Determinants of Foreign Direct Investment in Transition Economies: With particular Reference to Macedonia's Performance

Merita Zulfiu

──────── **Abstract** ────────

Using a panel dataset of bilateral flows of foreign direct investment (FDI), we study the determinants of FDI in transition economies, with particular reference to Macedonia's performance. As many transition countries, Macedonia has a low FDI potential and performance. The empirical work confirms the expectation of the positive feedback effect of past FDI onto current FDI. We do not have enough large dataset to say that all other variables, such as the GDP of the host and source country, unit labour cost, trade, inflation, legal environment, distance, and dummy variables capturing the language, common border and colonizing effect, do not have an effect on FDI stocks. Our suggestion is that all the econometric findings on the determinants of FDI in transition economies using small dataset and static models should be accepted only with caution.

Keywords: Foreign Direct Investments, Transition Countries, Gravity Model, Panel Data Estimation;

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INTRODUCTION

1.1 Why Foreign Direct Investment is important?

There are many reasons why foreign direct investment is an important issue and that have motivated scholars to develop a number of theories and to find empirical evidence that explain the causes and effects of FDI. The rapid growth of FDI, mainly since 1990s is one of the reasons. It resulted "*from global competition as from the tendency to free up financial, goods and factor markets*" (Moosa, 2002, p.3). Furthermore, direct investment flows are shown to be the most dependable source and the least volatile source of foreign investment particularly for developing countries (Lipsey, 2000). The fact that FDI plays an important role in growth and development is uncontested. It is widely discussed both in theoretical and empirical specifications that FDI brings host countries capital, productive facilities, technology transfer, new jobs, management expertise, marketing skills, improving infrastructure and general business climate. Besides, a favorable legal, political and institutional environment, is a necessary condition for the attraction of FDI.

Even though, transition countries do not hasten with the political and market reforms in order to offer more stable environment for attraction of FDI. Sometimes this might be attractive as for example, when the regime is corrupted and multinational corporations happen to be related to one of the corrupt leaders (McGee, 2003). However, as Moosa (2002) argues, the above positive effects may not arise, or they arise simultaneously with some adverse effects. It is often argued that FDI results in a loss of sovereignty, in distributional changes between labour and capital, it can reduce employment through divestment and closure of production facilities etc (Moosa, 2002). He adds that FDI raises income and social welfare in the host country unless there are distortions caused by protection, monopoly and externalities.

Nevertheless, FDI became the most important among the external capital sources (FDI, external loans, and portfolio investments) because of the difficult access of the transition countries to external loans and as a result of insufficient development of a financial market (Serbu, 2005). Also as Demekas et al (2005) argues FDI flows are non-debt creating and especially in developing countries they are used for financing external current account deficits. According to a large number of surveys and case studies as well as some econometric works, Resmini (2000) concludes that the main factors which have driven FDI in Central and Eastern Europe have been the need to secure market access, the timing and form of the privatization process and the degree of political and economic stability. Yet, she states that there is no clear evidence about the role played by production cost differentials and tax incentives in attracting FDI.

Thus, it is important to analyze the determinants of FDI in transition economies since it has been proven that FDI plays a vital role in the process of transition from socialism to capitalism as well as in the integration of these countries into the world economy. Also, there are not many studies on the determinants of foreign direct investments for transition economies but they are emphasized in popular debates. So, the FDI determinants are not completely understood, especially in transition countries where particular circumstances of a particular country determine the flow of FDI.

1.2 General trends of the inflow of FDI in transition economies

Foreign Direct Investment became a key element in global economic development and integration and an important element of national development strategies of most countries during the 1990s (UNCTAD, 2003). This is mostly due to the market change and the process of transition from socialism to capitalism. Mainly the investment is in the form of mergers and acquisitions (M&A), and less in new assets, since the FDI inflow depends on the privatization of the public enterprises in transition countries. FDI inflows have increased significantly in developed, developing and transition economies. After three year of declining flows they rebounded in 2004. World FDI flows were 2% higher in 2004 than in 2003 and developing countries inflows surged by 40% while developed countries inflows declined by 14%. In 2004 developing countries reached the highest level of the share in world FDI Inflows (36%) since 1997. According to UNCTAD estimates FDI flows reached their second highest level in 2006, getting to $1.2 trillion (UNCTAD, 2006). In 2005 they were $916 billion, increased by 27% compared to 2004. However, they are still below the peak of $1.4 trillion in 2000 (UNCTAD, 2005). In the case of South-European and the CIS in 2005 FDI flows were $40 billion, increasing only slightly over the previous year. According to these reports this was due to continued economic growth, increased corporate profits and policy liberalization. In the beginning of 2006 cross border M&As climbed to 39% compared to the same period in 2005, mainly in developing and transition countries. Yet, high oil prices, rising interest rates and increased inflationary pressures can have negative effect on further FDI growth. Uncertainty is increasing as a result of various economic imbalances and geopolitical tensions in some parts of the world (UNCTAD, 2006).

