Linkages amongst Foreign Direct Investment, Trade and Trade Policy: An Economic Analysis with Applications to the Food Sector

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Abstract

Our models show that, in OECD countries, tariffs and domestic support, which raise domestic market input prices, can have an effect on how FDI is distributed geographically. FDI may be used to "jump" tariffs. Investors in a home country may invest in a host country to exploit the preferential tariffs, as from an RTA, which the host has with a third country. Domestic support to agriculture, an input sector into the food sector, can encourage outward investment and discourage inward investment. FDI and trade appear to complement one another. Therefore, policies that open trade may increase FDI and vice versa.

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Introduction

In the media, national governments and international organizations, FDI has been the subject of much heated discussion. Understanding the trends and factors that lead to FDI is of broad policy interest. Also, economists have expended a great deal of research effort in understanding the linkages of FDI, trade and trade policy. In contributing to this effort, this paper reviews and provides evidence of the linkages amongst foreign direct investment (FDI), trade and trade policy. While there have been a number of studies, which have looked at FDI in the food sector, [1] few have considered inward and outward FDI amongst multiple OECD countries. This paper uses a gravity model of panel data from 1990 to 2000 of bilateral trade and FDI stocks. The regression models provide evidence of the following: FDI and trade are complements; countries may use FDI to "jump tariffs;" regional trade agreements influence FDI and trade; and market price support distorts trade and FDI.

Because this study considers FDI across several OECD countries, consideration of the location of FDI in the food sector is useful. The four largest host and home countries were the United States, the United Kingdom, the Netherlands and France (see figures 1 and 2).[2] The United Kingdom and the United States had outward FDI stocks, on average over the decade,[3] of $30,600 and $27,642 million in constant dollars. In terms of average inward stocks over the 1990s, the United States at $22,104 million was more than twice as large as the next largest host, the United Kingdom at $9,097 million in constant USD. The stock of FDI as a percent of the GDP of host countries reveals the relative importance of the FDI (see figure 3). The most striking percentages during the decade of the 1990s are for the Netherlands. The inward FDI stock was equivalent to 2.0% to 3.5% of GDP with only a few periods of decline. The United Kingdom had an inward FDI stock that was equivalent to

0.75% to 1.25% of GDP. Also notable are Finland, France, Iceland and Mexico. Each had inward FDI stock that was equivalent to at least 0.5% of GDP during the 1990s.

Literature Review

Given the size and the potential relationship between FDI and trade a further investigation is appropriate. A traditional trade/FDI question to ask is FDI a substitute for trade or a complement to trade. This issue is often described in the context of trade policy; that is, do home countries invest in other countries to avoid trade barriers in host countries? This question is an important one because the economic and trade effects will be different. If FDI is a substitute for trade, then FDI represents a diversion away from local production and exports to foreign production and affiliate sales. Conversely, if FDI and trade are complements, then local production benefits from investments aboard. An extension of the complement versus substitute discussion is do firms invest in other countries to outsource different levels of production (vertical investment); do firms produce the same product in multiple countries (horizontal investment) or do firms locate FDI for other reasons? Another consideration is if trade barriers encourage FDI, then these barriers are a source of efficiency loss because capital used for FDI is diverted from other productive uses to avoid tariff barriers (or "jump tariffs")? These possibilities are stylized, but they illustrate the concerns covered in the literature and the policy questions that arise from these concerns.

In their study of FDI in the food industry of the Western Hemisphere, Bolling, Neff and Handy (1998) argue that liberalization of FDI rules plays a role in the growth of investment. They provide data to suggest that the food exports and FDI increase together and are often complementary. Vaughan *et al*. (1994) interviewed seventeen agro-food multinationals based in Canada, Switzerland, the United Kingdom and the US. The interviews reveal the different factors that influenced the

location of production, the mode of entry into another market and the role of governmental policies on the strategies of firms. The most common reason for entry into another market was the slow growth of domestic markets to meet the growth objectives of the firms. Despite the lack of primacy, government policies such as non-tariff barriers, level of domestic support and trade did appear to have some influence. In a review of different studies and reports Handy and Bamford (2000) lay out several factors that may influence FDI such as size of host market, growth potential of host market, regulatory regime, cost of labor and other factors.

