The Determinants of US Outgoing FDI in the Food-Processing Sector

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Abstract

Global economic growth has led to an increase of FDI activity in the agro-food sector, which together with the increased FDI in the manufacturing sector, has generated increased FDI activity in food processing. This paper fills a gap in the literature on the role of FDI by extending the recent Knowledge-Capital (CMM) model of multinational enterprises to the food processing sector. Following the CMM model, this paper analyzed the determinants of US outgoing FDI in the food processing sector using data on developed countries over the period 1983 – 2002. The result suggests that economy size, factor endowment, home country trade cost and host country investment cost have significant effect on FDI activity in the food processing sector. Only weak empirical evidence was found for the effect of exchange rate, food price and corruption level.

I. Introduction

Foreign direct investment (FDI) is a kind of capital movement across national frontiers that give the investor control over the acquired foreign asset. More specifically, FDI in the US is ownership or control, direct and indirect, by one foreign person, of 10% or more of the voting securities of a US business enterprise (BEA, 2001). US Firms that meet this standard are known as multinational enterprises (MNE), and oversea plants of a US MNE are known as its foreign affiliates. Foreign direct investment (FDI) plays an important role in economic growth and development. It links the global market by providing goods and services to foreign markets. In 2001, foreign affiliates accounted for one tenth of world GDP and one third of world exports. FDI also integrates the global production systems both on the vertical and horizontal level, and by doing so, leading to a lasting effect of capital, technology, and skill. FDI is particularly beneficial to developing countries for it can enhance domestic production and hence stimulate employment and long-term economic growth. During the last decade, annual flow of global FDI has increased greatly from about $60 billion in 1980s to $1.4 trillion in 2000.

Global economic growth has led to an increase of FDI activity in the agro-food sector, which together with the increased FDI in manufacturing sector, has generated increased FDI activity in food processing. The production, marketing, and distribution of processed food are increasingly dominated by large multinational enterprises. Total stock of world inward FDI in food, beverages and tobacco has more than doubled from 1990 to 2000 (UNCTAD, 2002). The US is one of the major sources as well as recipients of FDI. As of 2003, total stock of US outward FDI was $US1.79 trillion. Sales by subsidiaries or foreign affiliates of US food processing companies increased to $150 billion. This is an increase of about 280% between 1982 and 2000, almost five times as high as the value of the US processed food exports (USDA, 2001).

The majority of US FDI in the food sector goes to developed countries with Western Europe as the leading destination. The United Kingdom, France, and the Netherlands account for more than half of US FDI in Europe. The largest share of US FDI in food manufacturing goes to the beverage industry dominated by firms such as Coca Cola and

Pepsi. This accounts for nearly 50% of the total in 2003. In second place are grain and oilseed milling, accounting for nearly 12%. Though dairy sector has been one of the largest food sectors in the United States, it only accounts for 2% of US FDI in food manufacturing.

A large share of the empirical literature on the determinants of US FDI has been focused on the FDI between US and other developed countries, especially Europe. This article aims to complement these previous studies by extending the discussion on determinants to the food processing sector based on the framework outlined in Carr, Markusen and Maskus (2001) and Markusen and Maskus (2002). Some variations are made to the CMM model to account for the features of the food processing sector. Factors taken from CMM model are economy size, relative factor endowment, trade costs in both home and host countries, and investment costs in the host country. The other factors considered are food price, exchange rate, and corruption level in the host country. The rest of the paper is organized as follows. Section II gives a review of literature on proposed key determinants of FDI. Section III summarizes the theoretical basis for the econometric model used. Section IV presents our empirical methodology and data. Section V gives the empirical result and section VI concludes the paper.

