The effect of inward foreign direct investments on export performance of developing countries: evidence from nine members of CIS

By

Umeyra Ibrahimova

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In partial fulfillment of the requirements for the degree of Master of Arts Supervisor: Professor László Halpern

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Abstract

The main objective of this thesis is to investigate the influence of inward Foreign Direct Investment (FDI) on the export performance of nine CIS countries by using annual aggregate level data over the period of 1995 and 2008. The results reveal significant negative effects of the lagged FDI variables. Although three different methods were employed in order to obtain reliable results, it cannot be claimed that all factors affecting FDI-export relationship have been taken into account in the study, which implies that there is still room for improving the model. It's suggested that the effect can change in future stages of development of the countries. Inward FDI is believed to have potential positive spillover effects over host countries' economies, which can be tested in future researches through separating them from direct effects resulting from additional capital supply into exportation sector.

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Introduction

Foreign direct investment (FDI) has become the center of attention of numerous researches concentrating on its determinants and possible effects on both host and home country's economies. "FDI is a category of international investment that reflects the objective of a resident entity of one economy (the direct investor) obtaining a lasting interest in an enterprise resident in another economy (the direct investment enterprise). The "lasting interest" implies the existence of a long-term relationship between the direct investor and the direct investment enterprise, and a significant degree of influence by the investor on the management of the enterprise. Direct or indirect ownership of 10 per cent or more of the voting power of an enterprise resident in one economy by an investor resident in another economy is considered to be evidence of such a relationship." (UNCTAD Training Manual on Statistics for FDI and the Operations of TNCs, Volume I, 2009, page 35)

The recent growth of globalization processes in the world gave rise to active participation of developing countries in international trade. Nowadays, the relationship between Foreign Direct Investment (FDI), exports and economic growth has become the center of attention of policy makers and researchers as trade and Foreign Direct Investment, positively influencing economic growth, are regarded as leading drivers of international economic development. So, in the environment of technological development, increasing competition, new organizational and managerial strategies, both developed and developing countries (including CIS members) are trying to employ all their potential in order to attract more FDI.

FDI inflows can positively influence welfare of developing countries mainly via the following ways. First of all, FDI increases capital resources demanded for enhancement of

various sectors of economy in developing countries. Secondly, FDI may decrease unemployment level through establishment of new working places. Thirdly, the existence of FDI may increase the competition, which, in turn, can promote productivity growth and introduction of products of higher quality and wider range into the market. Also foreign technology can result in positive research and development spillovers on the domestic companies. Taking all abovementioned into consideration, more and more developing countries choose policies supporting FDI (Ionascu and Žigić, 2004)

Depending on the nature of motivation, FDI can act as either a complement or a substitute to export of a host country. For example, if FDI is made to resource - rich country, and particularly, into sectors oriented to extraction of resources, this will boost the extraction and then export of the resources, acting as a complement to exportation. Thus more FDI will result in higher export levels.

As was pointed out before, FDI may also have an important role in development of the host economy through the spillover effects. One way in which spillover effects can occur in members of CIS is being a result of investments directed into retail trade development (hotel industry, financial sector, tourism). Such effects were observed in Spain, where FDI was first aimed at the development of such sectors as restaurant services and tourism. Existence of foreign managerial and organizational skills resulted in spread of positive effect over the other industries. On the other hand, if FDI is made into retail sectors, the direct effect will not be felt immediately, which will create a feeling of no effect of FDI on exports. Thus, the relationship between motivation of investments and phases of development is subject to change in later stages of development of a country and FDI inflows into it. The bottom-line of this discussion is that we are not sure what the relationship between FDI and exports is and it will not be a surprise even if

there is no linkage at all as the situation may change in future. This uncertainty in relationship induces interests in conducting new researches. Such study would be of particular importance with respect to CIS countries.

Studying the relationship between inward FDI and Export performance of countries is of special importance for policymakers. In case of detection of positive relationship the FDI-welcoming strategy is developed as it promotes further growth for the country. I assume conducting similar research with regard to CIS countries would be interesting as the obtained results may illustrate the current picture of FDI-Export relations suggesting further actions. Very few studies of such nature have been done involving CIS countries due to lack of data. In my work I will try to conduct the analysis with available data, and derive preliminary results which could be a basis for further researches.

The target of this thesis is to analyze to what extent host countries' export performances are affected by inward FDI in case of CIS. I investigate the direct empirical relationship between the FDI inflows and export activity. The assumed linkage between the FDI in previous period and export performance of the CIS countries was tested applying pooled OLS, Fixed Effects, and First-Difference estimation methodology on data for 9 CIS countries during 1995-2008 taken from UNCTAD and IMF databases. The results of the estimation show negative relation between FDI in previous period and export performance of a country in the following period. Nevertheless, obtained results do not exclude the possibility of indirect impact of FDI inflows on export performance through knowledge and technology spillovers giving a rise to domestic production level, which might have been obtained if the effects were divided into FDI-specific and spillover effects. The organization of the paper is as follows. Review of the literature relevant to this research area alongside with comparison of previously conducted empirical studies is presented in Section II following the introduction. Section III exhibits recent trends in global and CIS inward FDI. Section IV discusses empirical methodology, justifies the methods used in the study, describes the data and its sources and interprets obtained results. The last section concludes with the summary of main results and concluding remarks.