Gopinath, Pick and Vasavada (1999) explore the relationship between foreign affiliate sales by and exports from the US food processing industry. Based on a model of a profit maximizing firm that produces at home for export and abroad through foreign affiliates, the authors find that foreign affiliate sales are substitutes for exports. The measure for agricultural protection Producer Support Estimate (PSE) in the host country increases foreign affiliate sales and lowers exports. Marchant, Saghaian, and Vicker (1999) investigate the relationship between US outward FDI stock to China and exports from the US to China of processed foods. The model is a test of the effects of exchange rate, GDP, export price and FDI on exports and the effects of exchange rate, GDP, US interest rate and exports on FDI. The model indicates that FDI and exports are complements. The GDP and exchange rate variable are not statistically significant, but the US interest rate appears to affect FDI.

Hypotheses/Questions

From the literature some questions can be posed relating to trade and FDI in the food sector:
Across countries what is the relationship between investments and trade in the food sector?
What factors influence trade and FDI? In particular how do trade policies and market conditions affect trade and FDI?

This research provides evidence to address these questions. In particular, the present research provides evidence that trade policies and market conditions influence FDI and FDI influences trade flows. This suggests that policy makers may need to give broader consideration to the direct and indirect effects that trade-related policies, such as domestic support to agriculture and tariffs, can have on trade and investment.

Data

The World Integrated Trade Solution (WITS) data set provides data on trade flows in value of trade and tariffs using the ISIC Rev. 3 classification. The data are the bilateral trade and tariffs (applied and bound rates) of manufactured food and beverage products and manufactured tobacco products (divisions 15 and 16 of ISIC Rev. 3). These data only reflect trade amongst OECD countries. The OECD Structural Analysis (STAN) data set provides an assortment of industry level data such as value of production, exports and imports (the export and import data reflect total trade not just trade amongst OECD countries). The data set covers all OECD countries except for Iceland, Switzerland, and Turkey. The STAN data are reported for industries, and they are based on ISIC Rev. 3. The FDI data set is also based on ISIC Rev. 3. These data are from the OECD International Direct Investment Statistical Yearbook 2003. These data are of total FDI and do not reflect bilateral investments. All of the price data (trade, investment, GDP, etc.) are in constant US dollars, base year 2000. The same price deflator, the GDP deflator, is used for all of the data. The market price support (MPS) data is from the OECD Agricultural Directorate. The economic data (GDPs and exchange rates) are from the OECD Economic Directorate, and the distance and border data for the gravity models are from CEPII. The data cover the years 1990 to 2000, with gaps.

Empirical Models

An important way to begin to understand the relationship between FDI and exports is to ask the firms. From readily available sources,[4] two main (and often interrelated) motivations emerged for the location and distribution of FDI: to increase market share and to reduce costs. The interests of firms in market share has to do, in part, with a desire to capture new market share in emerging markets like those in Central and Eastern Europe during the 1990s (Jansik, 2004)). Interest in emerging markets is also promoted by the slow growth in the mature food industry in most OECD countries. For this analysis market share is defined as the share of local production to total food consumption (total production plus imports less total exports). Therefore, we hypothesize that the more the market is saturated by local production, the greater the amount of FDI the country will send aboard. Another perspective on market share is that if a potential host market is also saturated by its own local production, this market may be less attractive for investment.

The other main motivation for firms investing abroad is to increase efficiency. Efficiency-seeking FDI provides a base for supplying a host country as well as worldwide markets (i.e., through exports). A host country can become more attractive when it is involved in regional trade agreements (RTAs) that effectively enlarge its market, a notion close to the idea of gaining market share. The idea of an enlarged market comes from the possibility that an investor in a home country may invest in a host country that is a member of a RTA to exploit the preferential tariffs of host with other counties. The attractiveness of members of RTAs holds for investment originating in other members of the RTA or in countries outside the RTA.[5] The model addresses the issue of RTAs. We hypothesize that membership in a RTA positively influences FDI and trade.

Increased efficiency is most frequently considered in the context of reduced costs, firms invest abroad to gain from cost differences or to take advantage of economies of scale or scope (OECD, 2004a). Such FDI is a means for expansion of supply opportunities (supplying products less expensively), while expansion by seeking increased market share is a response to demand-side opportunities. One measure of cost that firms face is labor cost and the cost of capital. Much of the literature considers these factors**.** We hypothesize that factor costs are negatively related to inward investment and exports are positively related to outward investment and imports.