II. Literature Review

There has been an on-going debate and discussions on the determinants of FDI flows. The empirical methodologies adopted for analysis has been diverse and the resulting evidence is conflicting and controversial. The diversity in the empirical results demonstrates the wide differences existing in the determinants of FDI flow, but it may also reflect data or modeling problems, such as lack of precise data or too general grouping of countries with different characteristics. The choice of potential determinants depends not only on the subject discussed, but also on data availability. Factors such as market size, relative labor costs, interest rates, import protection, exchange rates, export orientation, market structure, geographical distance, political stability, and cultural similarity are some of the variables used most frequently. Subsequent section provides brief discussion of each of the key determinant of FDI in the theorectical and empirical literature on MNCs.

Market Size

Among the several widely tested determinants of FDI, the role of market size has the most accepted. The market size hypothesis holds that a large market is a prerequisite for the resources to be efficiently utilized and economies of scale realized. There is vast evidence in support of the market-size hypothesis across a variety of countries, periods, and model specifications. A lot of earlier studies have investigated US outgoing FDI. Among them, Bandera and White (1968), and Kravis and Lipsey (1982) found that host country's market size have a positive effect. An economy's size not only affects FDI in current time, but also has a lagged effect. Schmitz and Bieri (1972) and Lunn (1980) found that a one-period-lag of GNP has significant effect. More recently, Aristotelous and Fountas (1998) found that expectation of a larger market size leads to an increase in FDI inflow. Filippaios, Papanastassiou and Pearce (2003) examined the locational determinants of US FDI in Australia, New Zealand, Japan, and Korea for 1982-1997, and found market size exert a significant impact on both the timing and the location choice of US investors in the region. Bevan and Estrin (2004) used a panel dataset of bilateral flows of FDI to study the determinants of FDI from EU and EEC, and find market size to be one of the most important influences. Milner, Reed and Talerngsri (2004) tested the vertical model of FDI using firm level information on Japanese multinational activity in Thailand over the period from 1985 to 1995, and found a positive influence for host market size.

Wage

Unlike market size, the effect of wage on FDI has been the most controversial of all the potential determinants. Cheaper labor cost should encourage "efficiency-seeking" FDI flows. However, empirical studies on host wages have given conflicting results, where higher host nation wages are associated with negative, insignificant, or even a positive association. The extensive empirical studies on industrialized countries have mostly found wage a significant determinant for FDI inflow. Swedenborg (1979), and Nankani (1979) obtained a positive association between inbound FDI and the real wage. Yang, Groenewold and Tcha (2002) studied determinants of FDI in Australia since mid-1980 and found wage changes are an important determinant. However, Owen (1982) analyzed the inter-industry determinants of foreign direct investment in Canadian manufacturing industries, and found labor cost differences between Canada and the US have no significant impact. Gupta (1983) also found that wages of production workers in Canada relative to those in the United States were not a significant determinant.

Exchange rate

Exchange rate is another common variable involved in the analysis of the determinants of FDI. The currency area hypothesis suggests that the weaker a country's currency the more probable for the country to receive foreign investment. However empirical studies have also resulted in quite different results with respect to its role in determining FDI. Some theoretical and empirical studies showed that the level and volatility of exchange rates can have negative effects on foreign direct investment (FDI). Froot and Stein (1991) and Blonigen (1995) both observed strong negative correlations between a country's exchange rate and FDI. Lin (1996) developed a composite model to investigate the determinants of Japanese FDI in 11 types of US manufacturing industries for the time period of 1976-1990, and found that an expected depreciation of the real exchange rate brings in a larger amount of direct investment. Quere, Fontagne, and Revil (2001) modeled the trade-off between price competitiveness and a stable nominal exchange rate, and found that exchange-rate volatility is detrimental to FDI.

On the other hand, Edwards (1990) reported a significantly positive effect of the exchange rate on FDI. Tuman and Emmert (1999) observed that the exchange rate has an insignificant effect on FDI in a share regression but a significantly negative effect in a per-capita regression. Firoozi (1997) found that when the exchange rate fluctuation is the source of cost uncertainty, risk-averse exporters tend to rearrange their production allocation and shift part of the production to the export target countries to reduce the risk, thus increasing FDI.

