

Trade or Foreign Direct Investments: Evidence from CEE Countries.

Very preliminary draft

Artur Klimek
Wroclaw University of Economics

August 2007

Abstract

The main goal of the paper is to examine the effect of FDI on trade of CEE countries. The author investigates if the foreign production and trade are substitutes or complementaries for the selected group of countries. Most previous empirical studies were devoted to highly developed countries and this is one of the first attempt to test this relationship in CEE. The results of the finding will also help to answer the question about the changes in internationalization process of the CEE firms and relation between exports and outward FDI as the way of servicing foreign markets.

JEL Classification: F14; F23,

Keywords: Trade; Foreign Direct Investment, Central East European countries

The author acknowledges financial support from the scholarship financed by European Union and the Government of Poland (ZPORR, priority II, activity 2.6)

Introduction

For years, the region of Central East Europe has been a great field for western direct investments in many industries. The flow was rather one-way: from western to eastern countries. During last years we can observe the new trend. The small companies in Eastern Europe, which were founded after breaking the Iron Wall, have grown and today show their strength abroad. Foreign direct investment are still flowing, even in higher level, to CEE countries, but we can also notice the reverse of the flow.

The CEE companies learnt a lot from foreign companies present in their neighbourhood. In many cases they were subcontractors of huge multinationals (MNC) and had chance to use the modern technology and had access to know-how. Fifteen years ago hardly any local companies were able to meet multinationals' requirements, today they work with the same standards.

The facts mentioned above helped the companies to find the unique way of behaving on the market and create their own innovations. Today the companies want to use the sources they have to become an important player on the foreign markets. The important fact for the companies was also joining European Union and gaining access to Common Market.

The CEE companies start their expansion from Balkans and CIS and try to build their regional power first and then expand the European market to cover the entire continent. The companies also understand that it is impossible to compete directly with well-established western MNCs and they look for their place in East.

The paper will present the data on the trade and foreign direct investment of the CEE countries. I will indicate the main directions of trade and investments. Having these basic data, I will come further to the discussion on the optimal foreign market servicing for CEE companies.

It was almost impossible to find the paper on the outward foreign direct investment of CEE firms and only few works on trade of the firms. Most of discussion took an example of western companies and their investments in CEE. The paper will be one of the first in the discussion on the position of this countries and their firms in the international business environment. Firstly, I will present the literature facts on trade and foreign direct investment. Then I will carry out the empirical studies of the

relationship between trade and FDI. Are they substitute or complementary in CEE?

The firm has two main options to service foreign market. It can export its goods to foreign sales net (e.g. distributors) or start the business abroad by opening own premises (e.g. sales subsidiary) and it is named foreign direct investment (FDI). These are two most extreme approaches and are caused by different motives. Exporting means access to the foreign market through external sales net and having no direct commitment to the foreign market. Exporting can be the first step in internationalization of the firm. Further, the company can open its own sales subsidiaries or even production plants in the host country. This is a gradual involvement in the foreign market (Johanson and Vahlne, 1977, 1990; Root, 1987). The firm moves to further grade after gaining knowledge and experience about the host market and having positive financial results from previous activities. The firm starts exporting to neighbour countries and then expands to markets that are more distant. Exporting is the mode that requires least amount of sources and brings less risk than other foreign activities. Therefore it is a way chosen by the companies with limited resources or no experience in foreign activities. On the other hand, low resource commitment can bring low profits and control over the market (Agarwal, Ramaswami, 1992).

On the contrary to exporting, the firm can choose foreign direct investment as the entering way to an international market. This equity-based model is named strategic approach (Kwon, Konopa , 1993). The higher resource commitment provides higher degree of control over the market activities in the foreign country. Additionally, FDI brings higher profits comparing to exporting. Involving resources in foreign country causes also higher risk to the international operations and requires more experience and knowledge from managing staff. FDI means partial ownership of the resources in other country (joint venture) or wholly owned subsidiary (Anderson, Coughlan, 1987, Mahoney et al, 1998).

The main aim of the paper is to present findings based on the empirical studies of investments and trade flows of CEE countries. There are three levels of data utilized in this empirical study. The first level is country, then manufacturing and industry investments. Previous studies concerned mostly well developed European countries like Austria (Pfaffermayer, 1996) or Great Britain (Zarotiadis and Mylonidis, 2005), therefore it is crucial for enlarged Europe to find the role of CEE countries in this process.