2. Literature review

Broad discussions have been conducted on the theory of FDI, its impact on the development and growth of the recipient countries. Both influence on developed and developing countries has been closely studied. As in my work I will estimate the effect of FDI on export as one of the crucial elements contributing into economic development, I believe it would be helpful to review previously conducted researches and results on this topic. In this section I attempt to summarize the main conclusions of papers discussing main determinants of FDI both theoretically (Faeth, 2009) and empirically (Campos and Kinoshita, 2003), as well as to analyze the findings of authors as Kutan and Vukšic (2007), Gu, Awokuse and Yuan (2008), Gunawardana and Sharma (2009), Sharma (2000) on the direct effect of FDI on export performance of countries.

Literature on main FDI determinants:

In her paper "Determinants of foreign direct investment – a tale of nine theoretical models" Faeth (2009) in attempt of shedding light on the nature of FDI, discusses the FDI theories appearing in economic literature. She comes to a conclusion that FDI cannot be explained by one particular theory emphasizing the importance of specific determinant, but should jointly consider them. For example, according to the neoclassical theory (which is based on Hecksher-Ohlin-Samuelson proposition and later findings on considerations of roles of Multinational Enterprise (MNE)) capital-abundant countries take part in international trade through two major ways, i.e. exportation and capital transfer into foreign countries offering greater returns on capital; so, if a country is capital-abundant, it's implied that under certain conditions it will engage in investing activities. The framework proposed by Dunning (1977,

1979) suggests that FDI takes place in case of the Ownership, Location and Internalization Advantages of Multinational Companies (enterprises) over domestic firms. Ownership advantage occurs when MNE exhibits a comparative advantage over the domestic firms in technology, knowledge and production spheres. Location advantages encompass the opportunity of entering larger markets with relatively lower transportation, factor and production costs, market size, infrastructure and other favorable market characteristics. Internalization advantage refers to the evidence when investors get more profit from implementation of projects in foreign countries rather than in their home countries. Neoclassical and OLI theories are more frequently referred to in empirical studies.

In addition to illustrated theories, concepts of vertical and horizontal FDI should be distinguished as well, in order to get more comprehensive perception on the motivations inducing FDI. "Vertical Foreign Direct Investment takes place when a multinational corporation owns some shares of a foreign enterprise, which supplies input for it or uses the output produced by the MNC. Horizontal foreign direct investments happen when a multinational company carries out a similar business operation in different nations. Horizontal FDI is FDI in the same industry as the home industry."¹ According to general equilibrium framework introduced by Markusen (1997) and Markusen (2002) known as a Knowledge-Capital Model, horizontal FDI prevails in case of reasonable or high trade costs, as well as size and factor endowment similarities between the countries. Whereas, in contrast, vertical FDI prevails in case of the countries (Mariel, Orbe and Rodríguez, 2009). This model has been discussed by Faeth (2009) as well.

¹ <u>http://www.economywatch.com/foreign-direct-investment/</u> (accessed 05 June, 2010)

Tariff jumping is also considered a motive of FDI. However, FDI induced by this motive is likely not to affect the recipient economy favorably, as through investments the homecountries just try to penetrate local market protected by import tariffs, and have no further intentions to evoke exporting activities enlargement; however, a positive influence may still be observed as a result of indirect spillover effects (Ionascu and Žigić, 2004).

Out of mentioned theories OLI is the most applicable to explanation of motives of FDI into the developing countries, including countries of CIS region, as the MNEs investing in them possess the comparative advantage in described spheres, and make use of it. The potential of CIS markets is also very high, so the location suggestion of the theory is observed as well.

Empirical evidence on determinants of FDI: In their paper, Campos and Kinoshita (2003) analyze a panel data set for 25 transition economies between 1990 and 1998, and find empirical evidence that the main determinants of FDI are institutions, natural resources, agglomeration economies, trade openness and labor costs. However, they also find important differences between the Eastern European and Baltic countries, and the CIS countries: in the CIS countries group natural resources and infrastructure matter, while agglomeration matters only for the former group. Also, IMF country teams determined that the investment climate depends on a great variety of factors such as burdensome taxation, corruption and poor governance, weak legal and regulatory system, state involvement in the economy as well (Clinton and Shiells, 2003).

There is vast literature on effects of FDI on economic growth/development of the host country, including the effects on export performance. The studies were mainly done using European or OECD countries, which can be explained by the fact that the data were not available on other countries for the analysis. CIS countries were not extendedly empirically studied as well. In fact the FDI to these countries began to flow only couple of years after the collapse of USSR. In general, while some authors argue for an insignificant or even negative effect of FDI on exports, others advocate a strong positive relationship (or mixed results). Such different and sometimes contradictory results make it difficult to state unique opinion about inward FDI-export relationship. The content of some papers is given below along with their distinguishing features.

Literature on export effects:

As my study examines the transition countries, it will be useful to review the existing literature on the different aspects of the relationship of FDI and exports in developing countries.

FDI inflows are believed to contribute into the expansion of exports level of the recipient country. This is assumed to happen basically through supplying the host economies with additional capital to be invested into exporting sectors, transmitting newest production technologies, assisting in promoting the host countries' exported goods to be offered on bigger, more advanced and developed markets, encouraging domestic firms to learn from the experience of MNCs resulting in enhancement of managerial and organizational skills in the firms, etc. However, hypothetically, negative effect of inward FDI on exports via creation of harsh competition and thus, removal of potential, but weak exporters from the competition, hindrance of domestic investment expansion can also be expected (Zhang, 2005).