Furthermore, most FDI inflows went into services, particularly finance, telecommunications and real estate. But the sharpest increase was in natural resources since high prices for many commodities stimulated FDI to countries that are rich in natural resources such as

oil and minerals (UNCTAD, 2005). In addition, investments by collective investment funds such as equity and hedge funds, which are relatively new source of FDI, have been growing in 2005. But, since these funds often have a shorter time horizon than those of transnational corporations (TNC), current FDI growth may not be sustainable. In South-East Europe, Romania and Serbia and Montenegro showed better performance in 2005 which was due to several privatization deals in banking and the privatization of natural gas providers in Romania (UNCTAD, 2006). The Republic of Macedonia which is among the group of under-performers, i.e. countries with both low FDI potential and performance (UNCTAD, 2006), seems to follow the world trend.

FDI inflows are also related to privatization proceeds and they are estimated at US$ 350 million, up from US$ 97 million in 2005 (EBRD, 2007). Since our period of study is from 1997 to 2003 bilateral FDI for Macedonia, we will give more details about FDI for the end of this period, namely 2003.The biggest foreign direct investments in 2003, 48.8 million US$, come from the Developed countries. The share of Former Yugoslavia in this year is 9.9 million US$. Central and Eastern Europe, and the Former Soviet Union realized 21.9 million US$. The biggest investors in Republic of Macedonia in 2003 are: Liechtenstein; Hungary; Bulgaria; Austria; Slovenia; Switzerland; United Kingdom; Germany; Serbia and Montenegro; Greece; Italy; and USA. In this year Manufacturing industry accounted for the largest part in FDI, respectively 36.0 million US$ (State Statistical Office Report, 2003).

To conclude, FDI in transition economies is expected to increase further in 2007. According to UNCTAD (n.d.) the extend and speed will vary by region and industry. Yet, the overall FDI recovery is expected to be due to the acceleration of global GDP growth, the relatively low levels of interest rates in major capital exporting economies, and the increase in domestic investment and industrial output. In addition, UNCTAD (n.d.) expect services to be the most attractive to FDI,

particularly tourism, telecommunications and IT. Also, greenfield investments to be the most preferred in developing countries. The projection of Foreign direct investments in Macedonia for 2007 is 150 millions of US dollars (Transition report update, 2007).

2. THEORY OVERVIEW

There is not one general theoretical framework but a number of competing theories with varying degrees of power in explaining FDI. For this reason Agarwal (1980) and Moosa (2002) treat them as hypotheses. This leads the researchers to rely on empirical evidence for explaining the emergence of FDI.

Moosa (2002) classifies theories of FDI based on the assumption of perfect markets and theories assuming imperfect markets. In the first group Moosa (2002) analysis three hypothesis: the differential rates of return hypothesis; the diversification hypothesis; and the output and market size hypothesis. On the other hand, under theories assuming imperfect markets Moosa (2002) includes the following hypothesis: the industrial organization hypothesis; the internalization hypothesis; the location hypothesis; the eclectic theory; the product life cycle hypothesis; and the oligopolistic reactions hypothesis. In addition, the "New Theory of FDI", is another eclectic approach, trying to explain the horizontal and vertical FDI. Moreover, resource seeking FDI is another type of investment elaborated in the literature.

Analyzing the particular determinants of each type of investment one can conclude that the size of market, low-cost labour, abundant natural resources and close proximity are the main factors through which one country can attract more FDI. In order to build an effective investment attraction strategy one should consider these factors and other factors which also matter such as agglomeration economies. According to Campos and Kinoshita (2003) firms benefit by locating next to other firms as a result of spillovers (knowledge spillovers,

specialized labor, and intermediate inputs) from the investors already in that place. In addition they claim that to understand the determinants of FDI in transition economies it is crucial to specify an empirical model that allows for a combination of traditional determinants like market size and labour costs as well as newer determinants, among which they include institutions and transition-specific determinants such are initial conditions. The effect of distance between the source and the host country should differ between the three types of FDI. Distance should have a negative effect on market-seeking FDI since it involves higher cost of investment and more costly adaptations of goods to local preferences (Johnon, 2006). Distance has also negative effect on efficiency-seeking FDI because transportation costs increase with the distance when products produced in the host country are exported back to the source country. Johnson (2006) argues that distance can be relatively unimportant for resource-seeking investment, since MNEs are attracted to a limited number of geographical locations where the needed resource is available.

