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International Bachelor Economics & Business Economics

The effect of corruption on vertical foreign direct investment of US corporations'

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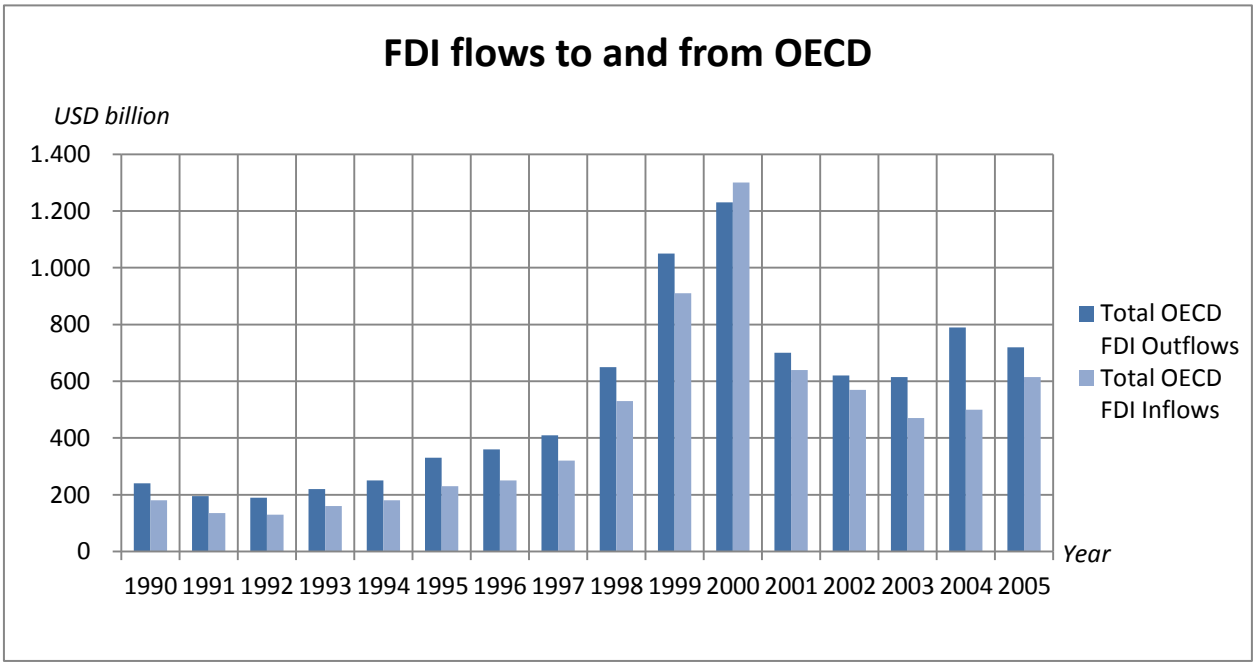
1. Introduction

Increasing globalization has aided in augmenting trade levels in the world today. More and more corporations have started to identify the benefits of differing relative factor endowments in various geographies. By adopting the industrial organization approach to trade, general equilibrium trade models have been extended by incorporating features such as increasing returns to scale, imperfect competition etc., thus forming an extension to the general trade theory. These new models present the scale and the direction of trade, as an interaction of country specific factors such as relative natural resource endowment, relative trade costs etc. and industry specific factors such as requirement for factor intensities and benefits of scale economies (Carr, Markusen, & Maskus, 2001). Such models best explain activities of multinational companies looking to establish themselves in various geographies around the world.

Developments over the years have shown that other factors should also be integrated into these trade models; corruption is one such factor. In recent times this factor has been coming up time and again as a grave threat to ethical business practices. A 2012 survey by Ernst & Young illustrated that 15% of senior executives polled at multinational companies said that they were willing to make cash payments to improve business. This stands significantly higher than the 9% recorded in 2010 (Ernst & Young, 2012) The very recent *Wal-Mart* case where this American multinational has been accused of bribing officials in Mexico for a speedy expansion of their stores in the country, stands as evidence that corruption continues to effect multinational operations (Latin Business Chronicle, 2012). Many other such evidences prove that corruption is indeed a factor that effects management decision of organizations especially when it comes to establishing multinational activity choices.

In essence all multinational activity falls under two broad categories 'horizontal' and 'vertical'. Under horizontal multinational activity, corporations make foreign direct investments (FDI), to set up facilities in countries outside the host country that essentially duplicate the activities of the facilities already established in the host country. On the other hand, vertical multinational activity is defined as foreign direct investment by corporations to locate stages of the production process to facilities outside the host country (Glass, 2011). These could then be sold back to facilities in the host country to be assembled into the final product offering.

FDI is not a recent phenomenon; it has been recognized early by OECD countries to be crucial for development. While the levels were relatively low in the early 1990's, towards the second half of the decade the levels had picked up significantly with the peak in 2000. The dip experienced in the years 2001- 2003 is due to the poor economic climate of the time. FDI trails economic growth, thus with the economic crisis in the time, a lower FDI activity in OECD countries was observed. The levels however picked up soon. Moreover OECD countries have been predominant as exporters of direct investment (also shown in the figure below). In the year 2005, net outflows of FDI stood at around $112 billion. Although lower than $294 billion of 2004, this is still a significant amount (OECD, 2006).



Source: (OECD, 2006)

The major beneficiaries of FDI activity have been developing countries who had reaped significant benefits in the past two decades. FDI has taken the position of being the primary source of financial capitals into these developing economies. This large expansion took place in two areas, namely Mergers and Acquisitions and Greenfield investments. Though developed countries still continue to attract a higher share of FDI than developing countries, the increase in flows to developing countries is higher than those to the developed. For instance while FDI flows to developing countries comprised of 25.5% in the years 1982 – 1987, this number increased significantly to 31.1% in the 1994-1999 period. Furthermore, in relative terms FDI plays a more important role in the development of developing countries in comparison to its role in the development of the developed countries. Data shows that Inward FDI stocks of

developing countries in 1998 amounted to 20 percent of their GDP, compared to 12 percent in developed countries (Nunnenkamp, 2002).

Theoretical works in the field of multinational activity and foreign direct investments often focus on horizontal FDI. Works by Horstmann and Markusen (1987, 1992), Markusen and Venables (1996, 1997, 1998) etc. have been tested to obtain results that support theoretical models of horizontal FDI. However, very little research has been done with respect to vertical multinational activity. Having established that these models comprise of interaction effects between country specific and industry characteristics, research into the interaction effects specific to vertical FDI has great potential to fill this gap in empirical research.

In studying the interaction effects between country specific and industry specific characteristics, corruption as a country specific characteristic offers interesting study opportunities. Corruption includes practices such as bribery, extortion, influence, fraud, and embezzlement. However we are concerned with a definition of corruption that effects multinational activity by possible increasing costs of investment or operations. In this context, in this paper corruption is defined as "the arrangement that involves an exchange between two parties which (1) has an influence on the allocation of resources either immediately or in the future; and (2) involves the use or abuse of public or collective responsibility for private ends" (Macrae, 1982: 678).

Studies show corruption as both an opportunity as well as a threat for foreign direct investments. Corruption has a negative effect on factors such as investment and economic growth, quality of infrastructure and productivity of public investment, health care and education services, and income inequality (Al-Sadig, 2009). All these factors are important characteristics influencing the decision of corporations when deciding to set up facilities in particular countries. Corruption also possesses opportunities in the sense that in countries with inefficient bureaucracy and rigid regulations, corruption acts as a means of fastening the decision making time of bureaucratic employees (Bardhan, 1997).