Described theoretical suggestions regarding the linkage between the FDI inflows and country's export performance have been carefully investigated and empirically tested in a variety of studies. Findings most applicable to the current study are summarized below.

In their study "Foreign Direct Investment and Export Performance: Empirical Evidence", which I take as a main reference in my thesis, Kutan and Vukšic test the significance of FDI as a variable determining the export level of 12 Central and Eastern European countries during 1996-

2004, 9 year time span. They distinguish between 2 possible effects of FDI on the recipient economy's exporting supply capacity: 1. through the influence on domestic production volume; and 2. FDI-peculiar effects originating from technological and knowledge advantages, higher productivity and managerial skills. Real Effective Exchange Rate, Trade Liberalization Index, GDP trend were used as control variables. Increase in FDI stock was found to have significant positive effects (both spillover and direct) on the export performance of the countries involved in the study.

Another research conducted by Gu, Awokuse and Yuan (2008) examines the impact of FDI inflow on export performance of 14 most export-engaged FDI-attracting industrial and foodmanufacturing sectors in China between 1995 to 2005. The study concludes that once such export determining variables as imports, real exchange rates, domestic investment and GDP are controlled for, FDI inflow imposes a positive influence on Chinese total exports. The same suggestion was made after accounting for cross-section effect of FDI which lets explain the FDI effects on the export performance of each sector. The innovation of the study is that unlike previous researches concentrating basically on aggregated data, it allows for and empirically estimates the variation in the effects of FDI on exports across the sectors. Except for one sector, the rest 13 sectors are subject to positive effects of FDI on their export performance.

In the paper of Gunawardana and Sharma (2009), they investigate how FDI inflows, labor productivity and effective rate of industry assistance possibly affect the export of Australian manufacturing sectors over the period of 1988 through 2005. The distinguishing feature of the study from previously mentioned ones is that the estimation model is constructed so that it captures short-run, lagged and long-run effects, which was not done in the researches discussed before; FDI and exports appear to be positively correlated in all cases. Research

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implies that in a short-run, a 1 % increase in FDI inflow causes a 0.397 % increase in exports of Australian manufacturing industries. The effect of four-quarter lagged FDI variable on exports is found to be 0.09 % higher, whereas in a long run we observe 2.668% possible increase in exports.

Xuan and Xing (2008) examined the effect of FDI on exports of Vietnam estimating gravity equation using the data on FDI inflows from 23 countries from 1990 to 2004. According to their robust findings, a 1 % increase in FDI inflows results in 0.25 % increase in exports.

In his turn, Sharma (2000), while analyzing the factors influencing the rapid export growth of Indian economy did not find any statistically significant effect of FDI on Indian exports suggesting a promotion of inward-oriented policies in India as a possible explanation for this finding. Also, after giving a detailed insight into the Foreign Direct Investments Policies introduced in India in different years, he stresses the point that the role of FDI in exporting activities expansion basically depends on motivation inducing it: having a good effect in case of comparative advantage usage and an adverse effect in case of tariff jumping-encouraged FDI.

The findings in reviewed papers suggest that the role of motivation, variations in countries and differences across the sectors should not be underestimated while determining the FDI-export relationship in the countries.

3. Recent trends of FDI in the world and CIS countries

Throughout last 20 years the global FDI inflows showed a tendency of growing at a higher growth rate than the global trade. The recent trend of inward FDI is reflected in Figure 1.

Figure 1

Global FDI inflows in billions of U.S. dollars (1994-2008)



*Note: the graph have been automatically generated by IMF Data Mapper

The fast increase of FDI inflows in 90's explained by cross-border mergers and acquisitions (M&A) was followed by a considerable decrease from 2000 to 2005 in every region of the world excluding Africa. The world FDI inflow growth dropped from 207.93 % in 1994-1999 to 38.53 % in 2000-2005. The decline in FDI inflows in Asia which was partly associated with the 1997 Asian financial crisis can act as one of the reasons for such a downfall in global FDI inflows (Chaisrisawatsuk and Chaisrisawatsuk, 2007).

Figures 2 and 3 depict the trends in FDI and exports of goods in developed countries, CIS members, developing Asia, Europe and Central and Eastern European countries. We can see from the graphs that from 2001 till 2008 the speeds of growth of FDI inflows and exports were consistent with each other. After 2007 again drop is observed in both FDI inflows and export levels related to global financial crisis. Thus, conclusion of possible relationship between these two macroeconomic indicators can be made.



Figure 2. Annual exports of goods in billions of U.S. dollars (1980-2008)

*Note: the graph have been automatically generated by IMF Data Mapper



Figure 3. Annual inward FDI in billions of U.S. dollars (1994-2008)

*Note: the graph have been automatically generated by IMF Data Mapper

Figure 4. Total annual FDI inflows into analyzed CIS countries, in millions of U.S. dollars (1995-2008)



Source: UNCTAD

*Note: the graph analyzes the constant values of FDI inflows (2005=100)