Other factors used in the literature to explain FDI flows are: political risk and country risk; tax policies; and trade barriers. Political instability is likely to discourage the inflow of FDI. Political risk may rise as a result of unexpected modifications of the legal and fiscal frameworks in the host country which may effect drastically the economic outcome of an investment (Moosa, 2002). Therefore political risk is negatively correlated with FDI inflows. However the evidence is mixed. According to surveys political instability has a negative effect on the inflow of FDI. On the other hand, Rouber (1973) found it to be a relatively unimportant determinant of FDI in developing countries, at least it is so for the distribution of the total supply of FDI among these countries (Agarwal, 1980). Moosa (2002) argues that in many studies the models which account for economic and political factors perform better than models which do not include political variables. Tax policies are an

important factor in the locational decision of foreign investors. In transition economies, Campos and Kinoshita (2003) expect this factor in the future to start playing a role. One would expect that high corporation tax would discourage firms from investment, but Veugelers (1991) finds mixed evidence on the effect of corporation tax rate, while Mudambi (1995) finds a negative relationship between tax rate and FDI. Moreover, trade effects are often discussed as a motivation of FDI as a substitute for exports to a host country. Moosa (2002) gives the example of Honda's establishment of production facilities in Ohio in order to avoid the tariffs and quotas imposed by the U.S. government. Bevan and Estrin (2004) examine the relationship between FDI and the openness of the economy and as expected find them to be positively related because the FDI is encouraged if the trade regime of the host economy is liberal. Also given the internalization advantages, MNEs have a higher propensity to export. Nevertheless, Resmini (2000) tests the hypothesis that foreign investors prefer countries with a liberal trade regime and finds that the degree of openness seems not to play any important role in the process of decision making of foreign investors. Di Mauro (2000) includes reduction of tariffs in her model and finds that FDI does not respond to changes in tariffs, i.e. an increase in the tariff level has no impact on FDI.

2.1 The Gravity Model

Nowadays, the gravity model is one of the most used methods that analyses the importance of factors such as proximity and market size that can transform countries into attractive locations for FDI. This model, explains the trade or FDI flows between two countries usually as a log-linear function using countries' GDP and also the geographical distance between the counties' capitals, where distance can be taken as a measure of the transaction and physic costs of foreign investments. Such costs are the costs of transport and communication, the cost of dealing with cultural and language differences, the cost of sending personnel abroad, as well as the

informational costs of institutional and legal factors (e.g. local property rights, regulations and tax systems which are assumed to increase with distance) (Bevan and Estrin, 2004). Particularly it is used to simulate potential trade or FDI flows between CEECs and Western economies. It provides a benchmark for FDI flows in the selected sample, but one expects deviations from that benchmark due to country-pair or country-group specifics. Those deviations can be due to different agreements between countries, Regional Integration Agreements such as EU, NAFTA, CEFTA etc., or having a common land border, common language, or some negative deviations like military conflicts or economic sanctions (Christie, 2003).

In the table below we summarize the variables included in the above explained theories (hypotheses), the other factors that add to the explanation of FDI flows and the gravity model used for analyzing the determinants of FDI[1].

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[1] We give a broader explanation of theories and empirical studies about FDI in transition economies in the full version of this paper which is a Master thesis of the author.

Table 1. Summarizing the literature review

Variables ↓	Theories assuming perfect markets			Theories assuming imperfect markets							Other factors used in the literature to explain FDI			Gravity model
	The Differential Rates of Return	The Portfolio Diversific. Hypothesis	The Market size Hypoth.	The Indus. Organiz. Hypoth.	The Internaliz. Hypoth.	The Location Hypoth.	The Eclectic Theory	The Product LifeCycle Hypoth.	The Oligopol. Reac. Hypoth.	The New Theory of FDI	Politic.risk and country risk	Tax polic-ies	Trade barr-iers	
risk		X		x	x		x	x	x	X	X			x
rate of return	x	X		x	x			x	x	X				x
human capital	x				x	x		x		X				x
market size (sales, GDP)			X				x	x	x	X				x
language				x						X				x
culture				x			x			X				x
legal system				x		x	x			X	X			x
capital				x	x	x	x			X				x
management expertise				x	x		x			X				
technology				x			x	x		X				
marketing				x	x		x	x		X				x
access to raw materials				x				x		X				x
economies of scale				x			x			X				x
bargaining power				x	x	x				X				
political power				x						X	X			x
wages				x		x		x		X				x
labour productivity		X				x								x
trade barriers				x		x	x			X			x	x
proprietary' knowlwdge				x	x		x			X				x
time lag					x									x
R&D		X		x	x	x		x	x	X				x
inflation											X			x
tax policies										X		x		x
distance										X				x

To summarize, the absence of one general theoretical framework has led scholars to rely on empirical evidence for explaining the appearance of FDI. All the hypothesis explained above are trying to fulfill the gaps of the earlier ones but none of them has succeed to explain this phenomenon entirely.