Theoretical background

There are two main approaches to the relation between trade and direct investment. In the origin, they are contrary ones. Most of previous contributions find a substitutive relation between trade and investments. They underline that outward FDI is expected to replace the export of the similar goods from home country. The empirical works confirming the substitution relation are among others, Brainard (1997) and Blonigen (2001). Brainard in his paper, studied US foreign investments and concluded that MNCs mostly serve foreign markets via their own subsidiaries in host countries and it is contradiction of exports. Blonigen studied Japanese trade and investments with US and found that imports of some items declined after Japanese companies opened their production facilities in US. Bayoumi and Lipworth (1997) also use the date for Japan to confirm the substitution effect of the flows.

On the other hand, most of the empirical studies confirm complementarities between the two way of internationalization. Foreign investing can create new possibilities for exporting the goods from home country. For example, a new production subsidiary abroad can purchase intermediate goods in origin country to supply host market. The work of Blongen (2001) and Head and Ries (2001) suggested such approach to this relation. The following works provide further studies on the complementarities of the trade and FDI Lipsey and Weiss (1981), Grubert and Mutti (1991), Eaton and Tamura (1994) Svensson (1996), Clausing (2000), and Barrell and Pain (1999).

Trade can also gain from FDI because the affiliates in many countries make exchanges of their products and it can cause additional stream of export from origin country. Most of the empirical contributions concern the trade of US or other developed countries, therefore this paper will be attempt to provide evidence from less developed countries and their multinationals.

Data

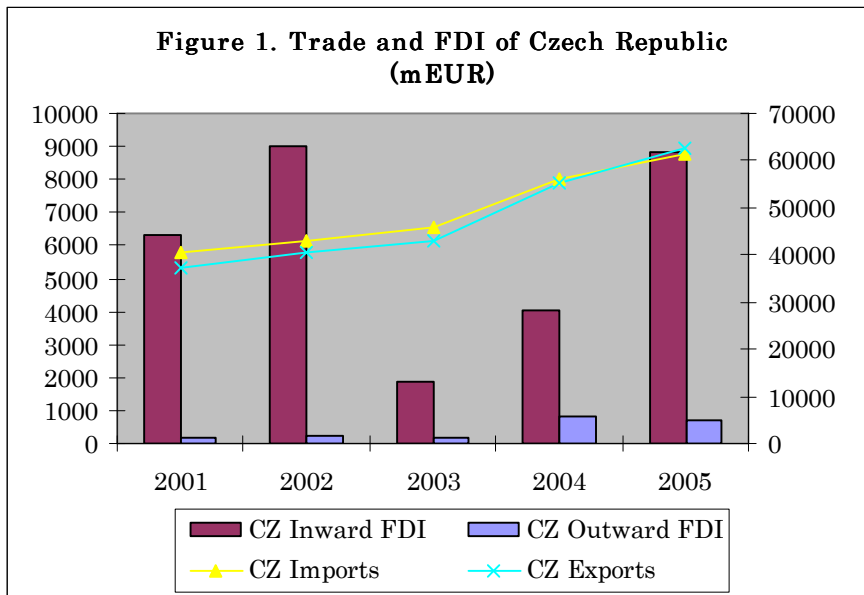
There were two main data sources for the empirical study. The data concerning investment were compiled by Eurostat of European Commission. The data were extracted from the table *EU direct investment flows, breakdown by partner country and economic activity* in the section Economy and Finance.

The data represents period of five years from 2001 till 2005. The limitation of data did not allow studying longer period. But it should not influence the results, as the earlier periods did not supply representative information. The data concern: Czech Republic, Hungary and Poland. The data represent the flows of investments both from and to mentioned countries. Most of FDI in CEE countries (CZ – 86%, HU-92% and PL-79%) are made by multinationals originated in EU15, therefore I place the investments from the countries in one group. The main partners from EU15 are Germany, France, Great Britain and the Netherlands. When it comes to main inward investments there are three main countries: United States, Switzerland and South Korea. Anyway analyzing the partners separately might cause misleading conclusions due to fact that single transaction could change the result for the country. Taking into consideration groups of countries I avoid also the problem that a German company is investing in Poland, but the ready goods are imported to its French subsidiary. When analyzing outward FDI, most of the streams flow to bordering CEE and CIS countries. This is one of the first contributions to the subject of relation between trade and investments in CEE, therefore future studies will be conducted on the finer disaggregate of data.

