,216 | 0,000 | -79,623 | 0,053 | -271,798 | 0,000 |
| **lnGDPPC** | 0,750 | 0,000 | 0,043 | 0,669 | 0,867 | 0,000 |
| **lnPOP** | -0,469 | 0,095 | -0,059 | 0,889 | 0,308 | 0,328 |
| **lnGDPPCUS** | -5,129 | 0,000 | 0,476 | 0,704 | -6,285 | 0,000 |
| **lnPOPUS** | 23,285 | 0,000 | 6,342 | 0,139 | 26,466 | 0,000 |
| **lnTRADE** | 0,225 | 0,000 | 0,356 | 0,000 | 0,167 | 0,001 |
| **lnMARKETCAP** | 0,162 | 0,000 | -0,063 | 0,022 | 0,139 | 0,000 |
| **R-squared** | 0,963 | | 0,965 | | 0,944 | |
| **Adjusted R-squared** | 0,961 | | 0,963 | | 0,941 | |
| **S.E. of regression** | 0,361 | | 0,515 | | 0,400 | |
| **Sum squared resid** | 100,226 | | 188,850 | | 122,386 | |
| **Log likelihood** | -302,540 | | -548,399 | | -383,974 | |
| **F-statistic** | 478,605 | | 465,250 | | 307,280 | |
| **Prob(F-statistic)** | 0,000 | | 0,000 | | 0,000 | |

### 4.1.6 Comparing the parameters for different models

#### Legal Family and Legal Family 01

| Table 4.12: Parameters & probabilities of Legal family & Legal family 01 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **LegalFam** | **Normal** | | | | **Time Fixed** | | | | **Separately** | |
| | **Political Difference** | | **Political Rank** | | **Political Difference** | | **Political Rank** | | | |
| **Total** | -0,119 | 0,02 | -0,122 | 0,00 | -0,126 | 0,02 | -0,127 | 0,00 | -0,1222 | 0,01 |
| **Inward** | 0,015 | 0,83 | 0,059 | 0,36 | 0,003 | 0,97 | 0,054 | 0,40 | 0,0338 | 0,59 |
| **Outward** | -0,190 | 0,00 | -0,254 | 0,00 | -0,196 | 0,00 | -0,259 | 0,00 | -0,2536 | 0,00 |
| **LegalFam01** | **Normal** | | | | **Time Fixed** | | | | **Separately** | |
| | **Political Difference** | | **Political Rank** | | **Political Difference** | | **Political Rank** | | | |
| **Total** | -1,213 | 0,00 | -0,390 | 0,00 | -1,200 | 0,00 | -0,360 | 0,00 | -0,7098 | 0,00 |
| **Inward** | -0,722 | 0,00 | -0,078 | 0,64 | -0,687 | 0,00 | -0,028 | 0,87 | 0,1747 | 0,59 |
| **Outward** | -0,908 | 0,00 | -0,111 | 0,34 | -0,895 | 0,00 | -0,077 | 0,51 | -0,6878 | 0,00 |

In general, it can be concluded that both Legal Family and Legal Family 01 are significant, at a 1% significance level, in the models explaining total and outward FDI stock. The only exceptions on this observation are the models in which the variables Legal family 01 and political Ranks are combined. In these models Legal Family 01 is insignificant in explaining outward FDI stock. In contrast both Legal Family and Legal Family 01 are insignificant in explaining inward FDI stock, with the exception of the models combining political difference indicators and legal family 01.

The estimated parameters of the legal factors have the same negative sign in all models and broadly are of the same magnitude, proving that they are rather robust. It contradicts the theoretical foundation that the sign of legal family is negative. As theory suggests, belonging to the same legal family increases familiarity and reduces transaction costs which should raise investments between countries. Moreover, introducing legal family into the augmented gravity model decreases the significance of border and distance in the model.

#### Culture

| Table 4.13: Parameters & probabilities of Culture | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Culture** | **Normal** | | | | **Time Fixed** | | | | **Separately** | |
| | **Legal Family** | | **Legal Family 01** | | **Legal Family** | | **Legal Family 01** | | | |
| **Political Difference** | | | | | | | | | | |
| **Total** | -0,015 | 0,00 | -0,024 | 0,00 | -0,015 | 0,00 | -0,024 | 0,00 | -0,0155 | 0,00 |
| **Inward** | -0,013 | 0,00 | -0,018 | 0,00 | -0,013 | 0,00 | -0,018 | 0,00 | -0,0266 | 0,00 |
| **Outward** | -0,017 | 0,00 | -0,025 | 0,00 | -0,016 | 0,00 | -0,025 | 0,00 | -0,0122 | 0,00 |
| **Political Rank** | | | | | | | | | | |
| **Total** | -0,006 | 0,00 | -0,009 | 0,00 | -0,006 | 0,01 | -0,009 | 0,00 | | |
| **Inward** | -0,009 | 0,01 | -0,009 | 0,01 | -0,009 | 0,01 | -0,009 | 0,02 | | |
| **Outward** | -0,004 | 0,05 | -0,005 | 0,03 | -0,004 | 0,07 | -0,005 | 0,05 | | |

In all three augmented gravity models, total, inward and outward FDI stock, difference in culture between the US and its partner countries is significant at a 1% significance level. Only in the model explaining outward stock in combination with political rank, is culture significant at a 10% significance level. In all three models the sign of culture's parameter is negative. Theoretical foundation suggests that differences in culture decrease familiarity and increase transaction costs, which causes lower investments between partner countries. Implementing culture into the augmented gravity model lowers the significance of language and distance for total FDI stock, which is possibly due to high correlation between culture and language and distance. In the outward FDI stock model border's significance level is also lowered substantially when introducing culture into the model.

In all models culture's parameter magnitude is approximately the same. Only in combination with political difference indicators is the effect approximately twice as large as in combination with political rank indicators. Culture is together with trade the most robust explaining variable. It has the same sign and magnitude in all models. In models explaining political rank culture is slightly less significant probably due correlation effects between culture and political rank.

## Different political indicators

## Voice and Accountability

**Table 4.14: Parameters & probabilities of Voice and Accountability indicator**

| VA | Normal | | | | Time Fixed | | | | Separately | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Legal Family | | Legal Family 01 | | Legal Family | | Legal Family 01 | | | |
| **Political Difference** | | | | | | | | | | |
| **Total** | -0,00001 | 0,09 | 0,00001 | 0,11 | -0,00001 | 0,09 | 0,00001 | 0,12 | 0,000001 | 0,90 |
| **Inward** | -0,00003 | 0,00 | -0,00002 | 0,16 | -0,00003 | 0,00 | -0,00002 | 0,15 | -0,000016 | 0,08 |
| **Outward** | -0,00001 | 0,07 | 0,00001 | 0,48 | -0,00001 | 0,08 | 0,00001 | 0,50 | -0,000004 | 0,55 |
| **Political Rank** | | | | | | | | | | |
| **Total** | 0,02551 | 0,00 | 0,01968 | 0,00 | 0,02572 | 0,00 | 0,02027 | 0,00 | 0,00991 | 0,00 |
| **Inward** | 0,03065 | 0,00 | 0,02998 | 0,00 | 0,03087 | 0,00 | 0,03083 | 0,00 | 0,02673 | 0,00 |
| **Outward** | 0,02483 | 0,00 | 0,02188 | 0,00 | 0,02496 | 0,00 | 0,02243 | 0,00 | 0,00554 | 0,01 |

Voice and Accountability (VA) Rank is significant, at a 1% significance level, in all models. VA Rank has a positive sign, which means that between the US and partner countries with high quality voice and accountability more FDI investments are initiated than between the US

and countries with low a VA rank, both for inward and outward FDI stock. Voice and Accountability Difference is only significant in explaining inward FDI stock in combination with legal family. In these models the VA difference parameter has a negative sign, meaning that more different countries provide less inward FDI stock, although the effect is very small.

According to these results we can conclude that VA rank is a better explanatory variable for FDI stock than VA difference. Consequently, it can be concluded that the quality of voice and accountability in a country is more important than the difference between that country and the US in explaining bilateral FDI stock. Furthermore, parameter estimations are rather robust as sign and magnitude are approximately the same in all models.

**Political Stability No Violence**

**Table 4.15: Parameters & probabilities of Political Stability No Violence indicator**

| PSNV | Normal | | | | Time Fixed | | | | Separately | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Legal Family | | Legal Family 01 | | Legal Family | | Legal Family 01 | | | |
| **Political Difference** | | | | | | | | | | |
| **Total** | 0,00000 | 0,85 | 0,00002 | 0,01 | 0,00000 | 0,95 | 0,00002 | 0,01 | 0,000026 | 0,00 |
| **Inward** | 0,00003 | 0,00 | 0,00004 | 0,00 | 0,00003 | 0,00 | 0,00004 | 0,00 | 0,000059 | 0,00 |
| **Outward** | -0,00003 | 0,00 | -0,00001 | 0,09 | -0,00003 | 0,00 | -0,00001 | 0,10 | -0,000001 | 0,91 |
| **Political Rank** | | | | | | | | | | |
| **Total** | 0,00008 | 0,97 | -0,00361 | 0,08 | -0,00021 | 0,92 | -0,00376 | 0,07 | -0,00231 | 0,19 |
| **Inward** | -0,01319 | 0,00 | -0,01251 | 0,00 | -0,01361 | 0,00 | -0,01278 | 0,00 | -0,00408 | 0,10 |
| **Outward** | 0,00295 | 0,17 | -0,00169 | 0,43 | 0,00268 | 0,21 | -0,00184 | 0,39 | -0,00346 | 0,06 |

Political Stability No Violence (PSNV) is significant in explaining inward FDI stock at a significance level of 1% and insignificant in explaining outward FDI stock. The sign of PSNV rank in explaining inward FDI stock is negative, meaning that politically stable countries invest less FDI in the US than unstable countries do. A reason could be that large investors like the UK, Netherlands, and France occupy a rather low rank in this indicator.