Problem Setting

Undoubtedly multinational activity can be explained best within an industrial organization approach to trade. Moreover models have been extended to beyond the neoclassical trade model. With the distinction between horizontal and vertical multinational activity already established, previous studies have proven theories established in support of horizontal multinational activity. However not a sufficient amount has been done with respect to multinational activity of a vertical nature. With the growing importance of multinational firms in the present economic environment, an understanding of all forms of multinational activity becomes essential. Moreover, though significant investments by multinationals of a horizontal nature are currently observable, it is not to say that this will not change. A study of this topic can provide insights that enable a more complete understanding of the interaction effects between industry specific and country specific factors mentioned earlier in the industrial organization model.

This paper will thus study the effect of corruption on vertical multinational activity. By means of an econometric analysis the nature and the magnitude of the effect of corruption on vertical FDI will be investigated. To do so multinational activities of US corporations in particular are being studied. With the US still being a big trading partner in the world economy and the presence of US corporations around the globe, a study of these companies possess the advantage of studying major players in this context. Additionally the extensive nature of the database available for US corporations allows for making a distinction between horizontal and vertical multinational activity. This paper will thus discuss *'The effect of corruption on vertical foreign direct investment of US corporations'*.

In attempting to discuss the above mentioned problem statement, following this introduction a literature review will be presented where contributions made by existing research and studies to the topic will be presented. As mentioned earlier, due to the fact that not much research has been done with respect to vertical FDI, a lot of the literature reviewed may be in the context of total FDI. A mix of both generic studies and studies specific to the US will be presented. Then a research design will be presented where the nature of a panel data analysis is used to answer the above presented problem statement along with any control variables are presented. Then a discussion of the actual study method will take place where an in depth view of how the study will be carried out will be produced. Along with it, an extensive overview of the sources used to find the required data to carry out the analysis will be shown. Following this the results of the study will be presented and analyzed, followed by a brief conclusion.

2. Literature Research

Similar research has been done in the past and each presents a different idea of the relationship between corruption and FDI. The paper 'Impact of corruption on foreign direct investment and tax revenues' by K.W Ketkar, S.L Ketkar and Murtuza (2005) studies the relationship between Corruption Perceptions Index (CPI) by Transparency International and foreign direct investment (FDI) by investigating 54 developing and developed countries. In this paper corruption is extended beyond bribery and extortion which requires an involvement of two parties to also include fraud that a public official can carry out alone. Moreover it incorporates the idea that first world countries have a hand in the high corruption levels of third world countries, by being the bribe givers. FDI is determined in the sense of total foreign affiliates of transitional corporations.

The model discussed in the paper mentioned above assumes an impact of additional factors on FDI namely trade *openness of the economy*, *size of the government* derived from the general government expenditure as a percent of atlas GDP, *level of wage* cost determined by two proxies: per capita income is US $ and wage rate in manufacturing, *corporate tax* defined as the highest marginal corporate tax rate in the host country and *prevalence of capital controls* which is a dummy variable adjusted according to control on FDI inflows and the liquidation of these investments. Results of this regression analysis show a statistically significant reduction in flows of FDI to a host country on perceptions of a high level of corruption. More specifically, a three point improvement in the Corruption Perception Index value of a host country i.e. a reduction in the perception of its corruption level, leads to a 1.5% rise in FDI as a percentage of its PPP adjusted CPI. Thus there is a significant positive relationship between improvement in CPI and the level of FDI.

Research done specifically with respect to a particular country in this area may provide a better insight into if there are any additional corruption related factors, that also effect vertical FDI. In this regard, 'Economic institutions and FDI location choice: Evidence from US multinationals in China' by Du, Lu and Tao (2008) investigates the impact of institutional factors in various region's in China on FDI from US multinationals to those areas. In doing so, data of 6228 US multinationals investing in various regions in China for the period of 1993–2001 was used. The paper introduces the idea that growth of transitional economies such as that of China could be credited to FDI. However in such economies, investment returns, which are the major factor that drive FDI, depend on property rights (the vertical relations

between the state and owners of private properties) and contract enforcement (the horizontal relations between transacting parties) amongst others.

In the paper under discussion above, a regression analysis approach is used with factors intellectual property rights protection measured by the logarithm of *the number of approved patents per capita, government intervention in business operations* defined as the proportion of entrepreneurs requesting government help in case of business disputes in each region , *Government corruption* constructed from the question 'Is it necessary to have stricter policies against government corruption in your region?' and *contract enforcement* dependent on the question 'will you use courts to resolve business disputes?'. These questions were asked in the *Survey of China's Private Enterprises*, which forms the major source of data in the study. Other control variables of the model are *agglomeration* measured by the ratio of the number of firms in the same region and same 4-digit industry to the national total of the same 4-digit industry and *regional characteristics as control variables*. The analysis results shows that 'US multinationals prefer to invest in those regions of China that have a better protection of intellectual property rights, a lower degree of government intervention in business operations and a lower level of government corruption, suggesting the importance of property rights protection in determining the location of FDI.' Results thus show a negative relationship between level of corruption in the particular region of China and FDI from US corporates. This article therefore establishes the idea that corruption does play an important role even when investing in successful transitional economies.

Not only is corruption an important factor but differences in corruption levels between countries plays a role. 'Corruption and Foreign Direct Investment' by Habib and Zurawicki (2002) takes a dual approach to assessing the impact of corruption on FDI by first assessing the effects of the host country's corruption level on FDI and then examining the effect of the difference between the corruption levels of the host and home country by using aggregate FDI levels and analyzing data from the year 1996 to 1998 for a range of countries. An OLS regression model is used to test the absolute effects of corruption on FDI while a PROBIT model is used to test the relative effects. The control variables of the first model include *population*, *GDP growth* and *GDP/capita* to test the consumption potential of the local market, *Trade/GDP ratio* to test the country's export orientation, *Political stability* by using the Political risk index, *Country level unemployment* figures used as a proxy for labor availability, *country ratings for science and technology* from the World Competitiveness Yearbook and finally *cultural* and *geographical* distance. The second model also used the same variables by taking the difference in the values for each of the host and

home countries. The study shows a negative effect of corruption on FDI supporting the previous mentioned idea of corruption as a barrier to investment. Additionally, a negative effect as a result of the difference in corruption levels between the home and host countries was found further emphasizing the previously mentioned idea. In the context of vertical FDI, it is also interesting to note that the study showed a marginally significant relationship between the host country's export orientation measured by *Trade/GDP* and FDI

A contrasting idea is presented by Egger and Winner (2005) in 'Evidence on corruption as an incentive for foreign direct investment' where corruption is defined as the misuse of power by public officials for private gains (Bardhan, 1997), effecting economic development and is a characteristic of low-income countries. This study extends on previous research on the impact of corruption on FDI by first analyzing the short and long run impact of corruption on inward FDI by utilizing data between 1995 and 1999 of 73 (developed and less developed) host countries, covering more than 90% of the world's inward FDI. It attempts to distinguish grabbing hand and helping hand effects on corruption in the context of FDI. In doing so variables such as *proximity to the market* that determines horizontal multinational FDI and *low-high skilled labor ratio* that determine its vertical counterpart are used, amongst many others. Statistical analysis of the data shows that corruption is a stimulus for FDI and can be beneficial in circumventing regulatory restrictions supporting the existence of a helping hand type of corruption with regard to foreign investment. Moreover the study illustrates that 'the change in perceived corruption in the long run may account for up to 40% of the observed overall FDI growth between 1995 and 1999.' Thus this paper introduces a new idea that corruption has a positive effect on FDI.

A similar helping hand idea of corruption is discussed in 'How Corruption Influences Foreign Direct Investment: A Panel Data Study' by Egger and Winner (2006) by using a panel data approach. The article discusses the impact of corruption in a panel of bilateral outward FDI stocks of 21 OECD countries in 59 OECD and non-OECD economies between 1983 and 1999 allowing a study across countries of different size, development and over the course of years. This is done by regressing bilateral stocks of outward FDI on corruption and other economic controls. These variables are adopted from the general trade model of multinationals, the knowledge-capital model. Results of the study suggest that marginal impact of corruption is not identical across economies. Corruption seems to be an important factor for intra-OECD FDI, but less relevant OECD economies' FDI in non-OECD member countries. A reason for this is the horizontal nature of FDI in the OECD countries but a vertical nature in the developing economies. Since

differences are relatively low within the OECD, small increase in perceived corruption could change FDI decisions. In contrast, due to the low wages of non-OECD economies and a lack of regulatory impediment with corruption opportunities, a small increase in corruption is insufficient to significantly reduce the specialization gains from vertical FDI, forming a case for the helping hand phenomenon of corruption.