FDI is also influenced by costs arising from trade-related policies. Researchers and individuals involved in the industry have suggested that trade-related policies are not generally a direct cause for the location and distribution of FDI (West and Vaughan (1995); and Vaughan, *et al.* (1994)). Rather, they may indirectly affect location and distribution through the increased cost that these policies may have on inputs in the country of production. Such trade-related policies include tariffs, NTBs and domestic support such as measured by the market price support (MPS). The MPS reflects the additional costs of primary agricultural inputs into the food industry. We hypothesize that tariffs are positively related to investment and negatively related to trade. The MPS (and relative MPS for bilateral trade partners) is positively related to outward investment and imports and negatively related to inward investment and exports.

Throughout the literature, a theoretical notion related to empirical specification surfaces: trade and FDI are related. The empirical specification necessary to deal with this is to recognize that there exists the possibility that FDI and trade flows are endogenous. This endogenous relationship suggests a relationship of substitutes or complements. This relationship must be tested and considered in the modeling of FDI and trade. Given the nature of the trade data, another empirical

specification that is appropriate to consider is whether there exists a pattern among the activities of a single country to the others, such a pattern suggests that the data are to be handled in a particular fashion, panel versus pooled. If a pattern does exist, is the pattern fixed or random? That is, should the models be specified as a random or fixed effects model?

Model Specifications and Statistical Concerns

We take the approach that to understand FDI more fully, both inward and outward FDI must be analyzed. Therefore, four equations with the dependent variables inward investment, imports, outward investment and export are estimated. Handling each equation separately is reasonable given that the trade data are bilateral while the FDI data are total and not bilateral.

We use an investment model that is influenced by Barrell and Pain (1996); Chakrabarti (2003); Gopinath, Pick and Vasavada (1999); among others. We use a gravity model to explore these factors for the bilateral trade data. The approach is chosen for the trade flows model because of its connection to theoretical models (Bergstand 1985, Bergstand 1989 and Bergstand 1990) and its popularity in use (Otsuki, Wilson and Sewadeh (2001a and 2001b); Zahniser, *et al*. (2002); among others).

$$\begin{aligned}\ln(Exports) = {} & \alpha_1 + a_2 \ln(Outward\ Investment) + \alpha_3 \ln(GDP_{Home}) \\ & + \alpha_4 \ln(GDP_{Host}) + \alpha_5 \ln(Wage_{Home}) + \alpha_6 \ln(MPS_{Relative}) \\ & + \alpha_7 \ln(Market\ Share_{Home}) + \alpha_8 \ln(Distance) + \alpha_9 \ln(Tariff\ Rate_{Host}) \\ & + \alpha_{10} \ln(Not\ EU\ or\ NAFTA) + \varepsilon\end{aligned} \tag{1}$$

For the export model (see equation 1), we expect that outward investment is positively related to exports. That is there is a complementary relationship between FDI and trade. We expect that the GDPs of the trading partners will be positive because the larger the economy the more the economy will trade. We expect that the distance variable is negative. Distance between the trading

partners is a proxy for transport costs. The relative MPS is the ratio of the MPS of the home country to its partner. We expect this variable to have a negative relationship with exports because the MPS represents, in part, the extra cost of domestic agriculture. If the MPS of the home country is larger than the MPS of its partner, one would expect that the food product is relatively more costly than the product produced in the importing country. Market share is relative domestic production to domestic consumption in the exporting country. We expect this variable to be positive. This variable represents the competitiveness of the domestic market. The more competitive the market the more the country will export. The market share variable is not based on the bilateral trade data of the dependent variable; rather, the data are from total trade with the world. Membership in a RTA (or non-membership) would be beneficial (detrimental) to exports if both partners are member of the RTA. Therefore, we assume that non-membership in the EU or NAFTA has a negative effect on exports.

$$\begin{aligned}\ln(\textit{Outward Investment}) = {} & \alpha_1 + a_2 \ln(\textit{Exports}) + \alpha_3 \ln(GDP_{Home}) \\ & + \alpha_4 \ln(Wage_{Home}) + \alpha_5 \ln(MPS_{Home}) + \alpha_6 \ln(\textit{Market Share}_{Home}) \\ & + \alpha_7 \ln(\textit{Tariff Rate}_{Host}) + \alpha_8 \ln(\textit{Not EU or NAFTA}) + \varepsilon\end{aligned} \tag{2}$$