Taking into account that the Political Difference indicator has a positive sign, the fact that the US has an average score in this indicator shows that countries with extreme scores invest larger amounts in the US than countries with an average score. Again this shows that empirical results do not underwrite theoretical foundation of familiarity in the area of politics, this in accordance with political rank. Hence, it is difficult to interpret this political indicator.

## Government Effectiveness

| Table 4.16: Parameters & probabilities of Government Effectiveness indicator | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| GE | Normal | | | | Time Fixed | | | | Separately | |
| | Legal Family | | Legal Family 01 | | Legal Family | | Legal Family 01 | | | |
| **Political Difference** | | | | | | | | | | |
| **Total** | 0,00006 | 0,00 | 0,00002 | 0,32 | 0,00006 | 0,00 | 0,00002 | 0,29 | 0,000029 | 0,00 |
| **Inward** | -0,00009 | 0,00 | -0,00012 | 0,00 | -0,00009 | 0,00 | -0,00012 | 0,00 | -0,000011 | 0,29 |
| **Outward** | 0,00010 | 0,00 | 0,00007 | 0,00 | 0,00010 | 0,00 | 0,00007 | 0,00 | 0,000040 | 0,00 |
| **Political Rank** | | | | | | | | | | |
| **Total** | -0,06478 | 0,00 | -0,05673 | 0,00 | -0,06523 | 0,00 | -0,05793 | 0,00 | -0,01465 | 0,00 |
| **Inward** | 0,01270 | 0,14 | 0,01534 | 0,11 | 0,01209 | 0,16 | 0,01341 | 0,16 | 0,00704 | 0,07 |
| **Outward** | -0,06830 | 0,00 | -0,06892 | 0,00 | -0,06868 | 0,00 | -0,07015 | 0,00 | -0,02043 | 0,00 |

Government Effectiveness (GE) Difference is, in general, significant in explaining inward and outward FDI stock. Its parameter has a positive sign if explaining outward stock and a negative sign explaining inward stock, meaning that dissimilar countries receive more FDI from the US and similar countries provide more FDI to the US.

Government Effectiveness Rank is significant, at a 1% significance level, if explaining outward and total FDI stock and only significant, at a 10% significance level, in explaining inward FDI if it is separately added to the augmented gravity model. Its parameter has a negative sign if explaining outward and total stock and a positive sign in explaining inward stock. This means that countries with a high GE rank provide inward stock to the US and US invests more FDI in countries with a low GE rank. If taken into account that the US has a high GE rank, this observation is similar to the GE difference variable emphasizing the same conclusion. Moreover, parameter estimations are rather robust as sign and magnitude are approximately the same in all models.

## Regulatory Quality

| Table 4.17: Parameters & probabilities of Regulatory Quality indicator | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| RQ | Normal | | | | Time Fixed | | | | Separately | |
| | Legal Family | | Legal Family 01 | | Legal Family | | Legal Family 01 | | | |
| **Political Difference** | | | | | | | | | | |
| **Total** | 0,00003 | 0,09 | 0,00010 | 0,00 | 0,00003 | 0,08 | 0,00010 | 0,00 | 0,000019 | 0,01 |
| **Inward** | 0,00014 | 0,00 | 0,00017 | 0,00 | 0,00014 | 0,00 | 0,00017 | 0,00 | 0,000017 | 0,10 |
| **Outward** | 0,00003 | 0,09 | 0,00009 | 0,00 | 0,00003 | 0,09 | 0,00009 | 0,00 | 0,000027 | 0,00 |
| **Political Rank** | | | | | | | | | | |
| **Total** | -0,02720 | 0,00 | -0,02011 | 0,00 | -0,02836 | 0,00 | -0,02128 | 0,00 | -0,00414 | 0,05 |
| **Inward** | -0,05097 | 0,00 | -0,05104 | 0,00 | -0,05232 | 0,00 | -0,05278 | 0,00 | -0,00395 | 0,21 |
| **Outward** | -0,02842 | 0,00 | -0,02167 | 0,00 | -0,02962 | 0,00 | -0,02298 | 0,00 | -0,00637 | 0,00 |

Regulatory Quality (RQ) difference is significant in the total, outward, and inward FDI model at a 1% significance rate, only if RQ difference is added to the augmented gravity model separately it is significant at a 10% significance rate. Also, in this model the sign of the political difference indicator is positive, which again means that unfamiliarity or dissimilarity breeds investments in the area of politics for both inward as outward FDI stock.

Regulatory Quality Rank is significant in the total, outward and inward FDI model at a 1% significance level, with the exception of the model where RQ rank is separately added; here being insignificant in explaining inward FDI stock. In all models the sign of this parameter is negative suggesting that the US invests more in countries with low quality regulation and receives less FDI from countries with high regulation quality. This contradicts theoretical foundation, which states that high quality regulation facilitates investments and raises FDI. Moreover, estimations are rather robust as sign and magnitude remain approximately the same in all models.

**Rule of Law**

| Table 4.18: Parameters & probabilities of Rule of Law indicator | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| RL | Normal | | | | Time Fixed | | | | Separately | |
| | Legal Family | | Legal Family 01 | | Legal Family | | Legal Family 01 | | | |
| **Political Difference** | | | | | | | | | | |
| **Total** | -0,00005 | 0,00 | -0,00006 | 0,00 | -0,00005 | 0,00 | -0,00006 | 0,00 | 0,000014 | 0,03 |
| **Inward** | -0,00011 | 0,00 | -0,00012 | 0,00 | -0,00011 | 0,00 | -0,00012 | 0,00 | -0,000005 | 0,59 |
| **Outward** | -0,00003 | 0,03 | -0,00005 | 0,00 | -0,00003 | 0,03 | -0,00005 | 0,00 | 0,000025 | 0,00 |
| **Political Rank** | | | | | | | | | | |
| **Total** | 0,01802 | 0,00 | 0,01700 | 0,00 | 0,01858 | 0,00 | 0,01748 | 0,00 | -0,00363 | 0,07 |
| **Inward** | 0,02624 | 0,00 | 0,02683 | 0,00 | 0,02784 | 0,00 | 0,02832 | 0,00 | 0,00318 | 0,29 |
| **Outward** | 0,00894 | 0,14 | 0,00670 | 0,28 | 0,00927 | 0,13 | 0,00699 | 0,26 | -0,00808 | 0,00 |

Rule of Law (RL) difference is significant in the total, inward and outward FDI model at a 5% significance rate, and insignificant in explaining inward FDI stock if it is added to the augmented model separately. The Rule of Law difference indicator sign is also negative in all three models suggesting that dissimilarity decreases investments, according to the theory of familiarity. However the parameter extracted from the augmented model suggests the opposite. It can be concluded the parameter is not robust in explaining total and outward FDI stock.

Rule of Law Rank is significant in the total and inward model at a 1% significance rate and insignificant in explaining outward FDI stock. In both models the sign is positive indicating that low quality Rule of Law in a partner country decreases FDI investments from a particular country to the US. Remarkable is the sign and significance of the parameter derived from the augmented gravity model where RL rank is separately added. In this model outward FDI is explained by RL rank and the sign is negative, which is contrary to the other models. Hence, these parameter estimations are not robust.

## Control of Corruption

**Table 4.19: Parameters & probabilities of Control of Corruption indicator**

| CC | Normal | | | | Time Fixed | | | | Separately | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Legal Family | | Legal Family 01 | | Legal Family | | Legal Family 01 | | | |
| **Political Difference** | | | | | | | | | | |
| **Total** | 0,00000 | 0,84 | -0,00004 | 0,00 | 0,00000 | 0,81 | -0,00004 | 0,00 | 0,000026 | 0,00 |
| **Inward** | 0,00010 | 0,00 | 0,00008 | 0,00 | 0,00010 | 0,00 | 0,00009 | 0,00 | 0,000047 | 0,00 |
| **Outward** | -0,00003 | 0,03 | -0,00008 | 0,00 | -0,00003 | 0,03 | -0,00008 | 0,00 | 0,000016 | 0,02 |
| **Political Rank** | | | | | | | | | | |
| **Total** | 0,03652 | 0,00 | 0,03134 | 0,00 | 0,03698 | 0,00 | 0,03210 | 0,00 | -0,00549 | 0,02 |
| **Inward** | -0,00191 | 0,89 | -0,00362 | 0,79 | -0,00221 | 0,87 | -0,00308 | 0,82 | 0,00278 | 0,42 |
| **Outward** | 0,04499 | 0,00 | 0,04509 | 0,00 | 0,04578 | 0,00 | 0,04624 | 0,00 | -0,01032 | 0,00 |

Control of Corruption (CC) difference is significant in the outward and inward FDI model at a 5% significance level. The same happens in the total models where CC difference is not combined with legal family. The sign is positive in explaining inward stock, meaning that the more dissimilar a country is in control of corruption the more it invests in the US. The CC difference sign is ambiguous in explaining outward FDI as the total models assign a negative sign to CC difference, while the augmented model, where CC difference is separately added, assigns a positive sign. Hence, the parameter is not robust.

Control of Corruption Rank is significant in the total and outward model, at a 1% significance CC rank, is insignificant in explaining inward stock. Again, the sign is positive in the total models and negative in the augmented model, which suggests the results are not robus

### 4.1.7 Wald-test

In this section a Wald-Test is performed on the political indicators, also in combination with the cultural difference indicator.