Very evidently previous research presents differing findings and evidence. While some show that there is a negative effect between corruption levels and FDI, others test for a positive effect. However a commonality amongst all previous research is that FDI is defined as total FDI. As foreign direct investment however can be broadly defined as horizontal and vertical FDI, no earlier research manages to make this distinction. This paper will thus make this distinction and look the effect of corruption on foreign direct investment specifically of a vertical nature. Moreover most studies take a very broad approach to studying the relationship. In contrast, this paper will look specifically at vertical foreign direct investment of US firms.

3. The Model

Going with Markusen's (1995) definition of multinational firms as entities that engage in foreign direct investment, these foreign direct investment activities can take several forms. Multinational firms may set up production facilities in foreign affiliates from scratch of acquire a controlling share in a firm situated in a foreign affiliate. Any such activity can further be classified as being of a horizontal or vertical form. This study will specifically discuss vertical FDI activities of firms. US multinational firm activities will be looked at specifically and multinational activity is defined as any investments by US corporations in foreign subsidiaries that secure them a controlling interest in the foreign entity.

In understanding vertical FDI decisions of multinationals, it is important to consider multinational activity as a whole to identify factors that distinguish the activities as falling under either horizontal or vertical activity. When engaging in horizontal multinational activity, firms continue to have headquarters in the the parent country, i.e. the US, and operate facilities in affiliate countries. The foreign affiliates essentially carry out the same production purposes as those in the US. The trade-off between trade costs and fixed costs on plant level is the major determinant of horizontal multinational activity (Markusen, 1984). Thus if trade costs were so high that fixed costs of setting up in affiliate countries are more than offset by savings made on trade costs, firms engage in horizontal multinational activity. Simply put, if trade costs are high

and the host country is relatively large, multinational firms engage in horizontal FDI (Markusen & Venables 1998).

Additionally Markusen & Venables (1998) suggest that horizontal multinational activity tends to dominate when total world income is high. The size of the foreign market plays a major role. Given that the foreign market is relatively small, then the benefit of lower fixed costs due to no costs associated to setting up production facilities abroad may not exceed to costs of transportation. On a macro level, when total world income is high and world market grows, firms have an incentive to participate in horizontal FDI.

Moreover along with differences in the relative sizes of the countries, differences in relative factor endowments also play a role in multinational activity choices. The model essentially aims to study how multinational organizations can optimally serve a foreign market without simply having the sole purpose of reducing production costs. Basic intuition arises from the fact that in horizontal multinational activity models, in each production location, the factors necessary for production are used in the same proportions, firstly with respect to fixed costs associated to each single plant as well as to the firm as a whole, and secondly with respect to marginal production costs (Markusen, 2002). By this logic horizontal multinational activity increases when relative factors of production are similar.

In summary horizontal multinational activity dominates other forms of business structures when total world income is high, when trade costs are relatively high, and when the two countries are relatively similar in factor endowments and thus factor prices, shown by per capita data.

Vertical horizontal activity sores under conditions that pose some similarities as well as differences. The relative advantage of vertical FDI lies in cases where factor prices are unequal. If there is a relative abundance of skilled labor in the foreign country in comparison to the home country, then by setting up production facilities in the foreign country corporations can take advantage of this higher skill ability in the foreign country. This has a particular impact on vertical FDI as firms can locate headquarters where skilled labor is cheap and the plant where unskilled labor is cheap. As this differentiation does not exist with horizontal multinational activity, vertical FDI dominates in this case (Markusen & Venables 1998). In our study this is measured using the *skilled labor difference* variable.

In this context, results from the study by Egger and Winner (2005), suggest that there exists a positive and statistically significant relationship between secondary school enrolment and inward FDI. This is also in line with the model presented by Markusen & Venables (1998). The variables *skilled labor difference* and *secondary school enrolment* both essentially present the availability of skilled labor to carry out manufacturing etc. which forms the activities of a majority of vertical FDI. Thus a similar result should be expected in this study too. Moreover the results in Egger and Winner also suggest that multinationals do their high-skilled labor intensive production and research in the developed countries and locate their low-skilled labor intensive production stages in countries, where low-skilled labor costs are low.

By this logic, vertical FDI is more prominent when differences in relative factor endowments exist, and when relative prices of certain factors are lower in foreign countries. Thus a *GDP pc difference* variable is used to not only measure development levels of a country but also as a reflection of differences in relative factor endowments across countries. This can thus be a means to explain the Heckscher-Ohlin model of trade between countries. However when two countries are too different with respect to these relative factor endowments, i.e if one country is much more developed than the other, then there is less incentive to trade. This is essentially what the *GDP pc difference squared* variable captures.

Habib and Zurawici's 2005 paper, in order to study the impact of corruption on FDI, also takes GDP per capita as a control variable. Its results suggest a statistically significant impact of GDP per capita on levels of vertical FDI. Additional models in the same study that take absolute differences in GDP per capita values also result in a statistically significant relationship. Moreover while the GDP per capita variable takes a positive coefficient, the absolute difference in GDP per capita variable takes a negative one. Thus the results of this study support the above suggested hypothesis.

At the same time, firms face a trade-off between low production costs in affiliate countries and the costs associated with getting the production back to the host country. Thus in all cases where the benefit of relatively cheap factor availability in foreign countries exceeds the costs of transporting the production back to the host country, vertical FDI dominates horizontal FDI. In our study this is shown using the *Distance* variable. In the paper by Habib and Zurawicki (2005), distance is tested as a control variable. Results show a statistically significant impact of distance on FDI. Moreover the coefficient takes a negative sign illustrating that as distance increases, level of vertical FDI decreases.

Although intuition suggests that the size of the market in the host country should not play a role in vertical FDI decisions of multinational organization Markusen (2002) suggests otherwise. The production that takes place in affiliate countries can also be sold in substantial amounts to those local markets. Thus having a large foreign market plays a role. This is captured using the two GDP variables *GDP sum* and *GDP difference squared*.

Trade cost difference and *Investment cost difference* both recognize the relative challenges to trade and business posed by foreign countries. Differences in trade costs amongst countries play a role in corporations choosing certain countries for trade. If strict regulations exist with respect to trading between countries then there will be a decrease in vertical FDI. As it becomes more difficult to export the production from foreign countries to the home country, the benefit of avoiding these costs may be higher than the costs of sacrificing benefits that could be reaped from factors such as relative factor differences. Similarly if costs of setting up production facilities in foreign countries are high, firms have less incentive to do so, thus there is a reduction in both horizontal and vertical FDI. Habib and Zurawicki (2005) study the impact of restrictions to trade on FDI. This is namely done by the variable trade/GDP. This essentially studies the same effect as the one studied by *Trade cost difference* in this study. Results show a marginally significant impact. Moreover the coefficients also take a positive sign illustrating that as restrictions decrease, FDI increases. Furthermore the effect of absolute differences in trade restrictions is also studied. This follows a similar pattern to the above results, however the coefficients are more statistically significant.