The outward investment model (see equation 2) is similar to the export model. However, the data are not bilateral. Therefore, we do not use bilateral explanatory variables: only GDP_{Home} and MPS_{Home} but not *Distance*.

$$\begin{aligned}\ln(\textit{Imports}) = {} & \alpha_1 + a_2 \ln(\textit{Inward Investment}) + \alpha_3 \ln(GDP_{Home}) \\ & + \alpha_4 \ln(GDP_{Host}) + \alpha_5 \ln(Wage_{Home}) + \alpha_6 \ln(MPS_{Relative}) \\ & + \alpha_7 \ln(\textit{Distance}) + \alpha_8 \ln(\textit{Tariff Rate}_{Host}) + \alpha_9 \ln(\textit{Not EU or NAFTA}) + \varepsilon\end{aligned} \tag{3}$$

For the import model (see equation 3), we expect similar results except in two instances: relative MPS and market share. Relative MPS should be positive because as the MPS of the importer is larger than the MPS of the exporter, one would expect that the importer will import more food

products because of lower cost of production in the exporting country. The market share variable should have a negative sign because the more competitive the market, the harder it is for the partner to penetrate the market of importing country. One additional difference is the import model includes the inward investment. To continue with the complementary relationship between trade and investment, we hypothesize that inward investment is positive. The trade and FDI data are potentially endogenous. Therefore, we test the data for endogenous variables.

$$\begin{aligned}\ln(\textit{Inward Investment}) = {} & \alpha_1 + a_2 \ln(\textit{Imports}) + \alpha_3 \ln(GDP_{Home}) \\ & + \alpha_4 \ln(Wage_{Home}) + \alpha_5 \ln(MPS_{Home}) \\ & + \alpha_6 \ln(\textit{Tariff Rate}_{Host}) + \alpha_7 \ln(\textit{Not EU or NAFTA}) + \varepsilon\end{aligned} \tag{4}$$

The inward investment model (see equation 4) is similar to the import model. However, the data are not bilateral. Therefore, we do not use bilateral explanatory variables: only GDP_{Home} and MPS_{Home} but not *Distance*.

For the outward investment, the tests indicated that market share is also an endogenous model. For the export model, the test result for an endogenous variable for outward investment is statistically significant at the 9% p-value; therefore, the result is a borderline case. The test indicates that market share is an endogenous variable. We estimated the model with and without the instrumental variable (IV) correction, and we decided that the better model is the IV model, which assumes that outward investment and market share are endogenous variables.

To test the robustness of the results we used the applied and bound tariffs. We use the Hausman test to determine whether the fixed or the random effects model is the best model. In all the cases, the Hausman test provides evidence that the random effects model is the better model; however, the outward and inward regressions revert to the simple pooled model. Many of the studies in the review use the fixed effect model. For the export model the random effects model is presented

because of the results of the Hausman test. Therefore, care should be taken in reviewing the panel model of exports. The results of the models are presented in tables 1 and 2.

Results

The trade and investment models used in this study are based on the traditional gravity models. Beginning with the variables that are found in many studies of FDI and trade, we see that the model results are as expected, the GDPs of the home and host country are positive and statistically significant. The FDI equations have only the GDP of the relevant country, and these equations do not have the distance variable. The reason for these and other omissions is that the FDI variable does not represent bilateral investment like the dependent variables on trade. The FDI data are of total outward investment from or inward investment into the world not just OECD countries. Therefore, bilateral relationships are not relevant. The cost of production variable, wage is not statistically significant in most of the model specifications, except for one of the import regressions.[6] The distance variable, a proxy for transportation costs, is negative and significant.

In light of the hypotheses, the models are constructed to provide evidence of an existence of a relationship between FDI, trade, and trade policies. From the analysis, evidence exists to suggest that FDI and trade flows are related. In terms of outward investment the relationship does not appear strongly because of the weak statistical insignificance of the endogenous variables, ln(*Exports*). The tests, which are not reported, indicate a strongly, statistically significant endogenous relationship. Therefore, a relationship exists but the relationship is weak and the opposite what was hypothesized. In terms of inward investment, the relationship was stronger and positive, suggesting that inward investment is positively influenced by imports. One of the import regressions shows a strong positive

relationship also. The implication of this result is that policies that increase trade may also increase FDI and vice versa.[7]

The competitiveness of a market is measured by market share, which is the ratio of domestic production to domestic consumption (production less exports plus imports).[8] Market share, which is endogenous, has a positive effect on outward investment and exports. The larger domestic production is to domestic consumption the greater the tendency to invest abroad and export. This result is consistent with the idea that a firm in a highly competitive market will look for other markets to invest to find new sources of market share in other countries. Because of statistical problems with the market share variable in the inward and import equation, market share was omitted from the equations.