Figure 4 illustrates the trend in FDI flows in the CIS countries in particular. The chart shows that the amount of total FDI inflows was growing from 1995 to 2008. However, existing unequal distribution of FDI inflows among the countries is not captured. For instance, countries like Azerbaijan, Kazakhstan, and Russia attract more FDI than others, mainly because of investment in resource (energy resources) extraction or energy transportation infrastructure. (Kudina, Jakubiak, 2008) On average, between 1995 and 2008 the value of FDI inflows received by CIS region amounted for about 24 billion US dollars per year. 60% of this amount, making on average 15 billion US dollars annually, went to the Russian Federation and the extraction industry; being also resource rich countries, Kazakhstan and Azerbaijan, in turn, attracted 3.7 billion USD and 0.7 billion USD per year respectively during 1995-2008. In general, direction of the FDI into the resource extraction fields as well as energy resources transportation in majority of cases is the distinguishing feature of investments into CIS countries, whereas in such countries

as The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia the main direction of FDI is manufacturing industry and financial sector development. (Kudina, Jakubiak, 2008)



Figure 5. FDI inflows to the CIS in millions of U.S. dollars, 1995-2008

Source: UNCTAD *Note: the graph analyzes the constant values of FDI inflows (2005=100)

Figure 5 illustrates the trend of FDI inflows throughout the period of 1995-2008. Looking at the graph, we observe a significant growth in FDI receipts of Russia, Kazakhstan and Ukraine after 2004, whereas FDI in Azerbaijan declined in subsequent years. Investment in remaining countries was relatively stable.

The highest FDI stocks per capita in the CIS were detected in energy-producing and energy-transit countries (Kudina, Jakubiak, 2008). Russia and Kazakhstan accumulated over 3800 and 3100 USD per capita in 2008 respectively (Figure 5).



Figure 6. FDI stock per capita in the CIS countries in 2008 in U.S. dollars

The economy of Tajikistan was found to be highly dependent on the Foreign Direct Investment inflows into the country as the level of local investment was low, although the per capita amount was not high as well. The percentage of FDI in overall investment into Moldova, as well as resource-abundant countries as Azerbaijan and Kazakhstan in during 2000-2006 equals to approximately 33%. However, the fact that Uzbekistan, Belarus and Russia report only 10% of foreign investment participation in total investments of the economies, appear to point to the fact that they are not FDI-dependent to a high degree. (Jakubiak, Kudina, 2008)

Out of the countries included in the study Kyrgyzstan appears to be the lowest recipient of FDI among mentioned 9 countries from 1995-2008. However, the role of FDI in CIS countries is still considered to be low if we compare it to Central and Eastern European and Baltic countries, which can be explained by the fact that the trade legislation and trade liberalisation are not sufficiently effective there. (Clinton and Shiells, 2003)

Source: UNCTAD

Nevertheless, the above discussion and figures mainly suggest that FDI's role in CIS economies is growing. If we have a look at Figures 5 and 7 we can see similar patterns of growth in FDI inflows and exports which points to the possible correlation between them.



Figure 7. Exports of CIS countries in millions of U.S. dollars, 1995-2008

Source: UNCTAD *Note: the graph analyzes the constant values of exports (2005=100)

4. Empirical model

4.1. Methodology

The previous sections provide an insight to the notion of FDI and its possible role in the development of the country; present its trend in the world and CIS countries in particular, discusses its main determinants and findings of various studies regarding the effects of FDI on growth of country's economy. This section, in turn, illustrates the empirical analysis conducted in order to reveal potential effect of FDI on export performance of CIS countries, and consists of description of the methodology and data used in the analysis, as well as the interpretation of the derived results. First, I perform Granger causality test in order to determine the direction of causality of FDI and export variables, as it's a disputable issue which should be considered as well. Then, I estimate my model. In order to get and report reliable results three methods of estimation were employed: pooled OLS, Fixed Effects and First Difference (Movsumzade, 2009).

I regress natural logarithm of exports of a country on the FDI flows and stock separately controlling for GDP, TOI (trade openness index), REER (real effective exchange rate). The pooled OLS method is used first in estimation of the model, after, the fixed effects estimation is performed, and then first-difference of logarithm estimator is applied to test the robustness of the previously found results. Employing logarithmic form is favorable as the model consists of variables, which are generally used in logarithms. Moreover, it is easier to derive elasticities when logarithmic transformation is implemented.

Trade policies, legislation and reforms in CIS countries have substantial effect on investment in the country; they act as unobservable factors in the model affecting the response variable as well. Countries which achieve moderate level of FDI are believed to implement effective trade policies. As a rule, these same countries show good export performance via adopting export-oriented policies and providing better opportunities for entrepreneurs. Taking into consideration the continuous changes in trade policies which are a result of transition period CIS countries undergo, as well as accounting for non-stable processes in the world, fixed effect and first difference methods were preferred over others. In accordance with Wooldridge (2003) in case the fixed effects are simultaneously correlated with the regressand (Export) and regressors (FDI), it's a usual practice to apply fixed effects estimation and first-difference estimation in order to remove them.

First – Difference estimator eliminates fixed effects as well as serial correlation in residuals and is applied as a third method to check the robustness of results.