Having identified the control variables, the impact of the corruption on vertical multinational decisions of US corporations completes the model. In this study, this is shown using the *CPI* variable. The existing literature, as discussed above, presents a diverse set of predictions with respect to how corruption would effect multinational activity. Based on some previous studies, it is evident that corruption or corruption perception effects vertical multinational activity negatively. This essentially stems from the perception that corruption poses a threat to property rights, which adversely affect the profitability of foreign multinationals. The fear of potential losses as a result of insufficient property rights makes countries with high levels of corruption undesirable for vertical multinational activity. Other studies present corruption as a stimulus for FDI. Through something of a 'helping hand' mechanism, the presence of corruption presents an opportunity to overcome regulatory restrictions posed by governments. This stands beneficial as it ensures a profitable operation of multinationals in these affiliate countries. Given the

presence of evidence to support both the above mentioned views, predicting the absolute effect of corruption on vertical multinational activities of US corporations becomes challenging.

In short, vertical FDI is expected to be the dominant when relative factor endowments of countries differ. More specifically this occurs when the host country is relatively unskilled-labor-abundant, and when trade costs are low. Moreover though intuition suggests that the size of the host country's market does not effect vertical FDI choices, Markusen (2002) suggests otherwise. It is illustrated in his work that multinational organizations sell substantial amounts of their output in the foreign markets where facilities are located, given the market is large enough.

Having identified the set of independent variables for the regression analysis, now the dependent variables will be established. The sales values of the foreign affiliates established through FDI are used as the dependent variables. However we will make a further distinction between all the different forms of sales of these foreign affiliates. By solely looking at sales of foreign affiliates leads to a wrong analysis as they are not specific to vertical FDI. To make this distinction three different measures are taken. These are namely total sales of foreign affiliates to the local markets, to the US and to US parent corporations, represented in this study by the variables *Total sales local*, *Total sales to US* and *Total sales to US parents*. In this way, this study goes beyond the surface to analyze in more detail different facets of foreign investments. It also recognizes that there may be differences in characteristics that effect different forms of activities of multinationals. An analysis of which independent variables have a significant relationship with these 3 dependent variables will produce interesting analysis opportunities to answer the problem statement. It provides a platform to compare for instance the effects of corruption on sales of these foreign affiliates to the parent company with sales within the host country. Thus more can be said about the nature of the effects of corruption.

3.1 Central regression equations

3 sets of regression equations will be estimated for this study each set with a different independent variable.

Regression equations i- iv – horizontal multinational activity:

(i) Total sales local = $GDP\ sum_{it} + GDP\ difference\ squared_{it} + GDP\ pc\ difference_{it} + GDP\ pc\ difference\ squared_{it} + Distance_i$

(ii) Total sales local = $GDP\ sum_{it} + GDP\ difference\ squared_{it} + GDP\ pc\ difference_{it} + GDP\ pc\ difference\ squared_{it} + Distance_i + investment\ cost\ difference_{it} + trade\ cost\ difference_{it}$

(iii) Total sales local = $GDP\ sum_{it} + GDP\ difference\ squared_{it} + GDP\ pc\ difference_{it} + GDP\ pc\ difference\ squared_{it} + Distance_i + trade\ cost\ difference_{it} + CPI_{it}$

(iv) Total sales local = $GDP\ sum_{it} + GDP\ difference\ squared_{it} + Distance_i + investment\ cost\ difference_{it} + trade\ cost\ difference_{it} + skilled\ labor\ difference_{it} + CPI_{it}$

The variable *Total sales local* represents the sales of foreign affiliates to the local market as a ratio of their total sales.

Regression equations v - viii – vertical multinational activity:

(v) Total sales to US = $GDP\ sum_{it} + GDP\ difference\ squared_{it} + GDP\ pc\ difference_{it} + GDP\ pc\ difference\ squared_{it} + Distance_i$

(vi) Total sales to US = $GDP\ sum_{it} + GDP\ difference\ squared_{it} + GDP\ pc\ difference_{it} + GDP\ pc\ difference\ squared_{it} + Distance_i + investment\ cost\ difference_{it} + trade\ cost\ difference_{it}$

(vii) Total sales to US = $GDP\ sum_{it} + GDP\ difference\ squared_{it} + GDP\ pc\ difference_{it} + GDP\ pc\ difference\ squared_{it} + Distance_i + trade\ cost\ difference_{it} + CPI_{it}$

(viii) Total sales to US = $GDP\ sum_{it} + GDP\ difference\ squared_{it} + Distance_i + investment\ cost\ difference_{it} + trade\ cost\ difference_{it} + skilled\ labor\ difference_{it} + CPI_{it}$

The variable *Total sales to US* represents the sales of foreign affiliates to the US as a ratio of their total sales.

Regression equations ix - xii – vertical multinational activity:

(ix) Total sales to US parents = $GDP\ sum_{it} + GDP\ difference\ squared_{it} + GDP\ pc\ difference_{it} + GDP\ pc\ difference\ squared_{it} + Distance_i$

(x) Total sales to US parents = $GDP\ sum_{it} + GDP\ difference\ squared_{it} + GDP\ pc\ difference_{it} + GDP\ pc\ difference\ squared_{it} + Distance_i + investment\ cost\ difference_{it} + trade\ cost\ difference_{it}$

(xi) Total sales to US parents = $GDP\ sum_{it} + GDP\ difference\ squared_{it} + GDP\ pc\ difference_{it} + GDP\ pc\ difference\ squared_{it} + Distance_i + trade\ cost\ difference_{it} + CPI_{it}$

(xii) Total sales to US parents = $GDP\ sum_{it} + GDP\ difference\ squared_{it} + Distance_i + investment\ cost\ difference_{it} + trade\ cost\ difference_{it} + skilled\ labor\ difference_{it} + CPI_{it}$

The variable *Total sales to US parents* represents the sales of foreign affiliates to their parent companies in the US as a ratio of their total sales.

Based on the theories discussed under the section "The Model", the table below shows predictions made with respect to the signs that the coefficients in each of the regression equations would take.

	Total sales local	Total sales to US	Total sales to US parents
Intercept	No prediction	No prediction	No prediction
GDP Sum	Positive	Negative	Negative
GDP difference squared	Negative	Positive	Positive
GDP pc difference	Negative	Positive	Positive
GDP pc difference squared	Negative	Positive	Positive
Distance	Positive	Negative	Negative
Skilled labor	Positive	Positive	Positive
Investment costs difference	Negative	Negative	Negative
Trade costs difference	Positive	Negative	Negative
CPI	Ambiguous	Ambiguous	Ambiguous

In this study, data for the estimation of regression equations is formed by a panel of observations for the 40 largest trading partners of the US over the period 1999 to 2008. These 40 countries that experience the most vertical FDI from US corporations, are determined based on the total sales values of FDI setups established in affiliate countries by American multinationals. The total sales values of all majority earned

US affiliates in the year 1999 (the first year of the panel) are used to identify the top 40 countries with the highest total sales. Data is then obtained for these 40 countries over the given time period.

3.2 Data Sources

Data for the vertical activity of multinational firms in the US is published by the US Department of commerce[1]. Annual data of the sales of majority owned non-bank foreign affiliates of US parent companies are used as a measure of vertical foreign direct investment activity. These are in fact the sales volume of nonbank manufacturing US affiliates in each country which stands as an indication of total production activity. As mentioned earlier, activity of vertical foreign direct investment is specifically identified by distinguishing the various activities of foreign affiliates.

First a ratio indicating the sales of goods produced by the foreign affiliates to the local market in comparison to the total sales of goods of these affiliates is calculated. This is represented by *Total sales local* variable. Data is obtained from the database of the *Bureau of Economic Analysis* from the *US Department of Commerce*. The same source is used to find data for the variable *Total sales to US*, defined as the ratio of total sales of the affiliate to the US to the total sales of the affiliate worldwide. Finally the *Total sales to US parents* ratio is introduced, which measures the ratio of total sales of goods produced by the affiliate to the US parent company in comparison to the worldwide sales of goods produced by the affiliate.

Data for GDP and GDP per capita which show the difference in sizes and relative factor endowments of countries is obtained from the World Bank database[2]. *GDP Sum* is simply the sum of the GDP values of US and a certain host country for a particular year, similarly *GDP difference squared* is the square of the difference in GDP between the US and a certain host country. For the *GDP pc difference* a difference in the GDP per capita value of the US and a certain host country is taken. This value is then squared for the *GDP pc difference squared* variable.