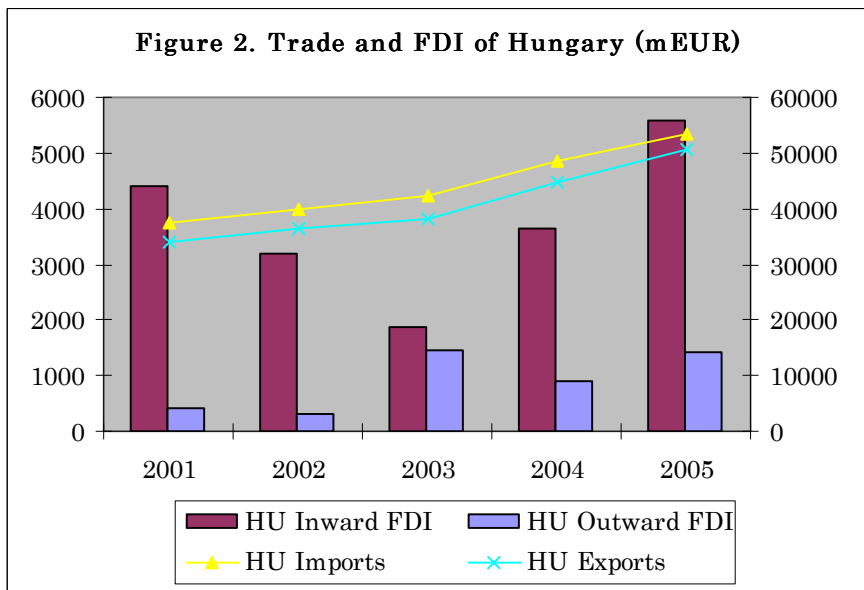
The trade data were extracted from Eurostat – External Trade database for the same period as investment data. The linkages between trade and industry were created by connecting the trade flows on 2-digit level according to SITC classification with investment grouped by Eurostat FDI FATS (based on NACE rev. 1).

The source of macroeconomic data concerning real exchange rate of the countries and growth of GDP was also European statistics – Eurostat.

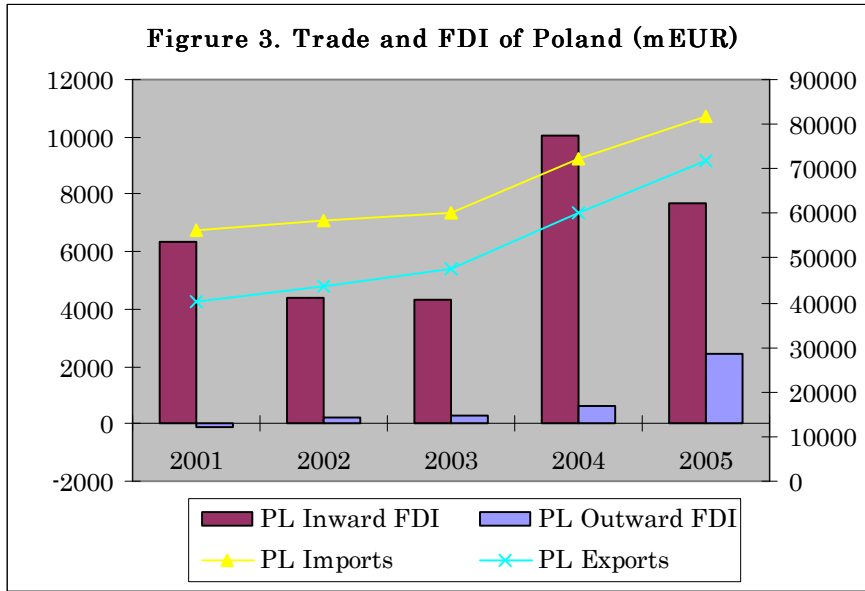
Below I present the plot of investments and trade for Czech Republic, Hungary and Poland. The main conclusion from coming out of the figures is raising significance of outward FDI and the investments are followed by exports.



Source: own calculations



Source: own calculations



Source: own calculations

Estimation framework

The main hypothesis of this paper is that trade and investments are complementarities. To investigate the relation between them I will apply the model that uses the value of the FDI on the respective flows of trade. I will use the outward FDI as the variable of exports and inward FDI as variable of imports.