**Table 4.20: Wald-Test**

| | Wald-Tests | | All Political Indicators Excl. Cultural indicator | | | All Political Indicators Incl. Cultural indicator | | |
|---|---|---|---|---|---|---|---|---|
| 1 | Legalfam Political Difference | Test Statistic | Value | df | Probability | Value | df | Probability |
| | | F-statistic | 5,707 | (6, 772) | 0,000 | 11,143 | (7, 772) | 0,000 |
| | | Chi-square | 34,243 | 6 | 0,000 | 78,002 | 7 | 0,000 |
| 2 | Legalfam01 Political Difference | Test Statistic | Value | df | Probability | Value | df | Probability |
| | | F-statistic | 10,485 | (6, 772) | 0,000 | 23,781 | (7, 772) | 0,000 |
| | | Chi-square | 62,910 | 6 | 0,000 | 166,467 | 7 | 0,000 |
| 3 | Legalfam Political Rank | Test Statistic | Value | df | Probability | Value | df | Probability |
| | | F-statistic | 34,330 | (6, 772) | 0,000 | 37,009 | (7, 772) | 0,000 |
| | | Chi-square | 205,982 | 6 | 0,000 | 259,062 | 7 | 0,000 |
| 4 | Legalfam01 Political Rank | Test Statistic | Value | df | Probability | Value | df | Probability |
| | | F-statistic | 17,919 | (6, 772) | 0,000 | 30,943 | (7, 772) | 0,000 |
| | | Chi-square | 107,512 | 6 | 0,000 | 216,601 | 7 | 0,000 |
| 5 | Legalfam Political Difference (Time Fixed) | Test Statistic | Value | df | Probability | Value | df | Probability |
| | | F-statistic | 5,926 | (6, 753) | 0.0000 | 10,953 | (7, 753) | 0,000 |
| | | Chi-square | 35,557 | 6 | 0.0000 | 76,670 | 7 | 0,000 |
| 6 | Legalfam01 Political Difference (Time Fixed) | Test Statistic | Value | df | Probability | Value | df | Probability |
| | | F-statistic | 10,407 | (6, 753) | 0.0000 | 23,155 | (7, 753) | 0,000 |
| | | Chi-square | 62,442 | 6 | 0.0000 | 162,084 | 7 | 0,000 |
| 7 | Legalfam Political Rank (Time Fixed) | Test Statistic | Value | df | Probability | Value | df | Probability |
| | | F-statistic | 34,751 | (6, 753) | 0.0000 | 36,948 | (7, 753) | 0,000 |
| | | Chi-square | 208,504 | 6 | 0.0000 | 258,634 | 7 | 0,000 |
| 8 | Legalfam01 Political Rank(Time Fixed) | Test Statistic | Value | df | Probability | Value | df | Probability |
| | | F-statistic | 18,503 | (6, 753) | 0.0000 | 30,942 | (7, 753) | 0,000 |
| | | Chi-square | 111,016 | 6 | 0.0000 | 216,593 | 7 | 0,000 |

We can conclude from table 4.20 that in the model including Legal Family and Political Rank the political and cultural indicators are the most significant. Therefore, Political Rank is a better estimator of bilateral FDI stock than Political Difference in combination with the Legal Family variable. These results are robust as they are roughly similar in the time-fixed models.

### 4.1.8 Robustness check

In this section the robustness of the cultural and political variables is checked. A model which best fits the data is identified, after which it will be tested for robustness by dropping a country from the sample each time.

**Table 4.21: Robustness Check**

| Robustness Check | Legal Family 01 Political Rank | | Legal Family Political Rank | | Legal Family 01 Political Difference | | Legal Family 01 Political Rank (Time Fixed) | |
|---|---|---|---|---|---|---|---|---|
| Country | Coefficient | Prob. | Coefficient | Prob. | Coefficient | Prob. | Coefficient | Prob. |
| Australia | -0,010 | 0,000 | -0,007 | 0,002 | -0,024 | 0,000 | -0,009 | 0,000 |
| Austria | -0,010 | 0,000 | -0,006 | 0,003 | -0,024 | 0,000 | -0,009 | 0,000 |
| Canada | -0,009 | 0,000 | -0,006 | 0,003 | -0,024 | 0,000 | -0,009 | 0,000 |
| Denmark | -0,009 | 0,000 | -0,006 | 0,004 | -0,025 | 0,000 | -0,009 | 0,000 |
| Finland | -0,010 | 0,000 | -0,006 | 0,007 | -0,025 | 0,000 | -0,010 | 0,000 |
| France | -0,010 | 0,000 | -0,007 | 0,001 | -0,024 | 0,000 | -0,010 | 0,000 |
| Germany | -0,009 | 0,000 | -0,005 | 0,014 | -0,024 | 0,000 | -0,008 | 0,001 |
| Greece | -0,006 | 0,017 | -0,002 | 0,411 | -0,022 | 0,000 | -0,005 | 0,038 |
| Ireland | -0,011 | 0,000 | -0,006 | 0,003 | -0,023 | 0,000 | -0,010 | 0,000 |
| Italy | -0,017 | 0,000 | -0,014 | 0,000 | -0,032 | 0,000 | -0,017 | 0,000 |
| Japan | -0,007 | 0,004 | -0,004 | 0,073 | -0,021 | 0,000 | -0,006 | 0,010 |
| South Korea | -0,004 | 0,046 | 0,001 | 0,617 | -0,018 | 0,000 | -0,004 | 0,076 |
| Mexico | -0,009 | 0,000 | -0,006 | 0,004 | -0,024 | 0,000 | -0,009 | 0,000 |
| Netherlands | -0,007 | 0,001 | -0,005 | 0,011 | -0,019 | 0,000 | -0,007 | 0,002 |
| New Zealand | -0,010 | 0,000 | -0,007 | 0,000 | -0,024 | 0,000 | -0,010 | 0,000 |
| Norway | -0,009 | 0,000 | -0,006 | 0,004 | -0,024 | 0,000 | -0,009 | 0,000 |
| Poland | -0,011 | 0,000 | -0,007 | 0,001 | -0,027 | 0,000 | -0,010 | 0,000 |
| Portugal | -0,008 | 0,003 | -0,003 | 0,233 | -0,025 | 0,000 | -0,007 | 0,005 |
| Spain | -0,010 | 0,000 | -0,006 | 0,002 | -0,024 | 0,000 | -0,009 | 0,000 |
| Sweden | -0,009 | 0,000 | -0,006 | 0,004 | -0,026 | 0,000 | -0,009 | 0,000 |
| Switzerland | -0,009 | 0,000 | -0,006 | 0,004 | -0,024 | 0,000 | -0,009 | 0,000 |
| Turkey | -0,008 | 0,000 | -0,004 | 0,031 | -0,022 | 0,000 | -0,008 | 0,001 |
| United Kingdom | -0,011 | 0,000 | -0,007 | 0,000 | -0,026 | 0,000 | -0,010 | 0,000 |
| Egypt | -0,012 | 0,000 | -0,005 | 0,019 | -0,030 | 0,000 | -0,012 | 0,000 |
| South Africa | -0,011 | 0,000 | -0,007 | 0,001 | -0,026 | 0,000 | -0,011 | 0,000 |
| Argentina | -0,007 | 0,001 | -0,004 | 0,053 | -0,023 | 0,000 | -0,007 | 0,001 |
| Brazil | -0,009 | 0,000 | -0,006 | 0,002 | -0,026 | 0,000 | -0,009 | 0,000 |
| Chile | -0,010 | 0,000 | -0,007 | 0,001 | -0,024 | 0,000 | -0,009 | 0,000 |
| Venezuela | -0,009 | 0,000 | -0,006 | 0,007 | -0,024 | 0,000 | -0,008 | 0,001 |
| Israel | -0,009 | 0,000 | -0,007 | 0,000 | -0,025 | 0,000 | -0,009 | 0,000 |
| China | -0,010 | 0,000 | -0,007 | 0,001 | -0,023 | 0,000 | -0,009 | 0,000 |
| Hong Kong | -0,009 | 0,000 | -0,009 | 0,000 | -0,024 | 0,000 | -0,008 | 0,001 |
| India | -0,006 | 0,011 | -0,005 | 0,007 | -0,023 | 0,000 | -0,005 | 0,021 |
| Indonesia | -0,010 | 0,000 | -0,010 | 0,000 | -0,025 | 0,000 | -0,010 | 0,000 |
| Malaysia | -0,008 | 0,000 | -0,005 | 0,019 | -0,024 | 0,000 | -0,008 | 0,001 |
| Singapore | -0,011 | 0,000 | -0,009 | 0,000 | -0,024 | 0,000 | -0,010 | 0,000 |
| Thailand | -0,008 | 0,000 | -0,004 | 0,032 | -0,025 | 0,000 | -0,007 | 0,001 |

The total model with Legal Family 01 and political Rank is selected, because this model has the best fit and highest R-squared. Culture's parameter has a value of -0.009, which means that one unit increase, in Euclidean distance, between the US and a partner country, total FDI stock decreases by 0.9% (*Exp(*(-0.009)-1)*100). Besides that Culture is significant, it has a marginal effect on FDI stock between countries. The four models above give roughly the same results; except for the model with Political Difference included, where the parameter of culture is substantially larger. If this model is used the parameter is -0,024, which means that one unit increase in Euclidean distance indicates that FDI stock between US and a partner country decreases by 2.4% (*Exp*((-0.024)-1)*100). So, in combination with political difference instead of political rank, the influence of the cultural variable increases substantially. The outliers of the model, including Legal Family and Political Rank, are the cases when Italy and South Korea are being dropped, which leads to an estimated coefficient

of 0.017 and 0.004 respectively. These estimates result in a decrease of 1.6% and 0.4% FDI stock per unit.