Some empirical works also found the role of exchange rate on FDI flows to be little or ambiguous. Lucas (1993) argued that the exchange rate have only a residual role with respect to exchange rate risk. Craig (2001) studied the short-term and long-term effects of exchange rate movements and exchange rate variation on FDI in forest industries with US, Finnish, and Swedish data, and found that FDI by the US forest industries are unaffected by dollar variability. Chakrabarti and Scholnick (2002) used panel data techniques to study the relationship between exchange rate movements and FDI flows from the US to twenty OECD countries, and found skewness of devaluations has a robust positive impact on FDI flows while average devaluation and its volatility do not. Pain and Welsum (2003) found the impact of exchange rates ambiguous, varying between different countries and types of investment as well as time.

Openness

Openness to trade is usually measured by the ratio of exports plus imports to GDP. The degree of openness is related to the investment possibility and economic environment, as most investment projects are directed towards the tradable sector. Empirical studies also reported mixed evidence on the effect of openness in determining FDI. Kravis and Lipsey (1982), Edwards (1990) and Culem (1998) reported a strong positive effect of openness on FDI. Dees (1998) found that openness to the rest of the world a significantly positive impact for China's inward FDI. Yang, Groenewold and Tcha (2002) studied determinants of aggregate FDI inflows into Australia since the mid-1980 and found that openness of the economy is an important determinant of FDI inflow into Australia. Janicki and Wunnava (2004) examined bilateral FDI between EU members and CEEC economies in transition using cross-section data for1997. The study revealed that openness to trade is a key determinant of FDI inflows in CEECs. Some studies have found less significant links between domestic openness and inward FDI. Wheeler and Moody (1992) observed strong support for the hypothesis in the manufacturing sector but a weak negative link in the electronics sector. Schmitz and Bieri (1972) obtained a weak positive link between openness and FDI.

Trade barrier

The effect of trade barriers on FDI has also been widely debated. Mundell (1957) proposed the tariff discrimination hypothesis arguing that FDI will be encouraged when there are obstacles to trade like tariff, which makes it difficult to export. Hence trade liberalization is expected to reduce the amount of FDI as goods can move more freely across countries. According to this view, trade barrier has a positive effect on FDI.

Schmitz and Bieri (1972) and Lunn (1980) observed a significantly positive effect of trade barriers on FDI. Hennart and Park (1994) did a sample study of the determinants of FDI at the product and firm-level by examining the impact of location and policy factors on a Japanese firm's tendency to manufacture in the U.S., and found trade barriers encourage Japanese FDI in the US. Barrell and Pain (1999) analyzed the determining factors of Japanese FDI to EC and US over the 1980 using pooled cross-section time-series annual data, and their results suggest that investment was significantly influenced by trade protection measures. Bang (1999) observed increased FDI flows after tariff and non-tariff trade barriers are removed as Vietnam became a member of ASEAN Free Trade Area (AFTA), and from trade reform in general.

Like discussions on other FDI determinants, conflicting results can also be found for trade barrier. Culem (1988) reported a significantly negative correlation between trade barriers and FDI. Beaurdeau (1986) and Blonigen and Feenstra (1996) found that trade barriers play an insignificant role in attracting FDI.

Investment costs

The effect of investment cost in the host country on FDI is less controversial. Studies that included investment cost as one of the determinants have mostly found that it has a negative impact on attracting FDI. Brainard (1997) explained the choice between FDI and export by examining the effect of transport costs, trade and investment barriers, production scale economies, and firm-specific advantages and found that lower level of investment barriers is connected the an increase in the share of total affiliate sales. Markusen and Markus (2002) examined the role of country characteristics, trade, and investment cost in foreign affiliate production. They found that investment costs have negatively affected affiliate production. Some studies have also found investment cost to play a insignificant role. Waldkirch (2004) investigated the determinants of Mexican inward FDI, and found that the influence of investment climate is not statistically significant.