As discussed in the literature, market size, internalization factors, location factors, cultural factors, political, legal and institutional factors all play an important role in determining firms' foreign market entry decisions.

Nevertheless, "we are now in a position to use at least 40 years' worth of theoretical and empirical developments to re-think the relationship between domestic factors in development, and international capital flows such as foreign direct investment" (Mcmillan, 1999, p. x).

3. FROM THEORY TO PRACTICE: GRAVITY MODEL

As shown in the theoretical framework different determinants are analyzed by different theories. However, the best way to capture the common determinants of FDI, as examined by many recent empirical studies, is the gravity model. Even though this model is typically applied to explain bilateral trade flows, it has also proved to be empirically successful in explaining FDI flows, especially when the studies are based on eclectic theories.

This study uses panel data, from 1997 to 2003, in order to test the significance of different determinants of FDI in Macedonia from twenty-nine source countries[2]. Considering the above empirical studies the estimated models will be consistent with the gravity approach. Bearing in mind the explanation of Bevan and Estrin (2004) the first specification is estimated both in contemporaneous form and with a two-year lag for the independent variables.

$$FDI_{ij}^{t} = f(GDP_{i}^{t}, GDP_{j}^{t}, ULC_{j}^{t}, trade_{j}^{t}, inflation_{j}^{t}, distance_{ij}, legalenv_{j}^{t}, dummy_{ij}),$$

(1)

where, FDI_{ij}^{t} are bilateral FDI stocks, from the source country i, to the host country j (j=1,…29), at a moment t (t=1997,…,2003); the source of the data for this variable is taken from wiiw Database on Foreign Direct Investment and converted in US$ billion.

An appropriate way of examining the proximity-concentration trade-off requires data on affiliate sales, but such data are only available for the US and Sweden (Christie 2003) and considering Di Mauro's idea that FDI stock can be taken as a proxy for affiliate sales since the FDI stock is a good proxy for foreign affiliate production, the later is

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[2] The source countries are: Albania; Australia; Austria; Belgium; Bosnia and Herzegovina; British Virgin Islands; Bulgaria; Croatia; Cyprus; Denmark; France; Germany; Greece; Hungary; Italy; Liechtenstein; Luxemburg; Netherlands; Panama; Russia; Serbia and Montenegro (are taken as one country since most of the databases consider them as one country); Slovakia; Slovenia, Sweden; Switzerland; Turkey; Ukraine; United Kingdom; and United States.

used. Another justification by Christie (2003) for using FDI stock is linked to the functional form of the gravity model. He argues that the gravity equation estimated in log-linear form can not account for zero or negative FDI inflows. While, FDI stocks at least can never be negative and in practice zero stocks are not included in the sample.

GDP_i^t, GDP_j^t, representing a proxy for the size of both source and host counties, expressed at current prices in billions of dollars over years; source International Monetary Fund, World Economic Outlook Database, April 2007.

ULC_j^t is unit labor costs in the host country, calculated as the ratio of the annual average wage to GDP per capita; source: annual average wage – IFS (International Financial Statistics), July 2006; and GDP per capita- International Monetary Fund, World Economic Outlook Database, April 2007.

$trade_j^t$ measures the openness of the host economy, which is the sum of imports and exports of host country j in billions of dollars; source IFS (International Financial Statistics), July 2006.

$inflation_j^t$, as an indicator of a stable macroeconomic environment, measured by the annual average inflation rate; source: National Bank of the Republic of Macedonia.

$distance_{ij}$ represents the distance between capital cities of source country i and recipient country j in kilometers, source: own calculations using online calculator www.indo.com/distance; and www.timeanddate.com. In the case of Turkey, Istanbul is taken instead of Ankara (the capital) since we believe to be better representation being the most tradable city between Macedonia and Turkey. And, an average distance is calculated between Belgrade and Podgorica in view

of the fact that Serbia and Montenegro are treated as one country in this study.

$legalenv_j^t$ captures the legal environment in Macedonia; source: EBRD rating of legal effectiveness.

$dummy_{ij}$, additional variables such as a common language, a common border, or colonizers of the country, are introduced via dummy variables; source: CEPII and own knowledge of the region.