If the total model with legal family 01 and political rank (table 4.6) is selected as the preferred model. The sensitivity of the different political and cultural variables can be calculated. The parameter of legal family 01 is -0.39, which means that belonging to the same legal family decreases FDI stock with 32% (*Exp(*(-0.39)-1)*100). The political rank variable: voice and accountability (VA) has a parameter of 0.0197, which means that a one unit increase in the political rank index indicates that FDI stock increases with 2% (*Exp(*(0.0197)-1)*100).

## 4.2 Discussion

The different models described above tested the impact of cultural and political variables on the magnitude of FDI stock between the US and their trading partners. The models show several significant and robust results for the control variables as well as the explaining variables mentioned in the research question and hypotheses.

Both countries' GDP per capita have proven to be significant and robust in the different gravity models. However, GDP per capita of the trading partner showed a positive sign and GDP per capita of the US showed a negative sign. Meaning that, low GDP per capita of the US and high GDP per capita of the trading partner positively affect FDI growth. The positive sign of the trading partner could be explained by the fact that growth of a country's GDP increases possibilities to invest but also options to invest in. Following this explanation, the negative sign of GDP per capita of the US is remarkable. We can conclude that increasing GDP makes the US more self-centered or inward looking as it decreases bilateral FDI stock. Other papers which use the gravity equation all find a positive sign for GDP per capita, but they do not investigate bilateral FDI stock of the US, they use multilateral flows to test the gravity equation. Therefore, it seems that this observation is typical for the US and could be an interesting subject for new articles.

Population of the US and the trading partners positively affects the magnitude of bilateral FDI stock. This is according theory of the gravity model which states that the size of a country determines for a large part FDI stock. The parameters have proven to be robust and significant.

Border's parameter estimation proved to be less robust. The estimation of its parameter is, in roughly half of the models, significant and in the models in which it is significant renders a positive sign for outward FDI stock and a negative sign for inward FDI stock. However, this shows only after correcting for trade. This is possibly due to FDI being a supplement of trade. As labor costs in the US are high relative to Mexico, the US invest FDI in Mexico to produce its products cheaper after which they are exported to the US. This increases outward FDI stock. In contrary, Mexico will not invest in the US because it can produce cheaper at home and export to the US. This decreases inward FDI stock. Canada is also adjacent to the US but shows a smaller difference between inward and outward FDI stock and thus, has less explaining power.

Distance is roughly in all models significant. The sign is positive in the total and outward FDI models, meaning that the US invests more in distant countries. The sign in the inward stock models is ambiguous.

Language is in all models significant, except for the model including legal family and political difference variables, probably due to correlation effects. In all other models language is significant. Speaking the same language has an unambiguous positive effect on bilateral FDI stock.

The get to the augmented gravity model trade and market capitalization were added. Trade is in all models significant, robust and has an unambiguous positive effect on bilateral FDI stock. Overall, FDI acts as a complement of trade according the gravity model. It is also according theory of familiarity, as trade induces familiarity, which increases bilateral FDI stock. Market Capitalization is also significant and robust, but only for outward FDI. As discussed before market capitalization influences FDI stock to a particular country not from a country.

Regarding the control variables, existing theory and literature is confirmed by this thesis. Only, as mentioned above, the GDP per capita US parameter estimation yields a divergent result. This could be typical for the US and deserves some further investigation. Subsequently, we arrived at the additional explaining variables, which are also represented in our hypotheses. Respectively: culture, legal family, legal family 01, political difference indicators, and political rank indicators.

First, in this empirical study the following hypothesis was tested:

**H1:** Cultural differences have a significant effect on FDI stock between the US and their trading partners.

As explained above culture is together with trade the most robust explaining variable. In all the gravity models culture's parameter has the same magnitude and sign. Only in combination with political difference indicators the effect is approximately twice as large as in combination with political rank indicators. In models explaining political rank culture is slightly less significant probably due correlation effects between culture and political rank. Therefore, based on the results of the regression analysis, **hypothesis one can be confirmed**

To investigate the effect of legal systems on FDI we identified two different variables to test the following hypothesis:

**H2:** Belonging to the same legal family, or particular type of legal family, has a significant effect on FDI stock between the US and their trading partners.

Legal family indicates the type of legal family a country's legal system belongs to. Legal family 01 indicates if a country has the same legal system as the US. Broadly, it can be concluded that both Legal Family and Legal Family 01 are significant, at a 1% significance level, in the models explaining total and outward FDI stock. In contrast, both Legal Family and Legal Family 01 are insignificant in explaining inward FDI stock, with the exception of the models combining political difference indicators and legal family 01. The estimated parameters of the legal factors have the same negative sign in all models and broadly the

same magnitude, concluding that they are rather robust. Obviously, the parameter of legal family 01 is larger, because the input differs between 0 and 1, as the input of legal family differs between 0 and 3. Looking at the fit of the models, in which the legal family variables are represented, legal family has more explaining power; however the difference is very small. So, based on the results of the regression analysis, **hypothesis two can be confirmed,** however only total and outward FDI stock between the US and their trading partners is explained by legal family.

At last we tested political variables to see how they influence FDI stock. Therefore, we identified the following two hypotheses:

**H3:** The quality of the political situation/indicators in a country does not have has/have a significant effect on FDI stock between the US and their trading partners.

**H4:** Differences in political situation/indicators has/have a significant effect on FDI stock between the US and their trading partners.

The total political difference variable, "political", has been added to the augmented gravity model and was tested significant, at a 5% significance level, in explaining outward and total FDI stock. "Political" Showed a positive sign, meaning that countries with a dissimilar political profile can expect more FDI investments from the US than countries with a similar political profile. The total rank variable "politicalr" was also added to the augmented model rendering a parameter with a negative sign, significant at a 1% significance rate. This negative sign means that countries with a low political rank can expect more FDI investments from the US. Taking in mind that US has a rather high average political rank of 85 this corresponds with the "political" variable which shows that dissimilar countries can expect more FDI investments.

Furthermore, in the inward model "politicalr" was significant at a 5% significance rate and showed a positive sign. This means that countries with a high political rank are expected to invest more FDI in the US than countries with a low political rank. The political rank table shows that countries with high rank are mainly developed countries and a low rank corresponds with developing countries. Consequently, our findings correspond with literature

on vertical and horizontal FDI. Vertical FDI usually flows from developed to developing country and horizontal FDI often flows from developed to developed country.

Also, the six different political indicators were added to the gravity model showing substantially more explaining power than the total political variables, both in the form of political difference as in the form of political rank. This could be explained by the fact that different political indicators show different, opposite, signs, which obviously increases explaining power if they are taken separately. Almost all six different political variables have a significant effect on bilateral FDI stock, extensively explained in the paragraph above. When having a closer look at the differences between the political difference and the political rank variables we can see that models including the political rank variables have a better explaining power. Especially, the models including a political indicator in which the US has a low, more average, rank. This means that both countries with a low rank as well as countries with a high rank are very dissimilar from the US. This suggests that political rank has a better explaining power than political difference. Although, political difference is significant in explaining outward FDI stock this could probably be due to the fact that this difference is based on, and correlated with, political rank. Consequently, we could conclude that in explaining the influence of political factors on FDI stock, familiarity does not play any role. But the political difference indicators are significant purely because they are correlated with political rank and not because they explain the "familiarity" element in FDI theory. This could be an explanation why models including political rank indicators have more explaining power, a higher R-squared, than models including political difference indicators. Applying the theory, explained in the theoretical section, on this conclusion we could conclude that the risk of instability is more important than the risk of unfamiliarity.

So, **hypothesis three can be rejected** as political rank has a significant effect on FDI.
**Hypothesis four can be confirmed** because it seems that difference does not explain the significant variables in the model but the fact that difference is correlated with rank explains that the variables are significant.

# 5. CONCLUSION

Foreign direct investment is a major form of international capital transfer and has increased substantially over the last decades as a consequence of rising global economic integration. It has even grown faster than world GDP and merchandise trade even despite of the large drop in world FDI flows at the turn of the millennium. The two-way flow between developed countries still accounts for the largest part of asset trade. Around 80% of total FDI flows are invested between developed countries. Furthermore, inward FDI stock of developing countries has decreased over the last eight years as a percentage of total inward FDI stock. This development is unfavourable for developing countries, as Foreign Direct Investments are regarded as a substantial contributor to international economic integration and development in general. If developing countries want to reverse this trend it is important for governments and companies of these developing countries to know which factor determine bilateral FDI stock. Besides easily changeable factors like interest rates, we have investigated more robust factors, like cultural and political factors. If cultural and political variables can explain the patterns of bilateral FDI stock a country's financial integration depends on it. Our results could be helpful for governments in developing countries to adapt their policy for attracting FDI. The role of cultural and political differences, which is often seen as an interfering factor in realizing global economic integration, has been the subject of many scientific articles

In this thesis I have tried to contribute empirical findings and results to the question as to what way cultural and political factors influence asset trade and in particular FDI. Two main theories could be identified that explain why cultural or political factors affect bilateral asset trade. Firstly, information asymmetries between countries determine the level of investments between those countries. Information asymmetry induces transaction costs which negatively affect bilateral investment flows. Secondly, additional risk that comes with investing in a particular country because of instability. If a political situation in a country is unstable or it has a low quality this will involve extra risk in investing in that country.