Following the work of Swenson (2004) I will firstly test the effect of total inward foreign investments and total outward foreign investments on the subsequent imports and exports, respectively. Baseline regression specification is:

$$\ln(\Delta imports_{cm}) = \beta_1 \ln(Total_Inward_FDI_{cm}) + \psi X_{cm} + \varepsilon_{cm} \quad (1)$$

$$\ln(\Delta exports_{cm}) = \beta_1 \ln(Total_Outward_FDI_{cm}) + \psi X_{cm} + \varepsilon_{cm} \quad (2)$$

In order to achieve more detailed results of the changes in trade in particular industries I will utilize the regression equation of data at finer disaggregation. I create two measures that correspond to industry and manufacturing direct investments.

Industry measure is created by connecting foreign direct investments that occurred in the particular industry with all the two-digit flows of imports and export, respectively.

The second measure is *manufacturing* investment variable, which is the connection between the sum of total investment by the country/group of countries with the value of exports/imports of all manufacturing products. I avoid double counting of the values by subtracting the value of investments that appeared on the lower level of aggregation (industry level). The baseline regression specification is:

$$\ln(\Delta imports_{cm}) = \beta_1 \ln(INDUSTRY_IMP_{cm}) + \beta_2 \ln(MANUFACT_IMP_{cm}) + \psi X_{cm} + \varepsilon_{cm} \quad (3)$$

$$\ln(\Delta exports_{cm}) = \beta_1 \ln(INDUSTRY_EXP_{cm}) + \beta_2 \ln(MANUFACT_EXP_{cm}) + \psi X_{cm} + \varepsilon_{cm} \quad (4)$$

Time subscripts have been omitted in all equations, but it is important to indicate that data concerning trade in year t are connected with investment data of year $t-1$. For example, the imports in 2005 were linked with investments of year 2004. It was necessary to catch the relation between trade and new investment completed a year before. Any fixed effects for countries, industries, etc were removed from the regression specification.

The remaining variable X is a composition of macroeconomic data that affect the changes in trade between countries. These are real exchange rate (*RER*) and growth of gross domestic product (*GDP*) of Czech Republic, Hungary and Poland. I expect that exports in the countries rise when the RER appreciates and GDP rises. Imports are expected to decline when REX depreciates and GDP rises.

Empirical findings

The four equations presented above are estimated using adjusted least squares methodology. I present in six tables the effects of FDI on imports and exports separately for each country. Unlike Swenson (2004) I created the measure to find the relation between exports and outward FDI. The information about exports in used to find the way of servicing foreign markets by firms from

Czech Republic, Hungary and Poland. I test if the increase in outward FDI may lead to changes in exports.

Table 1. Effect of Inward FDI on Czech Republic's Import Changes

	EU15		World (excl. EU15)	
	Eq. (1)	Eq. (3)	Eq. (1)	Eq. (3)
<i>Total_Inward_FDI</i>	0,117 ** (0,035)	-	0,647 *** (0,063)	-
<i>INDUSTRY_IMP</i>	-	0,253** (0,098)	-	-0,026*** (0,113)
<i>MANUFACT_IMP</i>	-	0,185 (0,212)	-	0,096 (0,140)
<i>RER</i>	-6,764 *** (0,200)	-3,156 ** (1,207)	-2,621 *** (0,326)	-4,828 *** (0,785)
<i>GDP change</i>	0,141 *** (0,072)	0,543 ** (0,274)	0,070 ** (0,023)	0,113 (0,317)
<i>R²</i>	0,999	0,983	0,999	0,986

Notes: Standard errors are in parentheses. The dependent variable is the change in imports. The FDI variables are lagged relative to the dependent variable. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

Table 2. Effect of Outward FDI on Czech Republic's Export Changes

	EU15		World (excl. EU15)	
	Eq. (2)	Eq. (4)	Eq. (2)	Eq. (4)
<i>Total_Outward_FDI</i>	0,122 *** (0,031)	-	1,059 *** (0,032)	-
<i>INDUSTRY_EXP</i>	-	-0,700 *** (0,112)	-	0,231 * (0,148)
<i>MANUFACT_EXP</i>	-	0,369 * (0,249)	-	0,219 (0,418)
<i>RER</i>	5,599 *** (0,137)	6,513*** (0,788)	0,818 *** (0,165)	3,545 ** (1,518)
<i>GDP change</i>	0,015 (0,079)	0,376 (0,289)	0,877 *** (0,134)	1,365* (2,072)
<i>R²</i>	0,999	0,999	0,999	0,994

Notes: the same as in table 1.

There is a positive association between previous year total investments and trade flows for Czech Republic for both group of investing countries. The situation changes when we observe finer level of disaggregation of foreign investment variables. There is a negative industry coefficient for exports to EU15 and imports

outside EU15. The real exchange rate variable has correct sign and GDP is positive for imports and export changes.