The trade and trade-related policy variables provide evidence that trade policy has an influence on FDI and trade. Each model has the applied or the bound tariff rate for food products in the receiving country. For the export and outward investment models the tariff rate is the one that the exporter/host country would face in the recipient market. For the import and inward investment models, the tariff (bound or applied) rate is the tariffs applied by the recipient country. The tariff rate variable is not statistically significant in the outward investment models; however, in one of the export models the bound tariff rate had a negative effect on exports, which was hypothesized. The positive sign on the tariff rate for the inward investment models are significant and as hypothesized. These results suggest that inward investments are used, in part, to "jump tariffs." The negative, statistically significant sign of the tariff for imports is as expected.

In addition to tariffs, support to agriculture, which raises the price of domestic inputs, has an effect on FDI in the food sector. The models include the market price support (MPS) for the home

and host country and the ratio of the MPS for the home to host country. For inward investment, the MPS is negative and significant suggesting that investors are discouraged from investing because the costs of local agricultural inputs are high. The import model has a positive and significant value for the relative MPS variable. This result indicates that large domestic support at home relative to the domestic support of the exporting country increases imports of food products; therefore, higher relative cost of production encourages imports. Like the tariff case, firms may "jump" domestic support through FDI. The relative MPS for exports is not statistically significant.

Lastly, membership in a customs union or regional trade agreement has an effect on trade and investment. Membership in either the EU or NAFTA should increase investment and trade flows, and not being a member should hurt investment and trade flows. For all of the regressions, the dummy variables for non-membership in EU and NAFTA are negative and statistically significant, which is consistent with the hypothesis. This result is consistent with the idea that an investor in a home country invests in a host country with preferential tariffs in a third country to exploit the preferential tariffs. The host country serves as platform to export products into other countries. A host country that is a member of a regional trade agreement is attractive for receiving investments.

Summary

In this study, we review both outward and inward FDI to give a fuller picture of the trade and investment relationship. While these results of these models are based on analysis of OECD countries, the recommendations in the research findings may also be valid for developing countries. Investment requires healthy, functioning markets. Low costs of production can also attract FDI; however, the inputs need to be of good value not just inexpensive. Border measures may attract some FDI; however, the border measures may not be a sustainable method to attract FDI in the long run.

This point is particularly true if border measures reduce the efficiency of domestic inputs or slow the imports of needed inputs. Additionally, measures that reduce the distance between countries can increase trade flows which increase inward investment. The distance between countries can be reduced through trade facilitation. Improved regional cooperation and trade agreements may improve inward investment as suggested by the results of EU and NAFTA. With greater consideration of the effect of different policies on investment a more efficient flow of capital is possible.

Endnotes

[1]For the food sector, much of the OECD FDI data, discussed in this paper, relate to "manufactured products of which food." Further investigation of these data reveals that, at least for the United States, this sector includes beverages and tobacco products 15 and 16 ISIC Rev 3. These data are compatible with the trade data in the OECD STAN.

[2]FDI data are not available for all OECD countries. For many of the countries reported, data for all years are not available. Therefore, care should be taken in the cross-country comparisons.

[3]Note several countries reported no data: Outward stock: Australia, Belgium, Canada, Greece, Hungary, Ireland, Luxembourg, Mexico, New Zealand, Spain, Switzerland and Turkey and Inward stock: Canada, Belgium, Greece, Ireland, Luxembourg New Zealand, Spain, Switzerland, and Turkey.

[4]These comments are based on a discussion with Odette Vaughan of Agriculture and Agri-Food Canada.