The first theory explains the effect of cultural differences on bilateral FDI stock and the results showed that there exists an unambiguous negative effect of cultural difference on FDI stock.

It was expected that the first theory would also explain the difference in legal family between the US and their partner countries. Hence, the estimation of the legal family parameter was significant. However, the models rendered a negative effect of belonging to the same legal family on bilateral FDI stock. So, the type of legal family affects FDI stock, except it has an opposite sign as expected. This might be a next research topic.

Both theories mentioned above could possibly explain the effect of the political situation indicators. However, the results showed that the political rank indicators had more explaining power than the political difference indicators. This suggests that the theory, above, based on political instability is more likely to explain the influence of the political situation on bilateral FDI stock. Although the different indicators show opposite effects they all prove to have a significant effect on FDI. In general, the results show that countries with a low political rank attract more FDI than countries with a high political rank do.

If developing countries should make policy based on the results of this thesis they should aim their policy on countries with similar culture or a different legal family as those countries are more likely invest FDI. Although, on all different political indicators should be anticipated in a different way, they could conclude that political instability does not obstruct FDI, as political instable countries attract more FDI, according the results.

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# APPENDICES

## Appendix 1:

| Appendix 1: Differences in Hofstede's cultural indicators between the US and partner countries | | | | | | |
|---|---|---|---|---|---|---|
| | 2006 | PDI | IDV | MAS | UAI | Total |
| 1 | Australia | 4 | 1 | 1 | 5 | 7 |
| 2 | UK | 5 | 2 | 4 | 11 | 13 |
| 3 | Canada | 1 | 11 | 10 | 2 | 15 |
| 4 | New Zealand | 18 | 12 | 4 | 3 | 22 |
| 5 | Ireland | 12 | 21 | 6 | 11 | 27 |
| 6 | South Africa | 9 | 26 | 1 | 3 | 28 |
| 7 | Switzerland | 6 | 23 | 8 | 12 | 28 |
| 8 | Germany | 5 | 24 | 4 | 19 | 31 |
| 9 | Italy | 10 | 15 | 8 | 29 | 35 |
| 10 | Finland | 7 | 28 | 36 | 13 | 48 |
| 11 | Netherlands | 2 | 11 | 48 | 7 | 50 |
| 12 | Austria | 29 | 36 | 17 | 24 | 55 |
| 13 | France | 28 | 20 | 19 | 40 | 56 |
| 14 | India | 37 | 43 | 6 | 6 | 57 |
| 15 | Denmark | 22 | 17 | 46 | 23 | 58 |
| 16 | Norway | 9 | 22 | 54 | 4 | 59 |
| 17 | Israel | 27 | 37 | 15 | 35 | 60 |
| 18 | Argentina | 9 | 45 | 6 | 40 | 61 |
| 19 | Spain | 17 | 40 | 20 | 40 | 62 |
| 20 | Poland | 28 | 31 | 2 | 47 | 63 |
| 21 | Sweden | 9 | 20 | 57 | 17 | 63 |
| 22 | Brazil | 29 | 53 | 13 | 30 | 69 |
| 23 | Egypt | 40 | 53 | 10 | 22 | 71 |
| 24 | Turkey | 26 | 54 | 17 | 39 | 73 |
| 25 | Japan | 14 | 45 | 33 | 46 | 74 |
| 26 | Hong Kong | 28 | 66 | 5 | 17 | 74 |
| 27 | Thailand | 24 | 71 | 28 | 18 | 82 |
| 28 | Mexico | 41 | 61 | 7 | 36 | 82 |
| 29 | China | 40 | 71 | 4 | 16 | 83 |
| 30 | Indonesia | 38 | 77 | 16 | 2 | 87 |
| 31 | South Korea | 20 | 73 | 23 | 39 | 88 |
| 32 | Singapore | 34 | 71 | 14 | 38 | 89 |
| 33 | Chile | 23 | 68 | 34 | 40 | 89 |
| 34 | Greece | 20 | 56 | 5 | 66 | 89 |
| 35 | Malaysia | 64 | 65 | 12 | 10 | 93 |
| 36 | Venezuela | 41 | 79 | 11 | 30 | 95 |
| 37 | Portugal | 23 | 64 | 31 | 58 | 95 |

## Appendix 2:

**Appendix 2: Rank of political indicators**

| | 2006 | VA | PSNV | GE | RQ | RL | CC | Average |
|---|---|---|---|---|---|---|---|---|
| 1 | **Finland** | 100 | 99 | 99 | 97 | 99 | 100 | 99 |
| 2 | **Switzerland** | 98 | 99 | 99 | 92 | 98 | 97 | 97 |
| 3 | **New Zealand** | 98 | 95 | 95 | 97 | 97 | 99 | 97 |
| 4 | **Denmark** | 100 | 76 | 100 | 99 | 99 | 99 | 95 |
| 5 | **Norway** | 97 | 90 | 98 | 90 | 100 | 97 | 95 |
| 6 | **Sweden** | 95 | 90 | 97 | 93 | 98 | 98 | 95 |
| 7 | **Canada** | 93 | 83 | 97 | 94 | 96 | 94 | 93 |
| 8 | **Ireland** | 96 | 85 | 91 | 99 | 92 | 92 | 93 |
| 9 | **Australia** | 94 | 78 | 96 | 96 | 95 | 95 | 92 |
| 10 | **Netherlands** | 99 | 73 | 96 | 96 | 94 | 96 | 92 |
| 11 | **Austria** | 91 | 83 | 92 | 95 | 97 | 95 | 92 |
| 12 | **Germany** | 95 | 79 | 93 | 93 | 94 | 93 | 91 |
| 13 | **UK** | 96 | 65 | 94 | 100 | 93 | 94 | 90 |
| 14 | **Hong Kong** | 70 | 88 | 93 | 100 | 91 | 93 | 89 |
| 15 | **Japan** | 77 | 86 | 91 | 86 | 90 | 90 | 87 |
| 16 | **Singapore** | 32 | 94 | 100 | 98 | 95 | 98 | 86 |
| 17 | **France** | 92 | 63 | 90 | 85 | 90 | 92 | 85 |
| 18 | **Chile** | 76 | 67 | 84 | 92 | 88 | 91 | 83 |
| 20 | **Portugal** | 91 | 79 | 78 | 82 | 82 | 83 | 82 |
| 21 | **Spain** | 84 | 53 | 80 | 85 | 84 | 83 | 78 |
| 22 | **Greece** | 78 | 63 | 72 | 73 | 71 | 65 | 71 |
| 23 | **South Korea** | 66 | 60 | 86 | 71 | 72 | 68 | 70 |
| 24 | **Italy** | 79 | 60 | 69 | 77 | 60 | 64 | 68 |
| 25 | **Israel** | 73 | 11 | 87 | 80 | 74 | 82 | 68 |
| 26 | **South Africa** | 75 | 46 | 75 | 68 | 59 | 70 | 65 |
| 27 | **Poland** | 71 | 56 | 71 | 70 | 59 | 62 | 65 |
| 28 | **Malaysia** | 31 | 57 | 82 | 66 | 65 | 67 | 61 |
| 29 | **Brazil** | 62 | 41 | 52 | 54 | 45 | 53 | 51 |
| 30 | **Turkey** | 43 | 27 | 63 | 58 | 54 | 60 | 51 |
| 31 | **Mexico** | 51 | 30 | 60 | 62 | 42 | 46 | 49 |
| 32 | **India** | 59 | 19 | 57 | 47 | 58 | 52 | 49 |
| 33 | **Thailand** | 31 | 20 | 65 | 59 | 54 | 51 | 47 |
| 34 | **Argentina** | 57 | 48 | 56 | 24 | 40 | 44 | 45 |
| 35 | **China** | 6 | 36 | 59 | 42 | 43 | 37 | 37 |
| 36 | **Egypt** | 12 | 21 | 33 | 35 | 51 | 38 | 32 |
| 37 | **Indonesia** | 41 | 13 | 43 | 43 | 26 | 23 | 31 |
| 38 | **Venezuela** | 34 | 15 | 23 | 10 | 5 | 15 | 17 |
| 19 | **US** | **86** | **61** | **91** | **94** | **92** | **89** | **85** |