	EU15		World (excl. EU15)	
	Eq. (1)	Eq. (3)	Eq. (1)	Eq. (3)
<i>Total_Inward_FDI</i>	0,393 ** (0,113)	-	1,628 *** (0,035)	-
<i>INDUSTRY_IMP</i>	-	0,34083 *** (0,072838)	-	0,007** (0,087)
<i>MANUFACT_IMP</i>	-	0,423 (0,666)	-	0,566 (0,566)
<i>RER</i>	-4,200 *** (0,673)	-1,446 (3,503)	-2,860*** (0,203)	-2,293 (4,333)
<i>GDP change</i>	2,465 *** (0,449)	0,720 ** (0,506)	2,232 *** (0,167)	0,469 ** (0,788)
<i>R²</i>	0,999	0,985	0,999	0,992

Notes: the same as in table 1.

	EU15		World (excl. EU15)	
	Eq. (2)	Eq. (4)	Eq. (2)	Eq. (4)
<i>Total_Outward_FDI</i>	2,373 *** (0,334)	-	0,002 (0,056)	-
<i>INDUSTRY_EXP</i>	-	-0,318* (0,585)		0,053 (0,103)
<i>MANUFACT_EXP</i>	-	0,767* (0,996)		0,087* (0,151)
<i>RER</i>	4,763 ** (1,578)	3,136 (5,925)	6,240 *** (0,306)	4,492 *** (0,772)
<i>GDP change</i>	3,389 ** (1,246)	0,195 (1,097)	3,825 (0,205)	0,222 (0,351)
<i>R²</i>	0,999	0,992	0,999	0,993

Notes: the same as in table 1.

Similar results as in a case of Czech Republic, are for Hungary's total investment coefficients, which comes according to previous findings concerning the relation between FDI and trade. Industry coefficients are positive for all imports and exports outside EU15, but negative for EU15.

Table 5. Effect of Inward FDI on Poland's Import Changes

	EU15		World (excl. EU15)	
	Eq. (1)	Eq. (3)	Eq. (1)	Eq. (3)
<i>Total_Inward_FDI</i>	0,507 *** (0,053)	-	0,141 ** (0,089)	-
<i>INDUSTRY_IMP</i>	-	0,396 *** (0,091)	-	-0,002 ** (0,069)
<i>MANUFACT_IMP</i>	-	-0,273 (0,467)	-	-0,131 (0,105)
<i>RER</i>	-9,233 *** (0,303)	-5,153 *** (2,570)	-6,894 *** (0,462)	-5,831 *** (0,596)
<i>GDP change</i>	0,837 *** (0,021)	0,556 *** (0,267)	0,761 *** (0,120)	2,265 *** (0,611)
<i>R²</i>	0,999	0,998	0,999	0,995

Notes: the same as in table 1.

Table 6. Effect of Outward FDI on Poland's Export Changes

	EU15		World (excl. EU15)	
	Eq. (2)	Eq. (4)	Eq. (2)	Eq. (4)
<i>Total_Outward_FDI</i>	1,439 *** (0,071)	-	0,008 ** (0,018)	-
<i>INDUSTRY_EXP</i>	-	0,063 * (0,206)	-	-0,035 (0,090)
<i>MANUFACT_EXP</i>	-	-0,200 * (0,193)	-	0,118* (0,096)
<i>RER</i>	0,896 (0,383)	6,047 *** (0,871)	6,033 *** (0,085)	4,982 *** (0,428)
<i>GDP change</i>	0,931 (0,253)	2,115 * (2,015)	0,822 *** (0,031)	0,662*** (0,201)
<i>R²</i>	0,998	0,993	0,999	0,998

Notes: the same as in table 1.

In a case of Poland, I noticed positive coefficients of all inward investments on the imports to this country for both EU15 and other investing country. The results are the same for lower level of aggregation when industry investments have positive influence on the imports of the products from the same industry.

The results of the effect of outward FDI on total exports are positive in the finest level of aggregation for industry and total FDI. Such finding is in accordance to previous empirical findings. The macroeconomic variables, when significant, are positive in all instances. The real exchange rate coefficient for Polish imports comes as expected and imports rise when real exchange rate of

Polish zloty depreciates. The value of GDP coefficient for Poland is positive and rises together with trade flows.