Political instability

Political instability tends to discourage the inflow of FDI. Uncertainties might induce investors to diversify or shift their production location. However, empirical evidence on political factors have also given mixed results. Schneider and Frey (1985), Edwards (1990), Aizenman (2003) found that political instability has a negative impact on FDI inflow. Aizenman and Marion (2004) found that the effect of volatility and sovereign risk on vertical and horizontal FDI differs, with a greater negative impact on vertical FDI. However, Hausmann and Arias (2000) found political instability has no significant effect on FDI. Bandelj (2002) studied FDI determinants in Central and East European countries (CEEC) and concluded that the effect of political volatility in post-socialist nations is not uniformly negative. Bevan and Saul (2004) studied the flow of FDI from the EU to Central and Eastern European nations, and found host country risk not a significant determinant.

Corruption

Corruption is regarded as a negative influence on business environment and consequently an impediment to investment. However, the empirical evidence on the effect of corruption on FDI has been inconclusive. Smarzynska and Wei (2000) found that corruption negatively affects foreign investment. Wheeler and Mody (1992) examined capital expenditure of US companies’ foreign affiliates and found that corruption has no significant effect. Henisz (2000) found that corruption in some cases even increases the probability of investing in a foreign country.

III. Theoretical background

How to incorporate both types of MNEs into a theoretical model has been a chanllenge. Due to the prevalence of horizontal firms, previous theoretical work has focused primarily on horizontal models. These models assumed either no difference in the use of factors of production for different production stages, or only one factor of production used, thus eliminating the factor-price motive for vertically fragmenting production across nations. On the other hand, vertical models assume no trade cost, which would exclude horizontal MNEs under plant-level scale economies. In this paper, a CMM model based on the general-equilibrium trade theory, developed in Carr, Markusen and Maskus (CMM, 2001) and Markusen and Maskus (2001, 2002) is employed for its better grounded in the formal theories of MNE activity. By including trade costs and different factor intensities across activities, CMM model accounts for both vertical and horizontal investment.

The model is built on the key idea that there are knowledge-based assets or fixed costs that create firm-level scale economies. With both firm-level and plant-level economies exist, the assumptions on fragmentation of knowledge-based assets and skilled-labor intensity encourage vertical FDI, and the joint-input assumption encourages horizontal FDI. Based on the predictions generated by the theoretical model, the factors considered in empirical model include economy size, skill difference, trade and investment costs.

IV. Empirical Methodology and Data

This paper follows the CMM specification which allows for both the horizontal and vertical MNE for FDI and considers trade costs. Some variations are made to incorporate features on food sector. In CMM model FDI from country i to country j is denoted by:

$$FDI_{ij} = f(SUMGDP_{ij}, DIFFGDPS_{ij}, SKDIFF_{ij}, GDPSKDIFF_{ij}, TCOST_i, INVEST_j, \\ TRSKDIFFS, TCOST\_US, DIST_{ij}) \quad (1)$$

Where:

FDI_{ij}: foreign affiliate sales by the majority-owned manufacturing affiliates of home country

$SUMGDP_{ij}$: sum of GDP of home and host country

$DIFFGDPS_{i}j$: squared difference in GDP between home and host country

$SKDIFF_{ij}$: skill difference between home and host country

$GDPSKDIFF_{ij}$: interaction between skill difference and GDP difference

$TCOST_{j}$: trade cost in host country

$INVEST_{j}$: investment costs in the host country

TRSKDIFFS: interaction between trade cost in host country and squared skill difference

TCOST_US: trade cost in home country (US)

$DIST_{ij}$: distance between the capital of home and host countries

The variables on GDP are used to test for the effect of country size on FDI when there are trade costs. When trade costs exist, if the two countries are large and similar in size, the most common type of MNEs is horizaontal. While for large countries, the higher fixed costs for setting up production across countries should not be a deterrence to FDI relative to exporting, for countries with smaller market size the additional cost might deter FDI activity. Thus, the greater the sum of GDP in both countries (SUMGDP), the higher is the FDI level. SUMGDP is expected to be positively related to FDI. On the other hand, greater difference in GDP leads to reduced FDI activity. Squared difference in GDP (GDPDIFSQ) is expected to be negatively related to FDI.