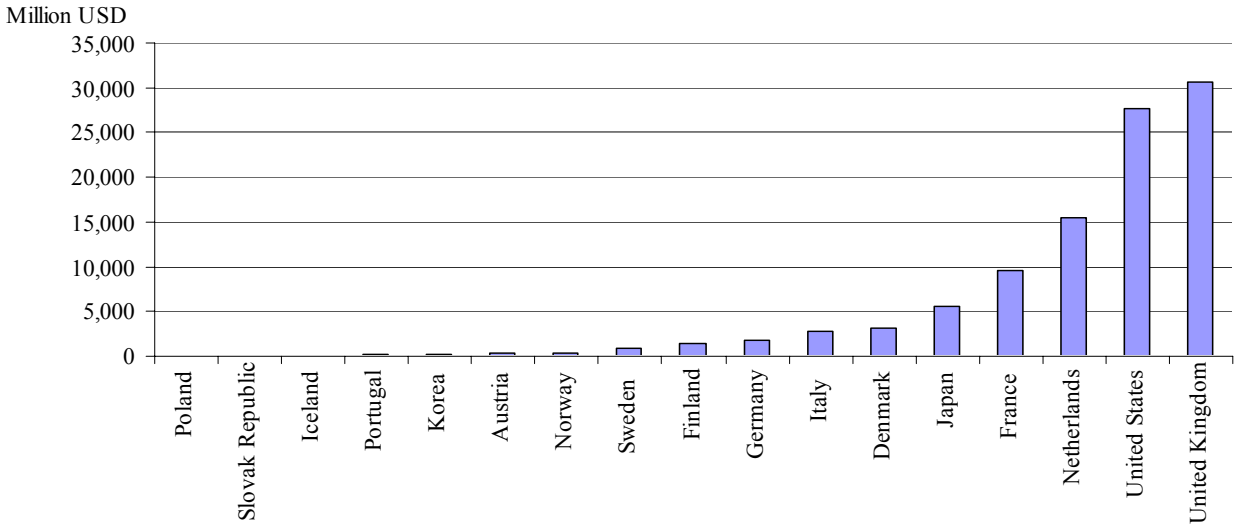
[5]Bolling and Somwaru state "U.S. Companies see FDI as an opportunity to expand their markets beyond the continental United States, and liberalized investment rules that are often included in regional trade agreements allow food companies to expand their markets." (Bolling and Somwaru, 2001 p. 24)

[6]In earlier specifications, interest rates were included. This variable is seen in some of the literature; however, upon further reflection, the exclusion of the interest rate may be appropriate. Because investment may be funded from any number of locations, the interest rate of the home or host country may tell us little of the true cost of capital.

[7]Care needs to be taken when reviewing these results. The data sets for the inward and outward FDI are different because all countries did not report both. For example Mexico reports only FDI for inward investment and not outward. Therefore differential effects are possible.

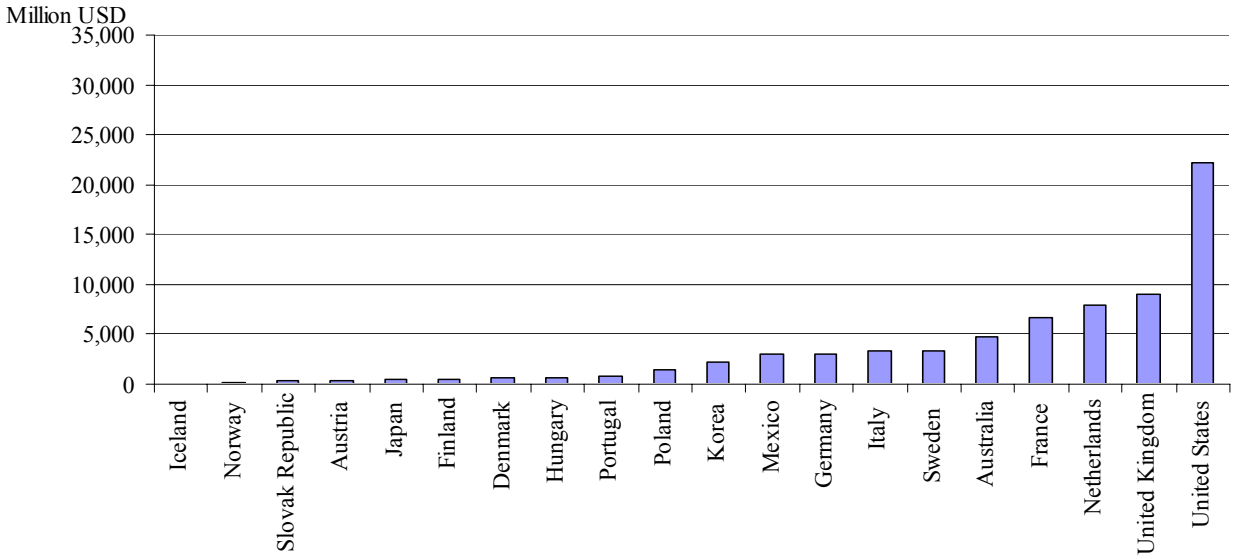
[8]The import and export data in market share represent total trade to and from the world; therefore, they are different than the dependent variables which represent bilateral trade flows among OECD countries.