Skilled labor difference compares the availability of skilled labor in the economies. This calculated by taking the number of total skilled labor including legislators, senior officials and managers, professionals

[1] http://www.bea.gov/iTable/iTable.cfm?ReqID=2&step=1
[2] http://data.worldbank.org/indicator/NY.GDP.MKTP.CD

and skilled agricultural and fishery workers in employment as a ratio of the total amount of labor in employment in the economy. In our study, though defined as skilled labor, they are the forms of labor that are most beneficial for vertical FDI, i.e these forms of labor are the most production/manufacturing orientated. The figures for this variable are obtained from the database of the International Labor office on Labor Statistics, which is operated by the International Labor Organization[3]. In cases where certain data was missing, the skilled labor ratios were taken as being equal to average of the 'neighbouring' values for each country. From this the variable skill difference is calculated by taking the difference between the skilled labor availability in the US and a host country. This thus shows the relative endowment of skilled labor in the US in comparison to the countries in the panel.

The variable *investment cost difference* showing the relative cost of investing in the affiliate country, is calculated by data on the number of days it takes to set up a firm in the host country. This data was obtained from reports published by *Doing Business*[4]. The variable is calculated by taking the difference in the number of days it takes to set up a business in the US and the host country and it aims to account for the higher/lower costs associated with doing business in the host country in comparison to the parent country. The *trade cost difference* variable is taken from the same source and is defined in this study as the difference in the number of documents required for an export to take place from the host country. The difference in the number of days between the US and the host country shows the additional cost/benefit of investing in a certain affiliate country.

A measure of *distance* is also incorporated in this report. It is simply defined as the geographical distance between the capital of the parent country, Washington D.C and that of the host country. This information was obtained from Geo Bytes (Geo Bytes, 2011).

Finally the measure or corruption is estimated using the *corruption perception index* (CPI) published annually by Transparency International (Transparency International , 2012). Note that this index measures the *perceived* level of corruption in a certain country on a scale from 0 – 10 where 10 symbolizes an extremely clean country. Results are obtained based on 13 independent surveys. The *CPI* variable in our study shows the difference between the index score of the US and that of the affiliate country, showing in relative terms weather the country is more or less corrupt.

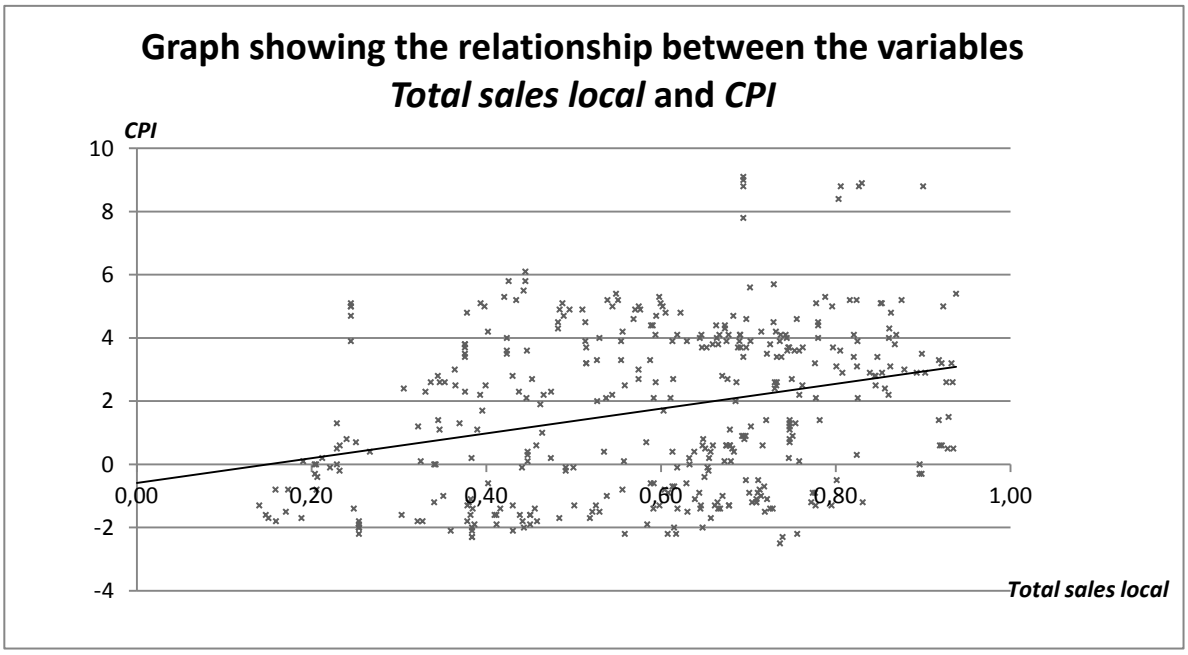
[3] www.bls.gov
[4] http://www.doingbusiness.org/custom-query

Descriptive Statistics

Variable	Mean	Std. Deviation	Maximum	Minimum
Total sales to local	0.59	0.19	0.94	0.14
Total sales to US	0.08	0.09	0.40	0.00
Total sales to US parents	0.07	0.08	0.38	0.00
GDP Sum	1.24E+13	2.05E+12	1.92E+13	9.35E+12
GDP difference squared	1.26E+26	3.92E+25	2.01E+26	2.43E+25
GDP pc difference	2.10E+04	1.30E+04	4.64E+04	4.07E+01
GDP pc difference squared	6.12E+08	5.76E+08	2.15E+09	1.66E+03
Distance	8540.63	3857.59	16355.00	732.00
Skilled labor difference	0.09	0.08	0.34	-0.22
Investment cost difference	-16.19	26.57	4.00	-135.00
Trade cost difference	-1.09	1.49	2.00	-5.00
CPI	1.72	2.60	9.10	-2.50

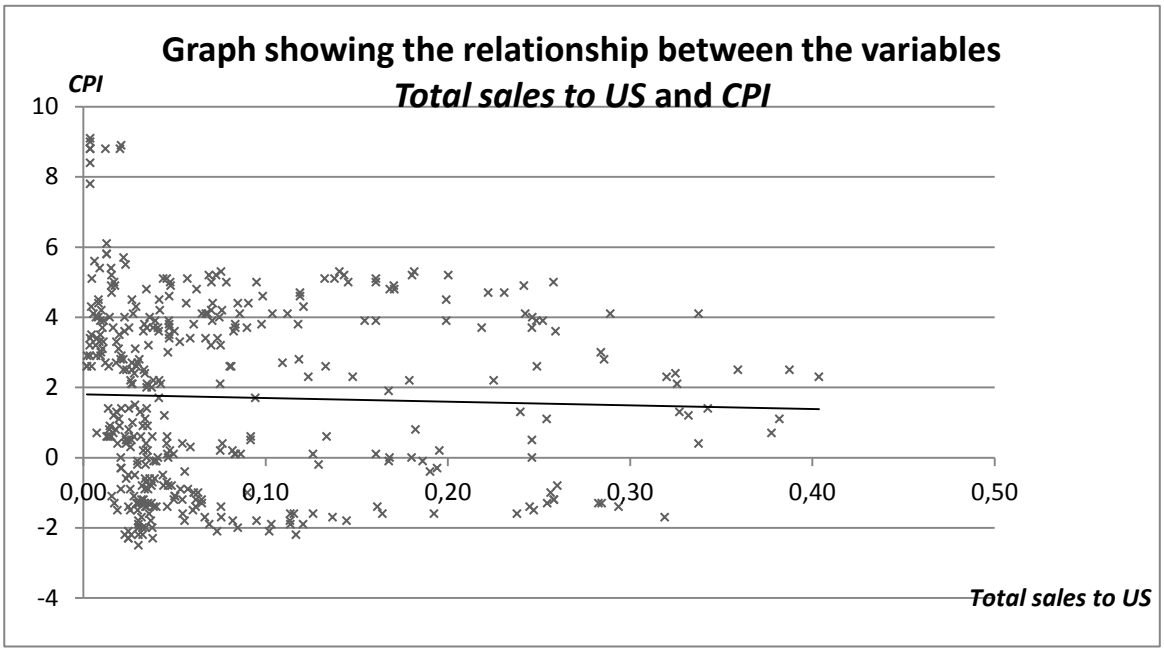
3.3 First evidence:

Before carrying out any regression analysis, understanding the relationship between the CPI variable and the three dependent variables could be helpful. Essentially this relationship aids in predicting what to expect from the regression analysis. To do so three graphs have been presented below, each with the *CPI* variable as the independent variable and *Total sales local, Total sales to US* and *Total sales to US parents* as the dependent. As already mentioned earlier under the section "The Model", the *CPI* variable is the difference between the CPI score of the US and the CPI score of the affiliate country.