## Appendix 3:

**Appendix 3: FDI stock between the US and trading partners (2006)**

| | Country | Inward | Country | Outward | Country | Outw - Inw | Country | Outw + Inw |
|---|---|---|---|---|---|---|---|---|
| 1 | UK | 303232 | 1 UK | 364084 | 1 Australia | 96860 | 1 UK | 667316 |
| 2 | Japan | 210996 | 2 Canada | 246451 | 2 Canada | 87472 | 2 Canada | 405430 |
| 3 | Germany | 202581 | 3 Netherlands | 215715 | 3 Mexico | 78624 | 3 Netherlands | 405008 |
| 4 | Netherlands | 189293 | 4 Australia | 122587 | 4 UK | 60852 | 4 Japan | 302765 |
| 5 | Canada | 158979 | 5 Germany | 99253 | 5 Singapore | 58005 | 5 Germany | 301834 |
| 6 | France | 158830 | 6 Japan | 91769 | 6 Ireland | 55064 | 6 Switzerland | 230344 |
| 7 | Switzerland | 140259 | 7 Switzerland | 90085 | 7 Hong Kong | 34594 | 7 France | 224763 |
| 8 | Ireland | 28551 | 8 Mexico | 84699 | 8 Spain | 34471 | 8 Australia | 148314 |
| 9 | Australia | 25727 | 9 Ireland | 83615 | 9 Brazil | 30479 | 9 Ireland | 112166 |
| 10 | Sweden | 22287 | 10 France | 65933 | 10 Netherlands | 26422 | 10 Mexico | 90774 |
| 11 | Spain | 14942 | 11 Singapore | 60417 | 11 China | 21674 | 11 Spain | 64355 |
| 12 | Italy | 11883 | 12 Spain | 49413 | 12 Italy | 17053 | 12 Singapore | 62829 |
| 13 | South Korea | 8609 | 13 Hong Kong | 38118 | 13 Austria | 15038 | 13 Sweden | 58225 |
| 14 | Norway | 7835 | 14 Sweden | 35938 | 14 South Korea | 13671 | 14 Hong Kong | 41642 |
| 15 | Finland | 7289 | 15 Brazil | 32601 | 15 Sweden | 13651 | 15 Italy | 40819 |
| 16 | Venezuela | 7246 | 16 Italy | 28936 | 16 Argentina | 12667 | 16 Brazil | 34723 |
| 17 | Denmark | 7209 | 17 South Korea | 22280 | 17 Malaysia | 12018 | 17 South Korea | 30889 |
| 18 | Mexico | 6075 | 18 China | 22228 | 18 Indonesia | 10505 | 18 China | 22782 |
| 19 | Israel | 4500 | 19 Austria | 17405 | 19 Chile | 10081 | 19 Austria | 19772 |
| 20 | Hong Kong | 3524 | 20 Argentina | 13086 | 20 Thailand | 7911 | 20 Venezuela | 18802 |
| 21 | Singapore | 2412 | 21 Malaysia | 12450 | 21 Poland | 7161 | 21 Norway | 18115 |
| 22 | Austria | 2367 | 22 Venezuela | 11556 | 22 India | 6850 | 22 Israel | 14464 |
| 23 | Brazil | 2122 | 23 Indonesia | 10585 | 23 Egypt | 5918 | 23 Argentina | 13505 |
| 24 | India | 2002 | 24 Norway | 10280 | 24 Israel | 5464 | 24 Denmark | 12962 |
| 25 | Greece | 1500 | 25 Chile | 10243 | 25 New Zealand | 5106 | 25 Malaysia | 12882 |
| 26 | South Africa | 652 | 26 Israel | 9964 | 26 Venezuela | 4310 | 26 India | 10854 |
| 27 | New Zealand | 615 | 27 India | 8852 | 27 Portugal | 3183 | 27 Indonesia | 10665 |
| 28 | China | 554 | 28 Thailand | 8217 | 28 South Africa | 3166 | 28 Chile | 10405 |
| 29 | Malaysia | 432 | 29 Poland | 7190 | 29 Norway | 2445 | 29 Finland | 9881 |
| 30 | Argentina | 419 | 30 Egypt | 5911 | 30 Turkey | 1868 | 30 Thailand | 8523 |
| 31 | Thailand | 306 | 31 Denmark | 5753 | 31 Greece | 573 | 31 Poland | 7219 |
| 32 | Turkey | 220 | 32 New Zealand | 5721 | 32 Denmark | -1456 | 32 New Zealand | 6336 |
| 33 | Chile | 162 | 33 South Africa | 3818 | 33 Finland | -4697 | 33 Egypt | 5904 |
| 34 | Indonesia | 80 | 34 Portugal | 3033 | 34 Switzerland | -50174 | 34 South Africa | 4470 |
| 35 | Poland | 29 | 35 Finland | 2592 | 35 France | -92897 | 35 Greece | 3573 |
| 36 | Egypt | -7 | 36 Turkey | 2088 | 36 Germany | -103328 | 36 Portugal | 2883 |
| 37 | Portugal | -150 | 37 Greece | 2073 | 37 Japan | -119227 | 37 Turkey | 2308 |

| Appendix 4: Total FDI Stock Basic Gravity Model; including Explaining Variables Separately | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Coefficient** | **LEGALFAM** | **LEGALFAM** | **TAXRATE** | **TAXTREAT** | **CULTURE** | **POLITICAL** | **VA** | **PSNV** | **GE** | **RQ** | **RL** | **CC** | **POLITICALr** | **VAr** | **PSNVr** | **GEr** | **RQr** | **RLr** | **CCr** |
| **C** | -278,2108 | -253,1675 | -270,3044 | -267,1296 | -245,1721 | -280,6379 | -270,7167 | -277,7514 | -285,8857 | -280,3357 | -277,0115 | -279,4678 | -275,8873 | -250,2487 | -274,4244 | -290,5766 | -276,7858 | -275,3989 | -277,9019 |
| **lnGDPPC** | 0,8664 | 0,6385 | 0,7910 | 0,7974 | 0,5452 | 0,8942 | 0,7971 | 0,8732 | 0,9127 | 0,8891 | 0,8579 | 0,8743 | 0,8505 | 0,5684 | 0,8310 | 0,9855 | 0,8574 | 0,8500 | 0,8763 |
| **lnPOP** | 0,3626 | 0,2598 | 0,3603 | 0,3323 | 0,1507 | 0,3713 | 0,3439 | 0,3990 | 0,3453 | 0,3552 | 0,3486 | 0,3615 | 0,3504 | 0,2537 | 0,3424 | 0,3509 | 0,3482 | 0,3498 | 0,3478 |
| **lnGDPPCUS** | -7,4062 | -6,7464 | -7,0600 | -7,1638 | -6,3214 | -7,5890 | -7,1716 | -7,4346 | -7,8264 | -7,5727 | -7,4681 | -7,5719 | -7,4026 | -6,4107 | -7,3321 | -8,1069 | -7,4473 | -7,4004 | -7,5254 |
| **lnPOPUS** | 27,5570 | 25,1280 | 26,6728 | 26,4883 | 24,3883 | 27,8180 | 26,7897 | 27,4713 | 28,4089 | 27,7991 | 27,4687 | 27,7184 | 27,3698 | 24,6416 | 27,2049 | 29,0642 | 27,4748 | 27,3278 | 27,6214 |
| **BORDER** | -0,3859 | -0,6511 | -0,3935 | -0,4668 | -0,5253 | -0,4261 | -0,4343 | -0,4223 | -0,5210 | -0,3553 | -0,4795 | -0,4963 | -0,4244 | -0,5772 | -0,4394 | -0,4006 | -0,4061 | -0,4368 | -0,4456 |
| **DISTANCE** | -0,0003 | -0,0001 | -0,0002 | -0,0003 | -0,0002 | -0,0003 | -0,0003 | -0,0003 | -0,0002 | -0,0002 | -0,0003 | -0,0003 | -0,0003 | -0,0002 | -0,0003 | -0,0001 | -0,0002 | -0,0003 | -0,0003 |
| **LANGUAGE** | 0,3880 | 1,0876 | 0,6360 | 0,5555 | -0,1055 | 0,5992 | 0,5526 | 0,5872 | 0,6267 | 0,5872 | 0,5956 | 0,5873 | 0,5842 | 0,4496 | 0,5751 | 0,6469 | 0,5940 | 0,5833 | 0,6056 |
| **lnTRADE** | 0,6143 | 0,7492 | 0,6445 | 0,6702 | 0,7694 | 0,6219 | 0,6471 | 0,6114 | 0,6560 | 0,6249 | 0,6399 | 0,6383 | 0,6337 | 0,7599 | 0,6421 | 0,6294 | 0,6357 | 0,6338 | 0,6300 |
| **lnMARKETCAP** | 0,1583 | 0,1950 | 0,1274 | 0,1606 | 0,1443 | 0,1850 | 0,1632 | 0,1766 | 0,1810 | 0,1822 | 0,1825 | 0,1878 | 0,1745 | 0,1355 | 0,1684 | 0,2058 | 0,1762 | 0,1792 | 0,1873 |
| **LEGALFAM** | -0,1222 | | | | | | | | | | | | | | | | | | |
| **LEGALFAM01** | | -0,7098 | | | | | | | | | | | | | | | | | |
| **TAXRATE** | | | 0,0000 | | | | | | | | | | | | | | | | |
| **TAXTREATY** | | | | 0,2599 | | | | | | | | | | | | | | | |
| **CULTURE** | | | | | -0,0155 | | | | | | | | | | | | | | |
| **POLITICAL** | | | | | | 0,0000 | | | | | | | | | | | | | |
| **VA** | | | | | | | 0,0000 | | | | | | | | | | | | |
| **PSNV** | | | | | | | | 0,0000 | | | | | | | | | | | |
| **GE** | | | | | | | | | 0,0000 | | | | | | | | | | |
| **RQ** | | | | | | | | | | 0,0000 | | | | | | | | | |
| **RL** | | | | | | | | | | | 0,0000 | | | | | | | | |
| **CC** | | | | | | | | | | | | 0,0000 | | | | | | | |
| **POLITICALr** | | | | | | | | | | | | | -0,0006 | | | | | | |
| **VAr** | | | | | | | | | | | | | | 0,0099 | | | | | |
| **PSNVr** | | | | | | | | | | | | | | | -0,0023 | | | | |
| **GEr** | | | | | | | | | | | | | | | | -0,0147 | | | |
| **RQr** | | | | | | | | | | | | | | | | | -0,0041 | | |
| **RLr** | | | | | | | | | | | | | | | | | | -0,0036 | |
| **CCr** | | | | | | | | | | | | | | | | | | | -0,0055 |
| **Probability** | **LEGALFAM** | **LEGALFAM** | **TAXRATE** | **TAXTREAT** | **CULTURE** | **POLITICAL** | **VA** | **PSNV** | **GE** | **RQ** | **RL** | **CC** | **POLITICALr** | **VAr** | **PSNVr** | **GEr** | **RQr** | **RLr** | **CCr** |
| **C** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnGDPPC** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnPOP** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnGDPPCUS** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnPOPUS** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **BORDER** | 0,012 | 0,000 | 0,010 | 0,002 | 0,000 | 0,005 | 0,005 | 0,005 | 0,001 | 0,022 | 0,002 | 0,001 | 0,006 | 0,000 | 0,004 | 0,008 | 0,008 | 0,004 | 0,004 |
| **DISTANCE** | 0,001 | 0,100 | 0,024 | 0,003 | 0,087 | 0,004 | 0,002 | 0,002 | 0,027 | 0,014 | 0,004 | 0,001 | 0,003 | 0,053 | 0,003 | 0,196 | 0,010 | 0,003 | 0,003 |
| **LANGUAGE** | 0,000 | 0,000 | 0,000 | 0,000 | 0,311 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnTRADE** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnMARKETCAP** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **LEGALFAM** | 0,006 | | | | | | | | | | | | | | | | | | |
| **LEGALFAM01** | | 0,000 | | | | | | | | | | | | | | | | | |
| **TAXRATE** | | | 0,945 | | | | | | | | | | | | | | | | |
| **TAXTREATY** | | | | 0,034 | | | | | | | | | | | | | | | |
| **CULTURE** | | | | | 0,000 | | | | | | | | | | | | | | |
| **POLITICAL** | | | | | | 0,007 | | | | | | | | | | | | | |
| **VA** | | | | | | | 0,904 | | | | | | | | | | | | |
| **PSNV** | | | | | | | | 0,000 | | | | | | | | | | | |
| **GE** | | | | | | | | | 0,000 | | | | | | | | | | |
| **RQ** | | | | | | | | | | 0,008 | | | | | | | | | |
| **RL** | | | | | | | | | | | 0,026 | | | | | | | | |
| **CC** | | | | | | | | | | | | 0,000 | | | | | | | |
| **POLITICALr** | | | | | | | | | | | | | 0,180 | | | | | | |
| **VAr** | | | | | | | | | | | | | | 0,000 | | | | | |
| **PSNVr** | | | | | | | | | | | | | | | 0,189 | | | | |
| **GEr** | | | | | | | | | | | | | | | | 0,000 | | | |
| **RQr** | | | | | | | | | | | | | | | | | 0,055 | | |
| **RLr** | | | | | | | | | | | | | | | | | | 0,074 | |
| **CCr** | | | | | | | | | | | | | | | | | | | 0,019 |