Relative factor endowment is chosen because greater gap in skill differences (proxied here by wage) tends to encourage vertical MNEs behavior in search of lower wage production area. Two variables are used to capture this effect. As higher skill level in the home country means higher production cost, it would lead to more affiliate production in a the host nation and vertical FDI will be encouraged. Thus the higher the skill difference (SKDIFF) between the home and host countries, the greater is FDI activity. SKDIFF is expected to have a positive sign. Skill difference and GDP do not affect FDI in such a separate way. As GDP difference discourage FDI while skill difference encourage FDI, the two factors when combined, affect FDI in opposite direction, the interaction between them ($GDPSKDIFF_{ij}$) is expected to have a negative sign.

Effects of trade and investment costs are captured by four terms. When trade costs in the host country rise, exporting becomes more costly, and FDI will be encouraged relative to export. Trade costs in the host country (TCOSTj) are expected be positvely related to FDI. On the other hand, high trade costs in the home country (TCOST_US) would make it more costly for affiliate goods to be shipped back to home country, thus TCOST_US is expected to be negatively related to FDI. Relatively high investment cost in the host country ($INVEST_j$) adds to production costs and should discourage FDI. When high trade costs exist horizontal investment is preferred relative to vertical investment, whereas greater skill difference favors vertical investment. Thus an interaction between host trade costs and squared skill difference (TRSKDIFFS) is expected to negatively affect FDI flow.

Distance between host and home countries (DIST) affects both trade and investment costs. The longer the distance, the higher these costs will be. The resulting effect of distance is ambiguous, since these costs may shift FDI in different directions. This paper does not include distance as it is constant across time and was shown to be statistically insignificant in previous empirical studies.

To account for the characteristics of the food processing sector, some variations are made to the original CMM model. As FDI location choice is affected by domestic market potential in the host countries, food market in host countries should have influence on the level of inward FDI. Food price is considered to reflect food market conditions. The effect of local price, though, is ambiguous. Higher food price may mean higher profit for foreign affiliates, but may also mean higher material cost.

Some other common factors are also considered. Exchange rate (ER) fluctuations affect both trade and FDI activities by the movement of capital in seeking higher profit. Corruption ($CORRUPT_j$) is also perceived to be a deterrent factor to investment and expected to have a negative effect on FDI activity. Since our data for corruption level constructed to have higher value indexing for less corruption, a positive sign is expected for this variable. The above discussion leads to our central equation as follows:

$FDI_{ij} = f(SUMGDP_{ij}, DIFFGDPS_{ij}, SKDIFF_{ij}, GDPSKDIFF_{ij}, TCOST_j, INVEST_j,$

TRSKDIFFS, TCOST_US ,FOODP, ER_j, $CORRUPT_j$)

(2)

Panel data covering 1983-2003 for 20 developed countries (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Portugal, Spain, Sweden, United Kingdom, and United States). To better capture the FDI activity in the food sector, we take real sales volume of food-processing sector by non-bank US majority-owned foreign affiliates in each country as a proxy for US FDI activity in each country. The data on affiliate sales are obtained from the U.S. department of Commerce. Data on GDP, skill, trade cost, food price are obtained from World Bank. GDP is in constant 1995 US Dollar. Skill is proxied by secondary school enrollment rate. Trade cost is calculated by 100 minus the sum of import share of GDP and export share of GDP. Exchange rate is retrieved from International Monetary Fund (IMF) online service. Investment cost and corruption level are taken from PRS group where corruption is measured by index from 0 to 6, the higher number indicating less corruption, and investment profile is measured by index from 0 to 12, with higher number indicating better investment environment.