Conclusions

The paper covered the issue of association between imports and inward foreign direct investment on one hand, exports and outward direct investment on the other. The further studies should also cover the relations between inward FDI and exports of the countries. The reason is that in many cases foreign companies use the resources abundance and location in the middle of Europe as the place of production for other European markets. The example is here the car industry in Poland, where 97% of produced cars are exported.

I have measured flows of trade and investments for three new members of European Union and results are similar in all cases. General conclusion of the paper is that the investments do not displace the trade flows in the high level of aggregation, but causes the increase in their levels. My findings that total manufacturing investments stimulate trade in related products confirms previous conclusions of aggregate studies and thesis of complementarity relationship between trade and FDI.

In some cases, the positive association between the flows of trade and investment does not come when studying finer disaggregation of data. The possible reason for such results is that outputs of some industry are used as intermediate goods for another industry and then traded abroad.

The most positive association between trade and investment appeared for Czech Republic. This can be connected to the fact that trade and investment play more significant role for this country than for two others and biggest UE15 investors make purchases abroad to supply the production in this country.

The flows of trade and investments for the sample countries is rising, therefore it is necessary to carry out further studies on the trade of the countries. In addition, the geographical position of the countries can possibly lead to build platform to serve the rest of Europe. Future work should be devoted to particular industries and changes in their trade/investment flows.

References

- [1] Agarwal, S. and S. N. Ramaswami (1992), Choice of Foreign Market Entry Mode: Impact of Ownership, Location and Internationalization Factors, in: *Journal of International Business Studies*, First Quarter, pp. 1–27
- [2] Anderson, E. and A. T. Coughlan (1987), International Market Entry and Expansion via Independent or Integrated Channels of Distribution, in: *Journal of Marketing* Vol. 51, pp. 71–82.
- [3] Barrell, R. and N. Pain (1999), Trade Restraints and Japanese Direct Investment Flows, in: *European Economic Review* 43, pp. 29–45.
- [4] Bayoumi T. and G. Lipworth (1997), Japanese Foreign Direct Investment and Regional Trade, in: *IMF Working Papers* No. WP/97/103
- [5] Brainard, L. S. (1997), An Empirical Assessment of the Proximity–Concentration Tradeoff Between Multinational Sales and Trade, in: *American Economic Review* 87, pp. 520–44.
- [6] Blonigen, B. A. (2001), In Search of Substitution Between Foreign Production and Exports, in: *Journal of International Economics* 53 (2001), pp. 81–104.
- [7] Clausing, K. A. (2000), Does Multinational Activity Displace Trade?, *Economic Inquiry* 38, pp.190–205.
- [8] Eaton, J., and A. Tamura (1994), Bilateralism and Regionalism in Japanese and US Trade and Direct Foreign Investment Patterns, *Journal of the Japanese and International Economics* 8, pp. 478–510.
- [9] Grubert, H. and John M., Taxes (1991), Tariffs and Transfer Pricing in Multinational Corporate Decision Making, *Review of Economics and Statistics* 73, pp. 285–293.
- [10] Head, K. and R. John (2001), Overseas Investment and Firm Exports, in: *Review of International Economics* 9, pp. 108–122.
- [11] Johanson, J. and J. Vahlne (1977), The internationalization process of the firm: A model o knowledge development and increasing foreign commitments, in: *Journal of International Business Studies*, Vol. 8, pp 23-32.
- [12] Johanson, J. and J. Vahlne (1990), The mechanism of internationalization, in: *International Marketing Review*, Vol. 7(4), pp. 11-24.

- [13] Kwon, Y. C. and L. J. Konopa (1993), Impact of Host Country Market Characteristics on the Choice of Foreign Market Entry Mode, in: *International Marketing Review* Vol. 10, pp. 60–76.
- [14] Lipsey, R. E. and M. Y. Weiss (1981), Foreign Production and Exports in Manufacturing Industries, *Review of Economics and Statistics* 63, pp. 488–494
- [15] Root, F. R. (1987), Entry Strategies for International Markets, Lexington, MA: D.C. Heath
- [16] Svensson, R., (1996), Effects of Overseas Production on Home Country Exports: Evidence Based on Swedish Multinationals, *Weltwirtschaftliches Archiv* 132, pp. 304–329.
- [17] Swenson D. (2004), Foreign Direct Investment and the Mediation of Trade Flows, in: *Review of International Economics*, Vol 12 (4), pp. 609-624
- [18] Zarotiadis G. and N. Mylonidis, FDI and trade in the UK: Substitutes or Complements, paper for ETSG Conference, August 2005