4.2. Data description

This econometric study analyzes the data consisting of 126 observations collected from 9 CIS (Commonwealth of Independent States) countries over 1995-2008 time interval. Substantial FDI inflow into these countries was observed basically after the collapse of USSR, and during the mentioned period was steadily increasing in annual terms becoming an important element of the economies of this region, which is supported by availability of country level data for this period (although not for every country). Out of 12 CIS countries, data for Turkmenistan, Uzbekistan and Tajikistan were missing on real effective exchange rate index (REER), also the available data were not consistent in appearance, which led to the exclusion of these countries from my analysis. Russia seems to be an outlier in the sample, as all indicators are higher in comparison with other countries; however, without taking it into consideration, the change in the results is not significant, so I decided to keep it due to the limited number of observations. Thus, the countries included in the study are: Armenia, Azerbaijan, Kazakhstan, Kyrgyz republic, Moldova, Georgia, Ukraine, Belarus, and Russia.

In order to estimate FDI effect on the exports it's necessary to take into account other determinants of export performance too. According to Fugazza (2004), satisfactory domestic transport infrastructures, domestic investment, macroeconomic environment (size, level of development, competitiveness, etc. of the country) and good quality institutions appear to be major determinants in the enhancement of the exporting sector.

Table 1 contains short description of the variables estimated in the model along with their main descriptive statistics.

Number	Variable	Description	Mean	Standard deviation	Observations
1	Exports	Country's yearly exports of goods and services, in constant 2005 USD values	31157.31	69936.93	126
2	Foreign Direct Investment Inflow	FDI inflow into country's economy, in constant 2005 USD	2608.47	7594.78	126
3	Foreign Direct Investment Stock	FDI stock in country's economy, in constant 2005 USD	17150.66	52633.24	126
4	GDP	Gross Domestic Product in constant 2005 USD	85460.60	223239.7	126
5	Real Effective Exchange Rate	REER index of the country	106.14	26.87	126
6	Trade Openness Index	Trade Openness measured as ratio of total trade (imports+exports) on GDP	0.97	0.34	126
7	Ln(Exports)	Natural log of exports	8.61	1.89	126
8	Ln(Foreign Direct Investment Inflow)	Natural log of FDI inflows	6.19	1.89	123
9	Ln(Foreign Direct Investment Stock)	Natural log of FDI stock	7.88	1.88	126
8	Ln(GDP)	Natural log of GDP in constant 2005 USD	9.52	1.80	126
9	Ln(Real Effective Exchange Rate)	Natural log of Real Effective Exchange Rate	4.64	0.21	126
10	Ln(Trade Openness Index)	Natural log of Trade Openness Index	-0.08	0.31	126
11	DLn(Exports)	Log-difference of Exports, in constant 2005 USD	0.13	0.15	117
12	DLn(Foreign Direct Investment Inflow)	Log-difference of Foreign Direct Investment Inflow, in constant 2005 USD	0.24	0.83	96

Table 1. Variables

Table 1. Variables (continued)						
13	DLn(Foreign Direct Investment Stock)	Log-difference of Foreign Direct Investment Stock, in constant 2005 USD	0.26	0.28	117	
14	DLn(GDP)	Log-difference of GDP, in constant 2005 USD	0.13	0.21	117	
15	DLn(Real Effective Exchange Rate)	Log-difference of Real Effective Exchange Rate	0.02	0.12	117	
16	DLn(Trade Openness Index)	Log-difference of Trade Openness Index	-0.01	0.15	117	

FDI might be a good proxy for the technological environment. In his paper Fugazza (2004) argues that FDI is likely to lead to an improvement in the competitiveness level of a country on international markets through the technological constitution of exports. That's one of the justifications for inclusion of this variable into the export estimating equations. Also, FDI can directly affect exports through provision of necessary capital to exporting sectors. It's more likely that FDI has a lagged effect on export performance, i.e. FDI in previous period affects exports in next period. In order to account for the mentioned "intertemporal effect" the lagged form of FDI variable is used in the analysis. As in many FDI countries the investment is observed to be made into long-term projects, as well as into extraction industries, it can't be denied that more lagged effect can be expected and its estimation may give more robust and reliable results.

FDI data are usually reported in terms of stocks and flows. "FDI stock refers to the value of capital and reserves plus net indebtedness, whereas FDI flow refers to capital provided by or received from a foreign direct investor to an FDI enterprise" (Zhan, 2006, page 2). I use both

indicators in this study in order to distinguish between the effects of these terms. We anticipate positive coefficients on both variables in accordance with results found by Kutan and Vuksic (2004). Positive coefficient expectation is also a result of belief that in case country gets additional capital (investment) into the sectors of the economy (most importantly, into the sectors involved in exportation activities), the productivity capacity will increase as a result of benefiting from investment inflow, which, in turn, will lead to export boost.

Since more developed countries tend to export more, a variable controlling for economic development of the country is to be employed in the analysis in a process of determination of the impact of Foreign Direct Investment on the export performance. GDP of a country perfectly meets these requirements. Along with implying information about general economic performance of a country, this variable is supposed to reflect country's productivity and exportation capacity. So, I expect a positive coefficient. Also, it is usually claimed that GDP is endogenous in such empirical models; however, the problem is easily overcome by considering GDP of the previous period (Fugazza, 2004).

As was suggested by Kutan, Vuksic (2007) in their paper, in order to capture the impact of the competitiveness of a country on exporting performance Real Effective Exchange Rate variable (REER) is included in the empirical model, as REER serves as a proxy of relative prices capable of reflecting the competitiveness of examined countries. As the REER index reported in World Bank statistics reflects the real appreciation of a currency, the anticipated sign of a coefficient is negative.