Market size is a proxy for product demand, analyzed in the market size hypothesis and as argued by most empirical studies and eclectic theories, is a very important determinant of FDI. The sign of the coefficients of both GDP variables are expected to be positive. Also, as predicted by the theory, lower input costs in the host country should increase the profitability of the firm, which indicates a negative coefficients on ULC_j^t. In addition, as suggested by the internalization hypothesis, Helpman (1984), and many other studies, FDI and the openness of the economy ($trade_j^t$) should be positively related. Furthermore, a stable macroeconomic environment should positively influence investment decisions. Here, price stability is the proxy; i.e. the lower the average inflation rate ($inflation_j^t$) is in the host country, the more foreign investment, ceteris paribus, is expected. And the relationship between FDI and distance is expected to have a negative sign. FDI theory suggests that when trade costs are high foreign investors will choose to invest abroad rather than export.

Moreover, including only economic variables in the model does not give the full picture in explaining the patterns of FDI flows. The importance of institutional development, legal framework, and political risk, as explained by the industrial organization hypothesis and the location hypothesis, is also examined empirically, to add to

the clarification of FDI flows. Holland & Pain (1988), Garibaldi *et al.* (2001), Kinoshita & Campos (2004) all argue for the impact of such factors on FDI and find them to be important determinants. According to Demekas *et al.* (2005) even though most the studies on the determinants of FDI found these factors to be significant, they are susceptible to be correlated with other underlying explanatory factors and their statistical significance can be hard to interpret. In this case the legal environment (EBRD rating of legal effectiveness) variable is used, rating from 1 to 4^+, where 4^+ indicates that commercial laws are reasonably clear and administrative and judicial support of the law is reasonably adequate. This rating assesses the extent to which commercial and financial laws reach international standards and are enforced. In 2003, the EBRD revised the methodology and launched a New Legal Indicator Survey (NLIS). Therefore, we combined and adjusted the two ratings in order to get a proper index on the legal environment.

We also have aggregate data (annual data from year 1997 to 2005, FDI stocks and FDI flows) on six countries: Albania; Bosnia and Herzegovina; Bulgaria; Croatia; Macedonia; and Romania. But, there is no obvious way in which we can merge bilateral data with aggregate data, so we can not use them in this study.

4. THE EMPIRICAL RESULTS

4.1 Estimation of panel data regression models

In this section we discuss the empirical results. In order to choose the appropriate specification several tests were conducted. We discuss the economic interpretation of the models summarized in Table 7. We check the robustness of the model to changes in specification and we check for the coefficient sizes and significance by including lag variables. In the table below we report the coefficient estimates for five models: the basic equation RE in levels; RE with two-years lag on all independent variables, except and dummy variables; RE without GDPj; RE without GDPj with two-years lag; and the FE model after the Cochrane-Orcutt correction.

Table 2. One-way RE and One-way FE results

Models / Variables	1. One-way RE after Cochrane-Orcutt correction	2. One-way RE with two-year lag	3. One-way RE without GDPj	4. One-way RE without GDPj and in two-year lag	5. One-way FE After White correction
Dependent variable: fdistock$_{ij}$					
Independent variables:					
Constant	-0.26	0.09	-0.20	0.07	
Standard Errors; t-statistic	(0.05); (-4.65)	(0.06); (1.49)	(0.05); (-3.67)	(0.06); (1.16)	
gdp$_i$	-0.15D-05	-0.20D-05	-0.11D-05	-0.17D-05	-0.81D-06
Standard Errors; t-statistic	(0.30D-05); (-0.52)	(0.28D-05); (-0.72)	(0.30D-05); (-0.38)	(0.28D-05); (-0.63)	(0.18); (0.00)
gdp$_j$	0.04	-0.02			0.04
Standard Errors; t-statistic	(0.01); (3.71)	(0.01); (-1.37)			(0.24); (0.18)
Ulc	2.35	-0.73	1.98	-0.58	2.37
Standard Errors; t-statistic	(0.90); (2.61)	(0.97); (-0.75)	(0.93); (2.14)	(0.96); (-0.60)	(0.91); (2.59)
Trade	-0.01	-0.002	0.04	-0.02	-0.01
Standard Errors; t-statistic	(0.01); (-0.49)	(0.02); (-0.13)	(0.01); (3.49)	(0.01); (-1.78)	(1.05); (-0.01)
Infl	0.0008	0.004	-0.0007	0.005	0.0008
Standard Errors; t-statistic	(0.00); (0.49)	(0.00); (2.19)	(0.00); (-0.40)	(0.00); (2.58)	(619.48); (0.00)
Dis	-0.67D-05	-0.66D-05	-0.68D-05	-0.66D-05	
Standard Errors; t-statistic	(0.22D-05); (-3.10)	(0.21D-05); (-3.06)	(0.22D-05); (-3.13)	(0.22D-05); (-3.06)	
Legalenv	0.004	0.01	0.004	0.01	0.004
Standard Errors; t-statistic	(0.01); (0.64)	(0.01); (2.03)	(0.00); (0.61)	(0.01); (2.02)	(10.48); (0.00)
lan1	-0.03	-0.03	-0.03	-0.03	
Standard Errors; t-statistic	(0.02); (-1.71)	(0.02); (-1.74)	(0.02); (-1.71)	(0.02); (-1.74)	
lan2	0.05	0.05	0.05	0.05	
Standard Errors; t-statistic	(0.02); (2.67)	(0.02); (2.68)	(0.02); (2.65)	(0.02); (2.66)	
Cbor	0.01	0.01	0.01	0.01	
Standard Errors; t-statistic	(0.02); (0.59)	(0.02); (0.59)	(0.02); (0.61)	(0.02); (0.62)	
col1	0.01	0.02	0.01	0.02	
Standard Errors; t-statistic	(0.03); (0.48)	(0.03); (0.51)	(0.03); (0.49)	(0.03); (0.50)	
col2	0.01	0.01	0.01	0.01	
Standard Errors; t-statistic	(0.03); (0.44)	(0.03); (0.47)	(0.03); (0.44)	(0.03); (0.45)	