| Appendix 5: Inward FDI Stock Basic Gravity Model; including Explaining Variables Separately | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Coefficient** | **LEGALFAM** | **LEGALFAM** | **TAXRATE** | **TAXTREAT** | **CULTURE** | **POLITICAL** | **VA** | **PSNV** | **GE** | **RQ** | **RL** | **CC** | **POLITICALr** | **VAr** | **PSNVr** | **GEr** | **RQr** | **RLr** | **CCr** |
| **C** | -321,6443 | -329,2565 | -295,4925 | -325,7753 | -287,4345 | -332,2639 | -315,1827 | -341,3479 | -318,4348 | -331,7444 | -322,3159 | -340,7763 | -313,7144 | -265,5923 | -330,5452 | -315,5794 | -328,9727 | -320,7958 | -321,0125 |
| **lnGDPPC** | 1,7239 | 1,7872 | 1,5128 | 1,7363 | 1,3271 | 1,8208 | 1,6624 | 1,9149 | 1,7024 | 1,8227 | 1,7242 | 1,8717 | 1,6314 | 1,1654 | 1,8090 | 1,6633 | 1,8001 | 1,6995 | 1,7070 |
| **lnPOP** | 0,5363 | 0,5645 | 0,2634 | 0,5689 | 0,2266 | 0,5618 | 0,5031 | 0,6655 | 0,5437 | 0,5495 | 0,5407 | 0,5606 | 0,5285 | 0,3185 | 0,5423 | 0,5433 | 0,5451 | 0,5371 | 0,5414 |
| **lnGDPPCUS** | -9,9681 | -10,1690 | -8,8661 | -9,8527 | -8,8702 | -10,3849 | -9,7488 | -10,6660 | -9,7931 | -10,3751 | -9,9456 | -10,8116 | -9,5608 | -7,9621 | -10,3334 | -9,6289 | -10,2815 | -9,8584 | -9,8762 |
| **lnPOPUS** | 32,1805 | 32,9215 | 29,4357 | 32,4389 | 29,0766 | 33,2800 | 31,5483 | 34,1055 | 31,8209 | 33,2397 | 32,2317 | 34,2241 | 31,2524 | 26,3062 | 33,1564 | 31,4384 | 32,9933 | 32,0354 | 32,0617 |
| **BORDER** | -0,9713 | -0,8965 | -1,2205 | -0,8831 | -1,1073 | -0,9579 | -1,0269 | -0,9372 | -0,9141 | -0,8956 | -0,9354 | -1,1119 | -0,9685 | -1,3095 | -0,9635 | -0,9591 | -0,9353 | -0,9475 | -0,9436 |
| **DISTANCE** | -0,0007 | -0,0007 | -0,0007 | -0,0007 | -0,0004 | -0,0007 | -0,0006 | -0,0007 | -0,0007 | -0,0006 | -0,0007 | -0,0007 | -0,0007 | -0,0003 | -0,0007 | -0,0007 | -0,0006 | -0,0007 | -0,0007 |
| **LANGUAGE** | 0,6335 | 0,4537 | 0,6403 | 0,5833 | -0,5044 | 0,6277 | 0,5725 | 0,6680 | 0,5556 | 0,6226 | 0,5677 | 0,6464 | 0,5085 | 0,3196 | 0,6362 | 0,5368 | 0,6320 | 0,5521 | 0,5569 |
| **lnTRADE** | 0,7799 | 0,7437 | 0,8815 | 0,7132 | 0,9871 | 0,7514 | 0,8157 | 0,6886 | 0,7649 | 0,7514 | 0,7720 | 0,7743 | 0,8004 | 1,0622 | 0,7575 | 0,7769 | 0,7586 | 0,7821 | 0,7777 |
| **lnMARKETCAP** | 0,0210 | 0,0102 | -0,0909 | 0,0249 | -0,0094 | 0,0371 | 0,0081 | 0,0505 | 0,0121 | 0,0374 | 0,0118 | 0,0581 | -0,0079 | -0,0483 | 0,0315 | -0,0026 | 0,0334 | 0,0035 | 0,0065 |
| **LEGALFAM** | 0,0338 | | | | | | | | | | | | | | | | | | |
| **LEGALFAM01** | | 0,1747 | | | | | | | | | | | | | | | | | |
| **TAXRATE** | | | 0,0006 | | | | | | | | | | | | | | | | |
| **TAXTREATY** | | | | -0,7252 | | | | | | | | | | | | | | | |
| **CULTURE** | | | | | -0,0266 | | | | | | | | | | | | | | |
| **POLITICAL** | | | | | | 0,0000 | | | | | | | | | | | | | |
| **VA** | | | | | | | 0,0000 | | | | | | | | | | | | |
| **PSNV** | | | | | | | | 0,0001 | | | | | | | | | | | |
| **GE** | | | | | | | | | 0,0000 | | | | | | | | | | |
| **RQ** | | | | | | | | | | 0,0000 | | | | | | | | | |
| **RL** | | | | | | | | | | | 0,0000 | | | | | | | | |
| **CC** | | | | | | | | | | | | 0,0000 | | | | | | | |
| **POLITICALr** | | | | | | | | | | | | | 0,0012 | | | | | | |
| **VAr** | | | | | | | | | | | | | | 0,0267 | | | | | |
| **PSNVr** | | | | | | | | | | | | | | | -0,0041 | | | | |
| **GEr** | | | | | | | | | | | | | | | | 0,0070 | | | |
| **RQr** | | | | | | | | | | | | | | | | | -0,0039 | | |
| **RLr** | | | | | | | | | | | | | | | | | | 0,0032 | |
| **CCr** | | | | | | | | | | | | | | | | | | | 0,0028 |
| **Probability** | **LEGALFAM** | **LEGALFAM** | **TAXRATE** | **TAXTREAT** | **CULTURE** | **POLITICAL** | **VA** | **PSNV** | **GE** | **RQ** | **RL** | **CC** | **POLITICALr** | **VAr** | **PSNVr** | **GEr** | **RQr** | **RLr** | **CCr** |
| **C** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,001 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnGDPPC** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnPOP** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnGDPPCUS** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnPOPUS** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,001 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **BORDER** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **DISTANCE** | 0,000 | 0,000 | 0,000 | 0,000 | 0,003 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,006 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **LANGUAGE** | 0,000 | 0,003 | 0,000 | 0,000 | 0,001 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,003 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnTRADE** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnMARKETCAP** | 0,597 | 0,800 | 0,020 | 0,526 | 0,799 | 0,368 | 0,840 | 0,195 | 0,764 | 0,363 | 0,779 | 0,145 | 0,850 | 0,203 | 0,434 | 0,950 | 0,417 | 0,934 | 0,879 |
| **LEGALFAM** | 0,591 | | | | | | | | | | | | | | | | | | |
| **LEGALFAM01** | | 0,198 | | | | | | | | | | | | | | | | | |
| **TAXRATE** | | | 0,000 | | | | | | | | | | | | | | | | |
| **TAXTREATY** | | | | 0,000 | | | | | | | | | | | | | | | |
| **CULTURE** | | | | | 0,000 | | | | | | | | | | | | | | |
| **POLITICAL** | | | | | | 0,125 | | | | | | | | | | | | | |
| **VA** | | | | | | | 0,080 | | | | | | | | | | | | |
| **PSNV** | | | | | | | | 0,000 | | | | | | | | | | | |
| **GE** | | | | | | | | | 0,285 | | | | | | | | | | |
| **RQ** | | | | | | | | | | 0,103 | | | | | | | | | |
| **RL** | | | | | | | | | | | 0,591 | | | | | | | | |
| **CC** | | | | | | | | | | | | 0,000 | | | | | | | |
| **POLITICALr** | | | | | | | | | | | | | 0,049 | | | | | | |
| **VAr** | | | | | | | | | | | | | | 0,000 | | | | | |
| **PSNVr** | | | | | | | | | | | | | | | 0,099 | | | | |
| **GEr** | | | | | | | | | | | | | | | | 0,074 | | | |
| **RQr** | | | | | | | | | | | | | | | | | 0,208 | | |
| **RLr** | | | | | | | | | | | | | | | | | | 0,291 | |
| **CCr** | | | | | | | | | | | | | | | | | | | 0,415 |