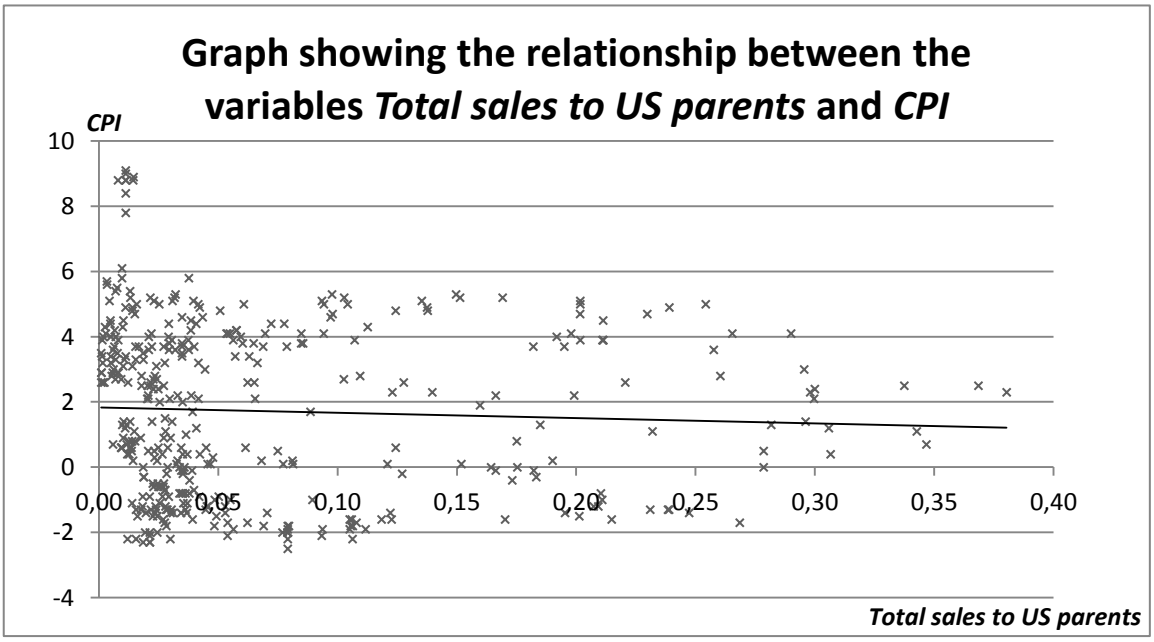


In the graph above *Total sales local* represents the sales of foreign affiliates to the local market as a ratio of their total sales. From this illustration of the variables, it could be concluded that there exists a positive relationship between the two variables. Therefore an increase in CPI difference between the US and the foreign affiliate increases sales of foreign affiliates to their local markets i.e an increase in horizontal multinational activity.

Next the relationship between the variables *Total sales to US* and *CPI* is presented. The variable *Total sales to US* represents the sales of foreign affiliates to the US as a ratio of their total sales. As seen in the graph below, there exists a somewhat negative relationship between the two variables. Thus an increase in CPI difference between the US and the foreign affiliate decreases sales of foreign affiliates to the US i.e a decrease in vertical multinational activity.



Finally the relationship between the variables *Total sales to US Parents* and *CPI* is studied where the variable *Total sales to US parents* represents the sales of foreign affiliates to their parent companies in the US as a ratio of their total sales. Once again a slightly negative relationship between the two variables is observed. An increase in CPI difference between the US and the foreign affiliate decreases sales of the affiliate to its US parent company. This again represents a decrease in vertical multinational activity.



4. Results

Given the large differences in magnitudes of some of the independent variables (for example the *GDP difference squared* variable), some of the variables have been rescaled to make the results more presentable. The table below shows the units in which the different variables are presented in each set of regression equations.

Variable	Regression eq. i- iv	Regression eq. v-viii	Regression eq. ix- xii
GDP Sum	10 trillion	100 trillion	100 trillion
GDP difference squared	1000 quadrillion	1000 quadrillion	1000 quadrillion
GDP pc difference	1 million	1 million	1 million
GDP pc difference squared	10 billion	100 billion	100 billion
Distance	1 million	1 million	1 million
Skilled labor difference	100,000	10,000	10,000
Investment costs difference	100	100	100
Trade costs difference	100	1,000	1000
CPI			

Regression equation results i- iv:				
Variable	*(i)*	*(ii)*	*(iii)*	*(iv)*
Intercept	-2.450*	-3.117	-3.117	-2.329*
	(1.031)	*(0.993)*	*(0.978)*	*(0.992)*
GDP sum	1.900	2.290	2.310	1.900
	(0.564)	*(0.554)*	*(0.536)*	*(0.546)*
GDP difference squared	4.150***	5.910*	6.080*	4.240**
	(2.670)	*(2.580)*	*(2.530)*	*(2.590)*
GDP pc difference	1.820	1.450	1.200	-
	(0.311)	*(0.300)*	*(0.312)*	-
GDP pc difference squared	-3.010	-3.070	-2.76	-
	(0.702)	*(0.665)*	*(0.669)*	-
Distance	-3.590***	-4.900*	-7.440	-5.900
	(2.280)	*(2.420)*	*(2.200)*	*(2.490)*
Skilled labor difference	-	-	-	0.205*
	-	-	-	*(0.103)*
Investment cost difference	-	-5.740***	-	-2.870***
	-	*(0.379)*	-	*(3.920)*
Trade cost difference	-	-4.617	-4.573	-4.045
	-	*(0.821)*	*(0.774)*	*(0.777)*
CPI	-	-	1.345	1.441
	-	-	*(0.451)*	*(0.403)*
Time fixed effects	*Yes*	*Yes*	*Yes*	*Yes*
Adj. R^2	*0.269*	*0.322*	*0.333*	*0.313*
Obs.	*400*	*400*	*400*	*400*

Standard errors in parentheses. * significant at 1%; ** significant at 5%; *** significant at 10%

Regression equation results v- viii:

Variable	*(v)*	*(vi)*	*(vii)*	*(viii)*
Intercept	0.587***	0.824***	0.772***	0.796***
	(0.529)	*(0.532)*	*(0.527)*	*(0.530)*
GDP sum	-3.190***	-4.577***	-4.310***	-4.440***
	(2.989)	*(2.920)*	*(2.890)*	*(2.920)*
GDP difference squared	-0.912***	-1.530***	-1.450***	-1.470***
	(1.370)	*(1.380)*	*(1.370)*	*(1.380)*
GDP pc difference	-0.726***	0.199***	1.010***	-
	(0.600)	*(1.610)*	*(1.680)*	-
GDP pc difference squared	2.040***	2.320	1.360***	-
	(3.602)	*(3.560)*	*(3.600)*	-
Distance	0.514***	1.27***	1.58***	1.960***
	(1.170)	*(1.300)*	*(1.190)*	*(1.330)*
Skilled labor difference	-	-	-	0.109**
	-	-	-	*(0.056)*
Investment cost difference	-	0.138***	-	0.176***
	-	*(2.030)*	-	*(2.100)*
Trade cost difference	-	1.397	1.266	0.675**
	-	*(0.440)*	*(4.170)*	*(0.415)*
CPI	-	-	-3.763***	-0.972***
	-	-	*(2.431)*	*(2.154)*
Time fixed effects	*Yes*	*Yes*	*Yes*	*Yes*
Adj. R^2	*-0.010*	*0.01*	*0.021*	*0.008*
Obs.	*400*	*400*	*400*	*400*