If we compare the results of REM after Cochrane-Orcutt correction and FEM after White correction, we will see that generally the coefficient values of the estimated variables do not seem to differ much, except for the GDPj which becomes insignificant in the FEM. The coefficient of GDPi is not positive as in some studies and it is almost zero and not significant. But this is not surprising taking into consideration that the main investors in Macedonia are not large economies but small ones such as Cyprus, Switzerland, Liechtenstein, etc. Hungary is the biggest investor in 2001 with the investment in Telecom. GDPj is significant and positive but not in the lagged form. This suggests that the income level of the host country is an important determinant for foreign investor. Interpreting this coefficient will indicate that an increase of one billion of dollars in GDP of the host county will increase the FDI stock for 0.04 billions of dollars, holding other variables constant. The negative and significant coefficient for distance indicates that FDI is determined by gravity factors, as expected. Also the negative coefficient of distance supports market-seeking FDI. Moreover, unit labor costs are positively associated with FDI form which does not support the hypothesis that foreign investors are cost sensitive as Bevan and Estrin (2004) find. Moreover, this is the only significant coefficient in FE estimation. The estimated coefficient before ulc is 2.35 in REM and 2.37 in FEM, which indicates that one billion dollars increase of ulc leads to 2.35, respectively 2.37 billions of dollars increase in FDI, ceteris paribus. One explanation for this positive relationship may be that FDI flows in Macedonia are mostly in the service sector that has higher wages comparing to manufacturing. Also, the period analyzed in this study does not cover the first phase of transition and as Demekas et al. (2005) argue that the size of the domestic market, geographical and cultural proximity, and cheap labor are among the most important determinants of FDI, but as the country succeeds in attracting more FDI the importance of these factors declines. Other factors such as the business environment become more important. In addition, trade openness has the right sign when excluding GDPj and it is significant. This suggests that countries having higher trading shares also attract

more FDI, i.e. one billion increase in trade variable will lead to 0.04 billions of dollars increase on FDI. Nevertheless, openness to trade is significant only in some studies. Besides, inflation does not have the correct size, is almost zero and is significant only in the lagged form. Macedonia has low inflation rate indicating low macroeconomic risk, thus it should be a good sign for attracting more FDI flows but this is not supported by the empirical results. Kinoshita and Campos (2004) also find a positive sign on inflation and their explanation is that the results could be due to potential endogeneity. The index on legal environment is also significant only in the lagged form and is positively related to FDI flows, which is as expected. Improving the efficiency of the legal system has a positive impact on foreign investors. The reason that this variable is significant only in the lagged form indicates that FDI decisions rely on past information about the host economies. Also it may be because this index does not vary too much from year to year and the real effect can not be captured by this estimation. Finally, dummy variables are not significant in both forms except for the lan2, the dummy for English language, which indicates that countries where the official language is English or is widely spoken in that country have less language difficulties and more FDI flows with Macedonia.

4.2 Dynamic panel models

As seen in the previous section the results indicate that static models are misspecified. In RE estimation the lagged dependent variable is correlated with the compound disturbance, because the same group specific random effect (u_i) enters the equation for every observation in group i (Greene, 2003, p.308). To get consistent estimates in the presence of lags of the dependent variable we employ the generalized method of moments (GMM) proposed by Arellano-Bond (1991) and Arellano-Bover (1995)/Blundell-Bond (1998) introduced also by Roodman (2006). As Roodman (2006) argues this is a proper approach for situations with "*small T, large N" panels, meaning few time periods and many individuals; with independent variables that are not strictly exogenous, meaning correlated with past and possibly current realizations of the error; with fixed effects; and with heteroskedasticity and autocorrelation within individuals*" (p.1).