Figure 1. Outward Stock FDI in the Food Sector
Averages 1990-2000



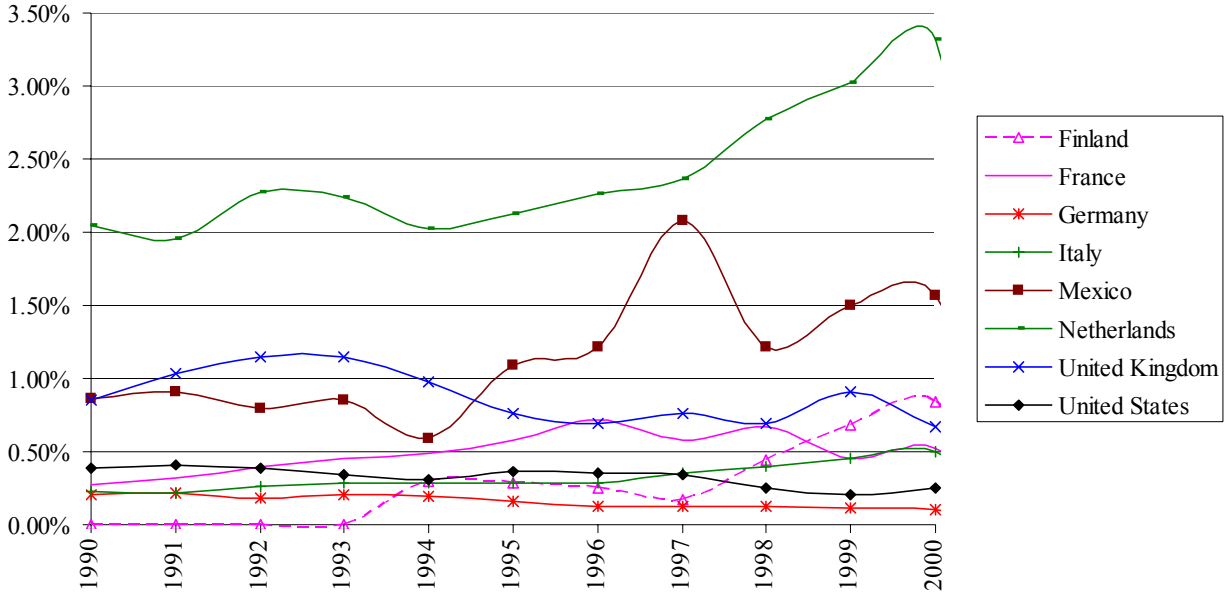
Note: Data for every year are available for Austria, France, Germany, the Netherlands, the United Kingdom and the United States. Iceland, Poland and Slovak Republic had average FDI outward stocks below 100 million USD. The averages are from the author with current year 2000.
Source: OECD (2004b)

Figure 2. Inward Stock FDI in the Food Sector
Averages 1990-2000



Note: Data for every year is available for France, Germany, Iceland, Italy, Mexico, Netherlands, Norway, United Kingdom and United States. Iceland had average FDI inward stocks below 10 million USD. Korea only reports data for 2000 and 2001 so their average is for those two years. The averages are from the author with current year 2000.
Source: OECD (2004b)

Figure 3. Inward Stock FDI for the Food Sector as a Percentage of GDP



Note: The averages are from the author with current year 2000.
Source: OECD (2004b)