| Appendix 6: Outward FDI Stock Basic Gravity Model; including Explaining Variables Separately | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Coefficient** | **LEGALFAM** | **LEGALFAM** | **TAXRATE** | **TAXTREAT** | **CULTURE** | **POLITICAL** | **VA** | **PSNV** | **GE** | **RQ** | **RL** | **CC** | **POLITICALr** | **VAr** | **PSNVr** | **GEr** | **RQr** | **RLr** | **CCr** |
| **C** | -275,5272 | -241,9889 | -267,1996 | -255,2779 | -239,5959 | -268,4323 | -257,7762 | -259,3711 | -280,7443 | -273,6211 | -270,6357 | -264,8090 | -273,1086 | -248,2234 | -265,4944 | -286,7496 | -269,1348 | -270,7271 | -273,3399 |
| **lnGDPPC** | 0,7119 | 0,4104 | 0,6123 | 0,5657 | 0,3681 | 0,6506 | 0,5400 | 0,5585 | 0,7272 | 0,6992 | 0,6717 | 0,6097 | 0,7032 | 0,4362 | 0,6174 | 0,8257 | 0,6589 | 0,6871 | 0,7157 |
| **lnPOP** | 0,3146 | 0,1922 | 0,3615 | 0,2603 | 0,1230 | 0,2980 | 0,2620 | 0,2704 | 0,2760 | 0,2908 | 0,2832 | 0,2837 | 0,2927 | 0,2233 | 0,2727 | 0,2831 | 0,2814 | 0,2894 | 0,2825 |
| **lnGDPPCUS** | -6,8763 | -5,9442 | -6,5341 | -6,3660 | -5,7054 | -6,7478 | -6,3056 | -6,3622 | -7,2935 | -6,9620 | -6,8946 | -6,6143 | -6,9735 | -5,9476 | -6,6261 | -7,6684 | -6,8067 | -6,9082 | -7,0503 |
| **lnPOPUS** | 27,1301 | 23,8267 | 26,1906 | 25,1367 | 23,6181 | 26,4160 | 25,3210 | 25,4790 | 27,7581 | 26,9713 | 26,6891 | 26,0539 | 27,0084 | 24,3055 | 26,1564 | 28,6167 | 26,5740 | 26,7692 | 27,0869 |
| **BORDER** | -0,0174 | -0,3304 | -0,0005 | -0,1585 | -0,1884 | -0,1143 | -0,1397 | -0,1221 | -0,2441 | -0,0058 | -0,1974 | -0,1596 | -0,0915 | -0,1982 | -0,1256 | -0,0782 | -0,0758 | -0,1217 | -0,1405 |
| **DISTANCE** | -0,0002 | 0,0000 | 0,0000 | -0,0001 | 0,0000 | -0,0001 | -0,0001 | -0,0001 | 0,0000 | -0,0001 | -0,0001 | -0,0001 | -0,0001 | -0,0001 | -0,0001 | 0,0001 | -0,0001 | -0,0001 | -0,0001 |
| **LANGUAGE** | 0,3795 | 1,2389 | 0,8274 | 0,7243 | 0,2067 | 0,7619 | 0,7153 | 0,7190 | 0,8243 | 0,7707 | 0,7950 | 0,7412 | 0,8003 | 0,6635 | 0,7548 | 0,8506 | 0,7844 | 0,7899 | 0,8202 |
| **lnTRADE** | 0,5254 | 0,6944 | 0,5626 | 0,6227 | 0,6900 | 0,5733 | 0,6083 | 0,5980 | 0,6083 | 0,5628 | 0,5818 | 0,5909 | 0,5591 | 0,6580 | 0,5865 | 0,5722 | 0,5769 | 0,5630 | 0,5620 |
| **lnMARKETCAP** | 0,1101 | 0,1487 | 0,0916 | 0,1148 | 0,1000 | 0,1385 | 0,1120 | 0,1152 | 0,1463 | 0,1481 | 0,1535 | 0,1330 | 0,1487 | 0,0994 | 0,1260 | 0,1832 | 0,1394 | 0,1552 | 0,1659 |
| **LEGALFAM** | -0,2536 | | | | | | | | | | | | | | | | | | |
| **LEGALFAM01** | | -0,6878 | | | | | | | | | | | | | | | | | |
| **TAXRATE** | | | -0,0001 | | | | | | | | | | | | | | | | |
| **TAXTREATY** | | | | 0,3149 | | | | | | | | | | | | | | | |
| **CULTURE** | | | | | -0,0122 | | | | | | | | | | | | | | |
| **POLITICAL** | | | | | | 0,0000 | | | | | | | | | | | | | |
| **VA** | | | | | | | 0,0000 | | | | | | | | | | | | |
| **PSNV** | | | | | | | | 0,0000 | | | | | | | | | | | |
| **GE** | | | | | | | | | 0,0000 | | | | | | | | | | |
| **RQ** | | | | | | | | | | 0,0000 | | | | | | | | | |
| **RL** | | | | | | | | | | | 0,0000 | | | | | | | | |
| **CC** | | | | | | | | | | | | 0,0000 | | | | | | | |
| **POLITICALr** | | | | | | | | | | | | | -0,0015 | | | | | | |
| **VAr** | | | | | | | | | | | | | | 0,0055 | | | | | |
| **PSNVr** | | | | | | | | | | | | | | | -0,0035 | | | | |
| **GEr** | | | | | | | | | | | | | | | | -0,0204 | | | |
| **RQr** | | | | | | | | | | | | | | | | | -0,0064 | | |
| **RLr** | | | | | | | | | | | | | | | | | | -0,0081 | |
| **CCr** | | | | | | | | | | | | | | | | | | | -0,0103 |
| **Probability** | **LEGALFAM** | **LEGALFAM** | **TAXRATE** | **TAXTREAT** | **CULTURE** | **POLITICAL** | **VA** | **PSNV** | **GE** | **RQ** | **RL** | **CC** | **POLITICALr** | **VAr** | **PSNVr** | **GEr** | **RQr** | **RLr** | **CCr** |
| **C** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnGDPPC** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnPOP** | 0,000 | 0,000 | 0,000 | 0,000 | 0,006 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnGDPPCUS** | 0,000 | 0,001 | 0,000 | 0,000 | 0,001 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,001 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnPOPUS** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **BORDER** | 0,912 | 0,036 | 0,997 | 0,319 | 0,224 | 0,471 | 0,388 | 0,442 | 0,122 | 0,971 | 0,214 | 0,316 | 0,563 | 0,218 | 0,428 | 0,610 | 0,633 | 0,440 | 0,371 |
| **DISTANCE** | 0,053 | 0,987 | 0,844 | 0,217 | 0,794 | 0,217 | 0,201 | 0,175 | 0,773 | 0,564 | 0,287 | 0,137 | 0,274 | 0,476 | 0,213 | 0,380 | 0,462 | 0,289 | 0,257 |
| **LANGUAGE** | 0,000 | 0,000 | 0,000 | 0,000 | 0,061 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnTRADE** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **lnMARKETCAP** | 0,000 | 0,000 | 0,003 | 0,000 | 0,001 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,001 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| **LEGALFAM** | 0,000 | | | | | | | | | | | | | | | | | | |
| **LEGALFAM01** | | 0,000 | | | | | | | | | | | | | | | | | |
| **TAXRATE** | | | 0,018 | | | | | | | | | | | | | | | | |
| **TAXTREATY** | | | | 0,013 | | | | | | | | | | | | | | | |
| **CULTURE** | | | | | 0,000 | | | | | | | | | | | | | | |
| **POLITICAL** | | | | | | 0,021 | | | | | | | | | | | | | |
| **VA** | | | | | | | 0,553 | | | | | | | | | | | | |
| **PSNV** | | | | | | | | 0,906 | | | | | | | | | | | |
| **GE** | | | | | | | | | 0,000 | | | | | | | | | | |
| **RQ** | | | | | | | | | | 0,000 | | | | | | | | | |
| **RL** | | | | | | | | | | | 0,000 | | | | | | | | |
| **CC** | | | | | | | | | | | | 0,024 | | | | | | | |
| **POLITICALr** | | | | | | | | | | | | | 0,001 | | | | | | |
| **VAr** | | | | | | | | | | | | | | 0,008 | | | | | |
| **PSNVr** | | | | | | | | | | | | | | | 0,059 | | | | |
| **GEr** | | | | | | | | | | | | | | | | 0,000 | | | |
| **RQr** | | | | | | | | | | | | | | | | | 0,005 | | |
| **RLr** | | | | | | | | | | | | | | | | | | 0,000 | |
| **CCr** | | | | | | | | | | | | | | | | | | | 0,000 |