Trade Openness Index, which is a trade-related variable, captures the impact of the trade liberalization policies introduced by the country, illustrating how intense the country's participation in foreign market activities is. "Trade liberalization reduces anti-export bias and makes exports more competitive in international markets." (Klasra, 2009, p. 2). So, the expected sign is positive.

Nominal values of GDP, FDI flows, FDI stocks, exports (of goods and services) and imports (used in construction of Trade Openness Index) were collected from "Handbook of Statistics On-line" database of UNCTAD. The data on REER were taken from The World Bank's Global Economic Monitor (GEM) dataset. The nominal values of GDP were deflated to base year of 2005 using Consumer Price Index (CPI) of US. The nominal values of the rest of the variables were converted to real values of 2005 using Wholesale Price Index (WPI) of US. Both CPI and WPI were obtained from the World Bank's official database.

4.3. Empirical results

Numerous studies have been conducted in order to establish the linkage and way of causality between FDI and Exports. However, the results are contradictory, confirming two-way causality when FDI causes exports and vice versa, one-way causality from FDI to Exports as well as one-way causality from Exports to FDI (Gunawardana and Sharma, 2009). In order to prepare and implement efficient, practical and useful policies serving the purpose of boosting economic growth, the direction of causality should be determined. In order to check whether one of these variables is appropriate to forecast the other, we apply Granger causality test.

Table 2. *Pairwise Granger causality test:*

Null Hypothesis:	Obs	F-Statistic	Prob.
LNFDIFLOWS does not Granger Cause LNEXPORT	92	3.48801	0.0192
LNEXPORT does not Granger Cause LNFDIFLOWS		5.63538	0.0014

In accordance with probability values presented in the above table, we reject both the hypothesis that FDI inflows do not Granger Cause Exports and that the Exports do not Granger cause FDI. Consequently, we can say that Granger causality runs both ways, from Exports to FDI and vice versa. According to Noy and Aizenman (2005), as both FDI and exports are likely to exhibit a rise influenced by higher factor productivity, institutions of better quality, and growing markets, obtaining two-way causality is not considered a surprising result.

The Granger test is formed to examine causality between two variables and if the valid linkage includes more than two variables, the obtained results might be not reliable.² In our case, the linkage might exist between GDP, exports, and FDI. Despite revealed two-way causality, I test the model including FDI as a right hand side variable.

As was stressed earlier, competitiveness measure of the economy, FDI, development level of the country, are found to be main determinants of export performance, along with quality of institutions and infrastructure (Fugazza, 2004). Based on availability of data on variables, I estimate less sophisticated version of representative export equation used in Fugazza's paper, not controlling for domestic development, transportation costs, infrastructure, and institutions. The model looks like below:

(1):
$$ln(Export_{it}) = \beta_0 + \beta_1 * ln(GDP_{it-1}) + \beta_2 * ln(FDIflows_{it-1}) + \beta_3 * ln(REER_{it}) + \beta_4 * ln(TOI_{it}) + \alpha_i + \gamma_t + u_{it}$$

(1) is the benchmark model for my study. (2), (3) and (4) are models altered through replacement of $\ln(\text{FDIflows}_{it-1})$ with $\ln(\text{FDIflows}_{it-2})$, $\ln(\text{FDIstock}_{it-1})$, and $\ln(\text{FDIstock}_{it-2})$ respectively.

$$(2): \ln(Export_{it}) = \beta_0 + \beta_1 * \ln(GDP_{it-1}) + \beta_2 * \ln(FDIflows_{it-2}) + \beta_3 * \ln(REER_{it}) + \beta_4 * \ln(TOI_{it}) + \alpha_i + \gamma_t + u_{it}$$

$$(3): \ln(Export_{it}) = \beta_0 + \beta_1 * \ln(GDP_{it-1}) + \beta_2 * \ln(FDIstock_{it-1}) + \beta_3 * \ln(REER_{it}) + \beta_4 * \ln(TOI_{it}) + \alpha_i + \gamma_t + u_{it}$$

(4): $ln(Export_{it}) = \beta_0 + \beta_1 * ln(GDP_{it-1}) + \beta_2 * ln(FDIstock_{it-2}) + \beta_3 * ln(REER_{it}) + \beta_4 * ln(TOI_{it}) + \beta_4 * ln(T$

² <u>http://dictionary.sensagent.com/granger+causality/en-en/</u> (accessed on 05 June, 2010)

 $\alpha_i + \gamma_t + u_{it}$

where α_i – captures country-fixed effects and γ_i captures year-specific fixed effects, u_{ii} is an idiosyncratic error term. $ln(GDP_{ii-1})$ accounts for natural log of lagged GDP in constant 2005 U.S. dollars , $ln(REER_{ii})$ controls for the level competitiveness of the country approximated by Real Effective Exchange Rate, $ln(FDI flows_{ii-1})$, $ln(FDI flows_{ii-2})$, $ln(FDI stock_{ii-1})$ and $ln(FDI stock_{ii-2})$ denote natural logarithm of lagged (by one and two periods) FDI flows and stocks respectively. The coefficient on $ln(TOI_{ii})$ is supposed to demonstrate to which extent exports are influenced by trade openness level. As was previously mentioned, GDP and FDI enter the equation as lagged variables because it is supposed that time should pass in order the true effect of these variables to be visible. Ideally, the availability of instrument variable would be very favorable for obtaining consistent results despite any endogeneity problem which might appear. However, as finding an exogenous variable correlated with endogenous explanatory variable only, is challenging and not easy, neither IV nor 2SLS estimations can be applied. As White Period Standard Errors adjust for heteroscedasticity we use them throughout the testing.