Table 1. Exports and Outward Stock Investment

	(1)ln(*Outward Investment*) IV Model	(2) ln(*Outward Investment*) IV Model	(3) ln(*Exports*) IV Panel RE Model	(4)ln(*Exports*) IV Panel RE Model
ln(*Outward Investment*)			0.021[a]	0.040[a]
			(0.13)	(0.13)
ln(*Exports*)	-1.65[a]	-1.59*[a]		
	(0.93)	(0.86)		
ln(GDP_{Home})	1.95***	1.94***	0.74**	0.69*
	(0.48)	(0.40)	(0.34)	(0.34)
ln(GDP_{Host})			0.32***	0.30***
			(0.029)	(0.029)
ln($Wage_{Home}$)[b]	0.13	0.090	-0.20	-0.16
	(0.12)	(0.13)	(0.26)	(0.27)
ln(MPS_{Home})	0.75*	0.65		
	(0.41)	(0.37)		
ln($MPS_{Relative}$)			0.023	0.015
			(0.024)	(0.027)
ln(*Market Share*$_{Home}$)	16.12*[a]	15.78**[a]	3.18***[a]	3.21***[a]
	(7.57)	(6.45)	(0.79)	(1.00)
ln(*Distance*)			-0.60***	-0.63***
			(0.084)	(0.081)
ln(*Tariff Rate*$_{Host}$)[c]	0.0016	0.022	-0.030**	-0.0053
	(0.038)	(0.041)	(0.013)	(0.0048)
Not EU or NAFTA Dummy	-2.85***	-3.076***	-0.22	-0.47***
	(0.85)	(0.80)	(0.17)	(0.15)
Constant	2.57	-2.061	-11.59	4.52**
	(5.073)	(4.97)	(1.37)	(2.40)
σ_μ			0.93	0.94
σ_ε			0.22	0.22
ρ			0.95	0.95
R^2	0.58	0.60	0.66	0.68
N	109	106	924	921

[a]Endogenous variables

[b]The wage for regressions 1 and 2 is the labour costs of employees in the food industry while for the other regressions the wage of these employees.

[c]The tariff is the simple average applied tariff rate for food and tobacco; the two tariffs are summed. For regressions 1 and 3, the tariff is the simple average bound tariff rate for food and tobacco.

Note: Significance at ***=1% level, **=5% level, and *=10% level. The standard errors are in parentheses below the estimated coefficient. RE indicates a random effects model. The pooled model has robust standard errors. IV indicates the use of instrumental variables to correct for endogenous variables. Regressions 1 and 2 are grouped by year, and regression 3 and 4 are grouped by country pairs.

Table 2. Imports and Inward Stock Investment

	(5) ln(Inward Investment) IV Model	(6) ln(Inward Investment) IV Model	(7) ln(Imports) Panel RE Model	(8) ln(Imports) Panel RE Model
ln(*Inward Investment*)			0.18***	0.0069
			(0.063)	(0.028)
ln(*Imports*)	0.37**[a]	0.36**[a]		
	(0.16)	(0.15)		
ln(GDP_{Home})	0.22**	0.22**	1.37***	0.13***
	(0.10)	(0.094)	(0.26)	(0.032)
ln(GDP_{Host})			0.41***	0.79***
			(0.020)	(0.12)
ln($Wage_{Home}$)[b]	0.12	0.13	-0.77***	-0.025
	(0.10)	(0.10)	(0.27)	(0.13)
ln(MPS_{Home})	-0.79***	-0.62***		
	(0.17)	(0.13)		
ln($MPS_{Relative}$)			0.38***	0.0084
			(0.049)	(0.026)
ln(*Distance*)			-1.11**	-0.79***
			(0.043)	(0.097)
ln($Tariff\ Rate_{Host}$)[c]	0.058**	0.064**	0.013	-0.020*
	(0.021)	(0.027)	(0.010)	(0.012)
Not EU or NAFTA Dummy	-0.57**	-0.52**	-0.76***	-0.34**
	(0.22)	(0.18)	(0.17)	(0.14)
Constant	-2.17	-2.075	2.41**	5.79***
	(1.041)	(1.03)	(1.13)	(0.84)
σ_μ			0.19	1.055
σ_ε			0.86	0.18
ρ			0.048	0.97
R^2	0.67	0.67	0.70	0.64
N	121	119	900	883

[a]Endogenous variable

[b]The wage for regressions 1 and 2 is the labour costs of employees in the food industry while for the other regressions the wage of these employees.

[c]The tariff is the simple average applied tariff rate for food and tobacco; the two tariffs are summed. For regressions 6 and 7, the tariff is the simple average bound tariff rate for food and tobacco.

Note: Significance at ***=1% level, **=5% level, and *=10% level. The standard errors are in parentheses below the estimated coefficient. RE indicates a random effects model. The pooled model has robust standard errors. IV indicates the use of instrumental variables to correct for endogenous variables. Regressions 5 and 6 are grouped by year, and regression 7 is grouped by country pairs, while regression 8 is grouped by importer.

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