V. Empirical Result

We first test our hypothesis following the CMM model. The initial specification has all the variables in the CMM model. Then food price, exchange rate and level of corruption are added to the original model to test their effects. Since we are looking at the pattern of US outgoing FDI, only the outbound data are used as dependent variable in fitting the model. Results from the initial specification demonstrate severe statistical problems, and to correct these problems alternative specifications are explored.

Table 2 presents estimates for determinants of US outgoing FDI in the food sector using the CMM specification. The R-squared and F-test statistic are quite good, but the coefficient estimates on GDP and skill difference have the wrong sign. After adding the food price, exchange rate and corruption variables, results on GDP and skill had the correct sign. However, the regression result indicates some severe problems in the model. The Durbin-Watson statistic shows that the model violates the no serial correlation assumption. Test for first and second moment specification also indicates that heteroskedasticity exists. There is also severe multicollinearity between skill difference and interaction between GDP and skill difference. Since the country-specific characteristics may generate unobserved differences, we include country fixed effect into the model. Using fixed effect model is preferable than random model in this case, as empirical studies suggest that when the data contain all existing cross-sectional units, fixed effect model performs better than the random effect model. In our data, we have only very few missing value after interpolation.

Table 3 (Colums 1 and 2) present weighted least squares (WLS) estimates for the fixed effect model in level form. The model improves both on R-squared and F-statistic. For both specifications most variables have the correct sign and are statistically significant. The sign on skill difference in the full model does not have the expected sign and is not statistically significant. As suggested by Blonigen (2004), for better fit, we take log of the data on the fixed effect model. For the negative values of skill difference and trade cost variables, we follow Blonigen (2004) to set them to 0.1. The interaction terms on skill difference in the logged model must be dropped as they become highly collinear with skill difference. Higher R-squared and F-statistic for both specifications show that they are better fit than the unlogged models. Table 3 (Columns 3 and 4) presents estimates for the fixed effect model after taking the log of the variables. In both specifications most independent variables have the expected sign and are statistically significant. Compared with table 3, effect of skill difference are smaller after adding the country fixed effect, which corresponds to CMM result. Overall we get similar results as CMM, suggesting affiliate sales in food processing sector are also strongly connected to joint market size, skill difference, and the interactions between the two. According to our full logged fixed effect model, a 1% increase in total economy size will increase foreign affiliate sales by 2.5%, which confirms CMM's hypothesis that the elasticity is greater than 1.

A 1% increase in difference in economy size will decrease foreign affiliate sales by about 1%. One concern is that the result on skill difference has been inconsistent throughout different specifications. The reason may be that our data are solely developed countries, where horizontal multinationals are prevalent, and skill difference wouldn't play a role as important as the in the case of less developed countries. Investment cost in host country has consistently got the negative sign for fixed effect model, which corresponds to the prevalence of multinationals between US and other developed countries where investment cost won't severely discourage FDI activity. The effect of trade cost in the home country has stronger effect than trade cost in the host country. Though the two interaction terms on skill difference dropped from logged fixed effect model, they have significant effect with predicted sign as shown in the levels models. For the three variables added to the CMM specification, exchange rate has a negative effect but not statistically significant in the full model, while results on food price and corruption level are ambiguous.

VI. Conclusion

With the improvement of living standard, the consumption preference of food product has undergone great changes. As part of the manufacturing sector, the food processing sector has attracted more and more FDI as the production becomes more and more mechanized. This paper analysed the determinants of US outgoing FDI to developed countries in food processing sector. Our model is developed based on the CMM model developed in Carr, Markusen and Maskus (CMM, 2001) and Markusen and Maskus (2001, 2002). The results are generally consistent with CMM model, indicating that the factors affecting FDI activity in food-processing sector are essentially not different from other sectors. An extension can be made to this study is to examine the case of developing countries as a comparison. Since developing countries used to be and are still more heavily dependent on agriculture than developed countries, factors affecting capital flow in food processing sector in developing countries may behave differently.