The model is estimated with pooled OLS, Fixed Effects and log-transformed firstdifferenced estimator. The results of Pooled OLS and Fixed Effects estimation are presented in Table 3.

Table	3
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	Dependent variable: Ln (exports) 1995-2008, in millions of US dollars, constant							
	1	2	3	4	5	6	7	8
ln(GDP(-1))	1.12 (0.02)***	1.06 (0.02)***	1.05 (0.05)***	1 (0.02)***	0.71 (0.31)**	1.2 (0.17)***	0.95 (0.40)**	1.31 (0.17)**
ln(FDIflows(-1))	-0.01 (0.02)				-0.01 (0.03)			
ln(FDIflows(-2))		0.05 (0.02)***				0.03 (0.02)		
ln(FDIstock(-1))			0.05 (0.01)***				-0.08 (0.10)	
ln(FDIstock(-2))				0.12 (0.02)***				0.01 (0.02)
ln(REER)	0.04 (0.11)	-0.12 (0.10)	0.09 (0.11)	-0.04 (0.09)	-0.08 (0.20)	-0.18 (0.06)***	-0.02 (0.24)	-0.17 (0.06)***
Ln(TOI)	1.22 (0.08)***	1.24 (0.52)**	1.2 (0.08)***	1.21 (0.06)***	0.63 (0.23)***	0.84 (0.10)***	0.66 (0.22)***	0.9 (0.10)***
Country/year fixed effects	No	No	No	No	Yes	Yes	Yes	Yes
Observations	114	106	117	108	114	106	117	108
R-squared	0,98	0.98	0,98	0,99	0,99	0,99	0,99	0.99

Estimation method: Ordinary Least Squares: pooled and fixed effects White Period Standard errors are given in the parentheses.

***, **, * indicate significance at the 1 %, 5 % and 10 % levels, respectively

Columns (1) - (4) represent the results obtained through pooled OLS estimation in order to determine the causative effect of FDI flows on export performance of the country. GDP, REER and TOI were employed as control variables. The estimated equations differ only in the form of FDI variable in the effect of which we are interested. Out of four variables reflecting FDI $ln(FDIflows_{it-2})$, $ln(FDIstock_{it-1})$ and $ln(FDIstock_{it-2})$ get significant positive coefficients. For example, 1 percentage point increase in FDI stock lagged by two periods results in 0.12 percentage points increase in Exports other variables controlled for. The coefficients are interpreted as elasticities, as the variables used are in logarithmic form.

It's evident from columns (5) - (8) that Fixed Effect Estimation method, in turn, exhibits ambiguous results. One-period lagged effects of both flow and stock FDI appear to be negative, whereas two-period lagged effects are positive; not significant though. Since two-period lagged FDI variables might capture the effect better, I tend to rely on their estimated coefficients. The coefficients on logarithm of lagged GDP are significant in both estimation methods with almost unchanged magnitudes.

The coefficients on REER are contradictory and insignificant in OLS estimation. However, they appear to be significantly negative in FE estimation when the two-period lagged FDI variables were included. The coefficient on TOI is positive as was expected and statistically significant in all cases. However, its value decreased in the second estimation as the fixed effects were eliminated, but it still remained high enough.

Fixed effects method eliminates both country and year-specific fixed effects. Nowadays, CIS countries tend to adopt trade liberalization policies and impose FDI-friendly regulation as well as accept export-oriented laws, which stimulate production in different sectors. These policies vary across the countries, being more developed in some countries than in the others. Country specific fixed effects term is supposed control for these unobserved effects. As for time-variant effects oil price shocks and crisis occurrences can be bright and relevant examples of them. I suppose that by using FE method I will manage to eliminate these effects and get more reliable estimation results.

Next method employed in order to test the effect and reliability of results is First-Differenced estimator which also accounts for possible serial correlation problem frequently

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come across. Our obtained coefficients of interest can be explained as elasticities of changes in exports with respect to the changes in FDI level. Now, our estimation equations look as follows:

$$(1): \Delta \ln(Export_{it}) = \beta_0 + \beta_1 * \Delta \ln(GDP_{it-1}) + \beta_2 * \Delta \ln(FDIflows_{it-1}) + \beta_3 * \Delta \ln(REER_{it}) + \beta_4 * \Delta \ln(TOI_{it}) + \Delta u_{it}$$

$$(2): \Delta \ln(Export_{it}) = \beta_0 + \beta_1 * \Delta \ln(GDP_{it-1}) + \beta_2 * \Delta \ln(FDIflows_{it-2}) + \beta_3 * \Delta \ln(REER_{it}) + \beta_4 * \Delta \ln(TOI_{it}) + \Delta u_{it}$$

$$(3): \Delta \ln(Export_{it}) = \beta_0 + \beta_1 * \Delta \ln(GDP_{it-1}) + \beta_2 * \Delta \ln(FDIstock_{it-1}) + \beta_3 * \Delta \ln(REER_{it}) + \beta_4 * \Delta \ln(TOI_{it}) + \Delta u_{it}$$

$$(4): \Delta \ln(Export_{it}) = \beta_0 + \beta_1 * \Delta \ln(GDP_{it-1}) + \beta_2 * \Delta \ln(FDIstock_{it-2}) + \beta_3 * \Delta \ln(REER_{it}) + \beta_4 * \Delta \ln(TOI_{it}) + \Delta u_{it}$$