Standard errors in parentheses. * significant at 1%; ** significant at 5%; *** significant at 10%

Regression equation results ix-xii:

Variable	*(ix)*	*(x)*	*(xi)*	*(xii)*
Intercept	0.558***	0.748***	0.702***	0.704***
	(0.487)	*(0.490)*	*(0.485)*	*(0.487)*
GDP sum	-3.11***	-4.210***	-4.000***	-4.010***
	(2.670)	*(2.690)*	*(2.660)*	*(2.680)*
GDP difference squared	-0.856***	-1.360*	-1.290***	-1.290***
	(1.260)	*(1.270)*	*(1.260)*	*(1.270)*
GDP pc difference	-1.190***	-0.367***	0.523***	-
	(1.470)	*(1.480)*	*(1.550)*	-
GDP pc difference squared	2.640***	2.860***	1.800***	-
	(3.320)	*(3.280)*	*(3.320)*	-
Distance	1.410***	1.960***	2.410*	2.670*
	(1.080)	*(1.200)*	*(1.090)*	*(1.220)*
Skilled labor difference	-	-	-	0.104*
	-	-	-	*0.051*
Investment cost difference	-	0.510***	-	0.572
	-	*(1.870)*	-	*(1.930)*
Trade cost difference	-	1.173	1.054	0.529**
	-	*(0.405)*	*(0.384)*	*(0.381)*
CPI	-	-	-4.242**	2.039
	-	-	*(2.239)*	*(1.978)*
Time fixed effects	*Yes*	*Yes*	*Yes*	*Yes*
Adj. R^2	*-0.002*	*0.019*	*0.028*	*0.020*
Obs.	*400*	*400*	*400*	*400*

Standard errors in parentheses. * significant at 1%; ** significant at 5%; *** significant at 10%

4.1 Analysis

While the GDP sum variable has a positive effect on local sales, it has a negative effect on the sales of affiliate production to the US as well as to the US parent corporations. A similar relationship is also observed for the *GDP difference squared* variable, which helps to study the effects of absolute differences in GDP levels. While it has a positive effect on sales of the US affiliates in the local markets, it has a negative effect on sales to the US and US parents. Both results support the idea presented by Markusen (2002) that the size of the local market influences not only FDI of a horizontal nature but also that of a vertical nature. With more and more of the production by foreign affiliates being sold within the local market, the size of these markets plays an increasingly important role. This also further explains the negative effect of the *GDP sum* variable on sales to the US and US parents. With more of the affiliate production sold within the local markets, less is available to be sold back to the home country i.e the United States.

With respect to the *GDP pc difference* variable a somewhat irregular relationship is seen. It has a purely positive effect on local sales. However in studying the effect of the variable on sales to US, while a positive relationship is seen in 2 models, a negative relationship is seen another one. Furthermore, in the models explaining sales to US parents, 2 models display a negative relationship and the third one displays a positive relationship. This irregular relationship is no longer seen while studying *GDP pc difference squared* variable. On one hand a positive relationship is seen between the variable and sales to the local market, whilst on the other, the estimated regression equations display a negative effect between the variable and sales to the US as well as to the US parents. This result to a great extent supports the results from the study by Habib and Zurawici's (2002) where a statistically significant negative impact of absolute differences in GDP pc on levels of vertical FDI is seen. In our study though the *GDP pc difference* variable does not establish an absolute relationship, the *GDP pc difference squared* variable does manage to do so. Given that the study by Habib and Zurawici takes absolute differences, and that this one takes relative differences (i.e the sign plays a role), the same results are not observed. However by including the differences squared variable in this study, the role of the sign in studying the impact of GDP pc capita levels on vertical FDI is omitted. Thus the same result is observed for the *GDP pc difference squared* variable in this study as the absolute differences in GDP per capita taken in Habib and Zurawici's study.

While most of the earlier variables support the conclusions of earlier studies, the distance variable presents results that diverge from earlier research. A negative relationship is observed between distance and sales to the local market while a positive one is observed between distance and sales to the US and US parents. This suggests that as distance increases, level of vertical FDI increases, thus refuting earlier studies that claim that as distance increases vertical multinational activity decreases. Moreover, in general, the coefficients are all statistically significant, thus strengthening the results further.

The variable *skilled labor difference* takes a positive coefficient, thus the difference in the level of skilled labor between the US and the affiliate country increases sales in the local markets, sales to the US as well as sales to the US parents. This supports the idea presented by Markussen (2002) that differences in the levels of skilled labor can be beneficial to all forms of business activity but especially beneficial to vertical multinational activity. Given that multinationals look at foreign localities for cheap manufacturing/production, firms benefit hugely by locating production facilities to countries where these form of labor are abundant. By enabling cheap manufacturing for these multinational organizations, differences in levels of skilled labor availability increase levels of vertical FDI.

Coming to the variable *investment cost difference*, while it has a negative effect on the sales of these production facilities in the local markets, it has a positive effect on their sales to the US and US parents. This is in accordance with the earlier mentioned idea that firms benefit from lower overall costs of production abroad and thus would be inclined to take part in vertical FDI, i.e produce cheaply abroad and transport the production to their home market. However the idea that lower investment costs reduce horizontal FDI is somewhat contradictory.

With respect to the variable *trade costs difference*, it increases vertical FDI, as shown by the positive sign of the coefficient of the variable in explaining sales to the US and sales to the US parents. However the variable takes a negative sign in explaining the sales in the local market, hence displaying that it hinders horizontal FDI. Moreover, the variables are only marginally significant, similar to what was observed in the study by Habib and Zurawicki (2002). Moreover, the results in our study also support that the hypothesis confirmed in that particular study by Habib and Zurawicki that trading cost difference increases vertical FDI.

Finally an analysis of the *CPI* variable suggests that while differences in the perception of corruption levels increase sales in the local market, it reduces sales to the US. Moreover a somewhat irregular sign is observed in the regression estimations where this variable explains sales to US parents; in one estimation the variable takes a positive sign whilst in the other it takes a negative one. As seen from earlier studies, corruption may effect vertical FDI in both directions. On one hand it may hinder vertical multinational activity whilst on the other it may enhance it through the 'helping hand 'mechanism. While the regression results show that it hinders vertical FDI when it comes to sales to the US, when it comes to sales to US parents, the effect is somewhat unclear.

4.2 Distance equivalence

While the regression equations have aided to establish whether the impact of corruption on vertical multinational activity is positive or negative, the magnitude of the effect is still unclear. To understand this, the distance equivalence of a reduction in the difference in corruption perception between the US and the affiliate country could be a useful tool. This essentially measures by how much the geographical distance between the US and the affiliate country must change in order for the level of vertical FDI (measured by *Total sales to US* and *Total sales to US parents*) to stay the same given that there is a 10% reduction in the difference between the CPI index of the US and the affiliate country.

In order to measure this equivalence, equations viii and xii from the regression equations list mentioned above will be taken, as they stands most complete to measure this effect. Moreover, amongst the 40 countries considered in this study, the 3 countries with the largest geographical distance from the US (determined by the geographical distances between the capitals of both countries) will be taken to study this equivalence effect. Presented in the tables below are % changes in geographical distances required in order to compensate for a 10% increase and decrease in the *CPI* variable in the two regression equations. The first table presents results of when *Total sales to the US* (defined as the sales of foreign affiliates to the US as a ratio of their total sales) is taken as the dependent variable, i.e. by testing equation viii. The second showcases the outcomes when *Total sales to US parents* (defined as the sales of foreign affiliates to their parent companies in the US as a ratio of their total sales) is taken as the dependent variable, i.e. equation xii is tested.