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Appendix

Table 1. Summary Statistics for the Data

Variable	N	MIN	MAX	MEAN	STD
SALE	295	0.10	15320.00	2663.49	3262.64
SUMGDP	295	5039.06	14700.00	7568.22	1760.25
DIFFGDP	295	1400.00	8905.00	6130.56	1596.62
DIFFGDPS	295	1960000.00	79299025.00	40124325.87	18098134.35
SKDIFF	295	0.10	49.70	4.56	8.41
GDPSKDIFF	295	140.00	244791.97	26632.71	50110.31
INVEST	295	4.00	12.00	7.90	1.91
TCOST	295	0.10	84.08	33.06	25.04
TRSKDIFFS	295	0.00	82832.00	2954.67	9308.05
TCOST_US	295	75.50	82.75	79.03	2.51
FOODP	295	1.14	115.78	88.21	19.51
ER	295	0.11	2379.18	178.83	513.09
CORRUPT	295	2.00	6.00	5.03	0.97

Table 2. Initial Results.

Variable	LEVELS,OLS (1)	LEVEL,OLS (2)
SUMGDP	-0.04	0.05
	(-0.19)	(0.21)
DIFFGDPS	-0.00009***	-0.000092***
	(-3.85)	(-3.75)
SKDIFF	-26.59	7.54
	(-0.51)	(0.13)
GDPSKDIFF	0.00054	-0.0028
	(0.07)	(-0.34)
INVEST	77.68	72.43
	(0.79)	(0.74)
TCOST	-7.90*	-8.17*
	(-1.69)	(-1.68)
TRSKDIFFS	0.019***	0.017***
	(3.11)	(2.72)
TCOST_US	-733.28***	-752.77***
	(-3.26)	(-3.31)
DIST	-0.69***	-0.69***
	(-7.7)	(-7.68)
FOODP		3.94
		(0.28)
ER		-0.11
		(-0.29)
CORRUPT		468.62**
		(2.15)
C	67146.29***	65332.47**
	(3.39)	(3.25)
Observations	295	295
R-squared	0.37	0.38

Table 3. Fixed-effects estimation of basic model: WLS

Variable	LEVELS,FE (1)	LEVELS,FE (2)	LOGS,FE (3)	LOGS,FE (4)
SUMGDP	0.71***	0.66***	4.73***	2.56***
	(2.77)	(2.79)	(5.74)	(3.43)
DIFFGDPS	-0.00006***	-0.00006***	-1.81***	-1.00***
	(-3.68)	(-3.28)	(-5.09)	(-3.49)
SKDIFF	16.49**	-11.15	-0.03*	0.02*
	(2.44)	(-0.89)	(-1.81)	(1.98)
GDPSKDIFF	-0.005***	-0.0017		
	(-5.85)	(-1.09)		
INVEST	-68.72***	-65.66***	-0.60***	-0.56***
	(-4.12)	(-3.08)	(-7.16)	(-7.34)
TCOST	0.9	-2.53	0.18	0.24*
	(0.27)	(-0.55)	(1.14)	(1.81)
TRSKDIFFS	0.002*	0.0029*		
	(1.84)	(1.71)		
TCOST_US	-176.30***	-231.99***	-9.16***	-13.13*
	(-4.92)	(-4.61)	(-3.45)	(-4.22)
FOODP		-5.29*		0.42**
		(-1.87)		(2.4)
ER		-1.28***		-0.19
		(-2.8)		(-0.91)
CORRUPT		-48.68		1.20***
		(-0.53)		(5.82)
C	14057.51***	19864.79***	36.73**	55.81***
	(3.62)	(3.98)	(2.3)	(3.06)
Observations	295	295	295	295
R-squared	0.85	0.85	0.99	0.99