The Arellano-Bond estimators have one-step and two-step variants, but the two-step estimates tend to be downward biased (Roodman, 2005), which we compensate by using xtabond2 that "*makes available a finite-sample correction to the two-step covariance matrix derived by Windmeijer . This can make two-step robust more efficient than one-step robust, especially for system GMM*" (Roodman, 2005, p.2). Allowing for dynamics in the model seems to be important for getting consistent estimates. Therefore, we proceed with a dynamic FDI model. In this case the lagged dependent variable is an endogenous variable and all other explanatory variables are treated as exogenous. Applying GMM we account for the potential endogeneity arising from the lagged dependent variable. Using the appropriate instruments for the endogenous variables one can overcome the endogeneity problem. Although Roodman (2006) suggest using lags two and deeper for the endogenous variable in the GMM-style, we can use only one lag in the system GMM, and not include the dummy variables and distance since using two or more lags and all the regressors included in RE increases the number of instruments and too many instruments "*can overfit*

endogenous variables" (Roodman, 2006, p.13). Moreover, xtabond2 issues a warning when the number of instruments may be large relative to the number of observations, in which case the instruments may be invalid. In addition, the diagnostic tests, namely m_1 and m_2, indicate that there is no first- and second-order serial correlation among the residuals and the Sargan test of over-identifying restrictions suggests that the instruments are valid. Therefore, the Ho: the restrictions are sufficiently close to zero can not be rejected, since the test statistics are smaller than the chi-square critical values at all conventional levels of significance in all five specifications. The results are summarized in the table below.

Table 3. Dynamic panel–data estimation

Models / Variables	1. Arellano-Bond dynamic panel-data estimation	2. Arellano-Bover dynamic panel-data estimation	3. Arellano-Bover dynamic panel-data estimation	4. Arellano-Bover dynamic panel-data estimation	5. Arellano-Bover dynamic panel-data estimation
Dependent variable: $fdistock_{ij}$	*One-step results*	*One-step results difference GMM*	*Two-step results difference GMM*	*One-step results system GMM*	*Two-step results system GMM*
Independent variables:					
Constant	-0.002			0.02	0.03
Standard Errors; t-statistic	(0.003); (-0.63)			(0.05); (0.48)	(0.05); (0.53)
lag1fdistock	1.09	1.09	1.13	1.16	1.16
Standard Errors; t-statistic	(0.19); (5.49)	(0.19); (5.49)	(0.22); (5.16)	(0.04); (28.14)	(0.04); (28.54)
gdp_i	7.11e-07	7.11e-07	1.59e-06	-4.73e-08	2.47e-08
Standard Errors; t-statistic	(0.000); (0.11)	(0.000); (0.11)	(0.000); (0.43)	(0.000); (-0.15)	(0.000); (0.11)
gdp_j	0.02	0.01	0.01	0.01	0.01
Standard Errors; t-statistic	(0.02); (1.02)	(0.01); (0.82)	(0.01); (0.68)	(0.01); (0.74)	(0.01); (0.76)
Ulc		-0.55	-0.80	-0.78	-0.79
Standard Errors; t-statistic	(dropped)	(0.88); (-0.63)	(0.66); (-1.22)	(0.64); (-1.21)	(0.64); (-1.25)
Trade	-0.01	-0.01	-0.01	-0.01	-0.01
Standard Errors; t-statistic	(0.02); (-0.60)	(0.02); (-0.55)	(0.01); (-0.86)	(0.02); (-0.54)	(0.02); (-0.56)
Infl	0 .002	0.002	0.002	0.002	0.002
Standard Errors; t-statistic	(0.002); (1.15)	(0.002); (1.16)	(0.001); (1.50)	(0.002); (1.15)	(0.002); (1.18)
Legalenv	0.01	0.01	0.01	0.01	0.01
Standard Errors; t-statistic	(0.004); (1.22)	(0.004); (1.27)	(0.01); (1.01)	(0.004); (1.27)	(0.004); (1.28)
m_1	-1.08	-1.08	-1.10	-1.13	-1.11
Pr > z	(0.28)	(0.28)	(0.27)	(0.26)	(0.27)
m_2	0.86	0.86	0.87	0.84	0.85
Pr > z	(0.39)	(0.39)	(0.39)	(0.40)	(0.39)
Sargan test of overid. restrictions		5.03	5.03	7.37	7.37
Prob > chi2		(0.98)	(0.98)	(0.99)	(0.99)
Wald test Prob > chi2 If TS> CV → Reject Ho: the independent variables are jointly zero.	TS $\chi^2_{(6)} =(65.93) >$ CV (12.59)	800.19 (0.000)	512.67 (0.000)	3687.19 (0.000)	3694.23 (0.000)