Table 4 provides us with obtained results:

Table	4
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	Dependent variable : First difference of ln (exports),							
	1995-2008, in millions of US dollars, constant							
	1 2 3 4							
Dln(FDIflow(-1))	-0.01							
	(0.02)							
Dln(FDIflow(-2))		-0.03						
		(0.01)***						
Dln(FDIstock(-1))	-0.15							
			(0.03)***					
Dln(FDIstock(-2))				-0.16				
				(0.04)***				
Dln(GDP(-1))	0.17	0.31	0.21	0.23				
	(0.08)**	(0.1)***	(0.07)***	(0.11)**				
Dln(REER)	0.18	0.11	0.16	0.10				
	(0.21)	(0.09)	(0.09)	(0.19)				
Dln(TOI)	0.21	0.28	0.22	0.26				
	(0.16)	(0.19)	(0.13)*	(0.18)				
Observations	104	96	108	99				
R-squared	0.07	0.12	0.15	0,18				

Estimation method: Ordinary Least Squares: first-difference White Period Standard errors are given in the parentheses. ***, **, * indicate significance at the 1%, 5 % and 10 % levels respectively

As can be seen from the table, the coefficients on two-period lagged FDI inflows and one and two period lagged FDI stock variables are negative and significant at 1 % significance level. This can be explained by so called possible "crowding out" effect of FDI which refers to decline of innovation capability, research and development (R&D) activities, and hence productivity of domestic firms which are potential exporters (Backer and Sleuwaegen, 2002). This interpretation is supporting one of the suggestions from OLI eclectic paradigm explaining the determinants of FDI, that through FDI activities MNEs take advantage of recipient country's (location) characteristics (Castejon and Wörz, 2006). This can also be evidence of tariff-jumping FDI which is oriented not on export, but on seizing the market of a host country. Such result can also be induced by positive spillover effects being overweighed by negative ones both within and between the countries. However, since I did not separate the FDI-specific and spillover effects it's hard to make a statement.

The coefficients on GDP are of expected positive sign and statistically different from zero; however, their magnitude is less than those previously obtained. 1 % increase in GDP results in 0.21% increase in Exports.

In case the error terms are suspected to be auto-correlated, Wooldridge (2003) suggests that First Difference estimation can be applied as it converts integrated time series process into weakly dependent process removing the serial correlation in the errors. The Durbin –Watson statistics is more close to 2 in First Difference estimator, which points to the fact of elimination of serial correlation. That's why we tend to believe the results obtained through this method.

The coefficients on ln(REER) are surprisingly positive, though insignificant. The coefficient on TOI is positive, less in magnitude than the previous ones, and insignificant in all cases.

Although the obtained coefficients are more reliable than the previous ones, the results might be not that robust. This assumption can be explained by possible endogeneity problem rising from omitted variable bias. Although the FE and FD methods eliminate the unobservable factors, variables accounting for Domestic Investment, Infrastructure level, Quality of Institutions would have increased the reliability of results. So, we cannot claim that the result of significant negative effect of FDI on host country's exports cannot be changed if different model specifications will be introduced.

The awareness of which motive of FDI is dominant in our sample would increase the confidence in obtained results in our case, as depending on a motive, FDI may lead to both a positive and negative effects on exports. In case the results are reliable, the governments should

more think over the direction of FDI and its control in order to transform the effects into positive one, because it is possible, the worldwide evidence is a support for this suggestion.

Conclusion

This thesis investigated the relationship between FDI and export performance of CIS countries. The data on nine CIS countries over years 1995-2005 used in the study were examined by applying pooled OLS, Fixed Effects, and First Difference estimation methods.

According to the method employed first, FDI positively influences exports of a country. However, we have an omitted variable bias here, as there are factors absent in the model which affect the exports and are correlated with FDI such as legislation, year specific factors. It results in biased estimates. This problem was eliminated through introduction of FE method. However, due to the presence of serial correlation in the sample, we do not fully rely on the results and employ another method, which is First-Difference estimation. Thus, we eliminate both the unobserved factors' effects and the autocorrelation in the residuals. This method results in determination of statistically significant negative effects of FDI inflow and stock variables on exports.

The conducted analysis suggests that the inward FDI is negatively related to the export performance in CIS countries. However, the empirical work can be expanded in the several ways suggesting basis for further researches. For instance, introduction of one year lagged dependent variable into the model might have a favorable role on its estimation as it would act as a good predictor of the next year's export performance. It is also hard to derive definite results since the data were taken on aggregate level (not distinguishing among sectors), also, the spillover effects and direct effects were not separated. Conducting analysis accounting for these recommendations would give more reliable results. Another suggestion for improvement of the estimated model is employing a distributed lagged dependent variable model including several lags of FDI variable. Including longer time span, and introduction of more variables, may result in more robust estimates. Unfortunately, I could not implement the suggestions given above due to existing data limitations on CIS countries.

So, there are various factors affecting the relationship between FDI and exports, their effect can be of different signs. They should be taken into consideration to get trustworthy results; further examinations may discuss these factors separately. Nevertheless, my research can serve as one of the preliminary studies on identifying more precise effects of inward FDI on exports. Even if the estimated relationship is true, it can change in later stage of development of these countries.

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