Dependent variable: Total sales to US

		Actual	*10% increase*	*10% decrease*
Hong Kong	*CPI*	5.08	5.59	4.57
	Distance	13129	13380	12877
	% change distance		***1.92%***	***-1.92%***
China	*CPI*	4.11	4.52	3.70
	Distance	11170	11373	10966
	% change distance		***1.82%***	***1.82%***
Indonesia	*CPI*	5.44	5.98	4.90
	Distance	16355	16624	16085
	% change distance		***1.65%***	***-1.65%***
Average	*CPI*	1.72	1.89	1.55
	Distance	8541	8626	8455
	% change distance		***1.01%***	***1.01%***

Dependent variable: Total sales to US parents

		Actual	*10% increase*	*10% decrease*
Hong Kong	*CPI*	5.08	5.59	4.57
	Distance	13129	13168	13090
	% change distance		**0.29%**	**-0.29%**
China	*CPI*	4.11	4.52	3.69
	Distance	11170	11201	11139
	% change distance		**0.28%**	**-0.28%**
Indonesia	*CPI*	5.44	5.98	4.89
	Distance	16355	16396	16314
	% change distance		**0.25%**	**-0.25%**
Average	*CPI*	1.72	1.89	1.55
	Distance	8541	8554	8528
	% change distance		**0.15%**	**-0.15%**

Using China as an example to explain the interpretation of *% change distance*, table one demonstrates that when there is a 10% increase in the CPI index difference between the US and China, a 1.82% increase in distance between China and the US is required to keep China's *Total sales to US* constant. On the other hand, when the CPI index difference between the US and China reduces by 10%, an equal decrease is required in order to keep the variable constant. Table two establishes that when there is a 10% increase in the CPI index difference between the US and China, a 0.28% increase in distance between China and the US is required to keep China's *Total sales to US parents* constant. Similarly, in order to keep the variable constant when the CPI index difference between the US and China reduces by 10%, a 0.28% decrease in distance is needed.

Results in both tables demonstrate that the percentage changes in distance required to compensate for a 10% change in the *CPI* variable for the 3 chosen countries are relatively small, therefore illustrating that the CPI variable has a small effect on both *sales to US* and *sales to US parents*. Moreover the distance equivalence percentages are higher when measuring *sales to US* in comparison to *sales to US parents*. Both results thus showcase that corruption effects vertical foreign direct investment by US corporations only to a small extent.

5. Conclusion

Undoubtedly, globalization is a phenomenon that has impacted business and trade activities substantially. General equilibrium trade models have developed to incorporating more and more factors and corruption is one securing increasing importance. Given the willingness of multinationals to participate in corruption activities and increasing FDI levels globally, studying the impact of corruption levels on multinational developments presents great research opportunities. While research has been done previously to study this impact, it primarily focuses on multinational activity of a horizontal nature, hence presenting a substantial opportunity to study the impact of corruption on that of a vertical nature. As a result, this study tries to establish 'The effect of corruption on vertical foreign direct investment of US corporations'.

In answering the above question with the use of regression analysis and data from 40 of the US's largest trading partners over the period 1999 to 2008, the effect of corruption on vertical FDI is determined. While the 'First Evidence' aided in forming an expectation with regards to the results of the regression analysis, the results did not always match. While there exists a negative relationship between Corruption and sales to the US this relationship is somewhat unclear for sales to the US parent multinationals. The negative relationship is explained by the perception that corruption poses a threat to property rights, which adversely effect the profitability of foreign multinationals. This idea stops multinationals from taking part in vertical FDI activities. Moreover distance equivalences were calculated to measure the magnitude of the effect of corruption on vertical multinational activity. These showed that corruption has a very small effect on sales of the foreign affiliates to the US and an even smaller effect on the sales of these affiliates to foreign parents.

These results thus establish that corruption has a very small effect on vertical multinational activity decisions of US corporations and if/when it does, the effect is mostly negative.

6. Bibliography

Al-Sadig, A. (2009). The Effects of Corruption on FDI Inflows. *Cato Journal 29*, 269.

Bardhan, P. (1997) "Corruption and Development: A Review of Issues." *Journal of Economic Literature 35,* 20–46.

Carr, D. L., Markusen, J. R., & Maskus, K. E. (2001). "Estimating The Knowledge-Capital Model of the Multinational Enterprise." *The American Economic Review 91*, 693-708.

Du, J., Lu, Y., & Tao, Z. (2008). "FDI Location Choice: Agglomeration vs. Institutions." International Journal of Finance and Economics *13 (1),* 92-107.

Egger, P., & Winner, H. (2006). How Corruption Influences Foreign Direct Investment: A Panel Data Study. *Chicago Journals 54 (2)*, 459 - 486.

Egger, P., & Winner, H. (2005). Evidence on corruption as an incentive for foreign direct investment. *European Journal of Political Economy 21 (4)*, 932-952.

Ernst & Young. (2012, May 23). *Growing Beyond: a place for integrity.* Ernst & Young.

Geo Bytes. (2011). *City Distance Tool*. Retrieved Apr 25, 2012, from Geo Bytes: http://www.geobytes.com/citydistancetool.htm

Glass, A. (2011). *World Economy Vertical versus Horizontal FDI.* Texas A&M University.

Habib, M., & Zurawicki, L. (2002). Corruption and Foreign Direct Investment. *Journal of International Business Studies 33 (2)*, 291-307.

Horstmann, I. J., Markusen, J.R, (1992). Endogenous Market Structures in International Trade (Natura facit saltum). *Journal of International Economics 32*, 109-129.

Horstmann, I. J., Markusen, J.R, (1987). Strategic Investments and the Development of Multinationals. *International Economic Review 28*, 109-21.

Ketkar, K. W., Murtuza, A., & Ketkar, S. L. (2005). Impact of Corruption on Foreign Direct investment and Tax Revenue. *Journal of Comparative Economics 36 (2)*, 412-429.

Latin Business Chronicle. (2012, May 2). Mexico Bribery: Cost of Doing Business?.

Macrae, J. (1982) “Underdevelopment and the Economics of Corruption: A Game Theory Approach.” *World* Development *10 (8),* 677-687.

Markusen, James R (2002), Multinational Firms and the Theory of International Trade, Cambridge: MIT Press.

Markusen, J. R. (1995). The Boundaries of Multinational Enterprises and the Theory of International Trade. *Journal of International Economics 9 (2),* 169-189.

Markusen, J. R. (1984), “Multinationals, Multi-Plant Economies, and the Gains from Trade”, *Journal of International Economics 16*, 205-226.

Markusen, J. R., Venables, A. J.(1998). Multinational Firms and the New Trade Theory. *Journal of International Economics 46 (2)*, 183-203.

Markusen, J. R., Venables, A. J.(1997). The Role of Multinational Firms in the Wage-Gap Debate. *Review of International Economics 5 (4)*, 435-451.

Markusen, J. R., Venables, A. J.(1996)"The Increased Importance of Multinationals in North American Economic Relationships: A Convergence Hypothesis," London: Cambridge University Press. 169-88.

Nunnenkamp, P. (2002). *Foreign Direct Investment in Developing Countries.* Jaipur: CUTS Centre for International Trade, Economics & Environment.

OECD. (2006). Trends and Recent Developments in Foreign Direct Investment. *International Investment Perspectives 2006 Edition*, 13-45.

Transparency International . (2012). *Corruption Perceptions Index* . Retrieved 04 20, 2012, from Transparency International : http://cpi.transparency.org/cpi2011/results/