In the actual estimations the Wald statistic is larger than the critical value, so the Ho that the independent variables are jointly zero is rejected. As it can be seen, the results in all five dynamic models are very similar, but the advantage of Arellano-Bover is that this estimator uses more moment conditions, i.e. more information and increase in efficiency. The estimated coefficient on the lagged dependent variable is significant which is an evidence that fdistock is subject to persistence effects. Moreover, the coefficient on the lagged dependent variable is greater than one which indicates an explosive growth of fdistock that is expected in these kind of data. The coefficient of the lagged FDI is contingent to a particular sample period, particular country and particular circumstances. Thus, we will not expect this coefficient to be constant over time. We do not have enough data, not enough variation left in the data after accounting for the lagged fdistock, so we can not draw any strong conclusions about the impact of the independent variables on the foreign direct investments. These results do not indicate that the dynamic model is the right specification but that there are omitted dynamics on the static model. The fact that all the regressors are not significant while the lagged fdistock is, suggests that some of the explanatory power of the lagged dependent variable is being falsely attributed to the other variables in static specifications. Therefore, all the econometric findings on the determinants of FDI in transition economies using small data sets and static models should be accepted only with caution.

5. CONCLUDING REMARKS AND EXTENSIONS

This paper analyses the determinants of foreign direct investments in transition countries, with particular reference to Macedonia's performance. Guided by the economic theory and empirical investigations we specify both static and dynamic models. The static models, both fixed and random effects, do not give the best specification. These models suffer from autocorrelation. Nevertheless, we reported those results where we find several variables we included to be important determinants of FDI. Therefore, income level of the host country is an important determinant for foreign investors. The negative and significant coefficient of distance indicates that FDI is determined by gravity factors, as expected. Moreover, the positive relationship between FDI stock and ulc is explained through the effect of the service sector on wages. However, these results are not surprising considering the fact that after the fist phase of transition the importance of these determinants declines and other factors such as business environment become more important (Demekas et al.,2005). In addition, countries having higher trading shares also attract more FDI. Macedonia has low inflation rate indicating low macroeconomic risk, thus it should be a good sign for attracting more FDI flows but this is not supported by the empirical results. Also, improving the efficiency of the legal system has a positive impact on foreign investors. Whereas, the dummy for English language, which indicates that countries where the official language is English or is widely spoken in that country, have less language difficulties and more FDI flows with Macedonia.

Considering the dynamic panel model we find that the coefficient of the lagged FDI is contingent to the particular sample period, country and circumstances. Thus, we will not expect this coefficient to be constant over time. We do not have enough data, not enough variation left in the data after accounting for the lagged fdistock, so we can

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not draw any strong conclusions about the impact of the independent variables on the foreign direct investments. Therefore, all the econometric findings on the determinants of FDI in transition economies using small data sets and static models should be accepted only with caution. Consequently, we rely on the results of other studies so we can say that the variables included in our models are important determinants of FDI in transition economies.

These conclusions certainly need to be further tested with bigger dataset containing information on FDI flows to transition countries. This study can be further extended in analyzing deeply the benefits and consequences of foreign direct investments in Macedonia and other transition countries, emphasizing the effect of special economic zones.

REFERENCES

Agarwal, J.P. (1980) *Determinants of Foreign Direct Investment: A Survey*, Weltwirtschaftliches Archiv, 116, pp. 739-773

Aliber, R. (1983) *Money, Multinationals and Sovereigns* in Kindleberger, C. (ed.), *The International Corporation in the 1980s*, MIT Press, Cambridge, MA.

Bajo-Rubio, Oscar and Sosvilla-Rivero, Simon (1994) *An Econometric Analysis of Foreign Direct Investment in Spain, 1964-89,* Southern Economic Journal, Vol. 61, No. 1. pp.104-120.

Bevan, A. Alan & Estrin, Saul (2000) *The determinants of Foreign Direct Investment in Ttransition Economies,* Working Paper Number 342

Bevan, A. Alan & Estrin, Saul (2004) *The determinants of foreign direct investment into European transition economies,* ELSEVIER, Journal of Comparative Economics 32, pp. 775-787

Brainard, S. Lael (1997) *An Empirical Assessment of the Proximity-Concentration Trade-off Between Multinational Sales and Trade,* The American Economic Review, Vol.87, No.4.

Buckley, J. Peter and Casson, C. Mark (1998) *Analyzing Foreign Market Entry Strategies: Extending the Internalization Approach,* Journal of International Business Studies, 29, 3, pp. 539-562

Buckley, J. Peter and Casson, Mark (1985) *The Economic Theory of the Multinational Enterprise,* The Macmillan Press LTD

Campos, F. Nauro and Kinoshita, Yuko (2003) *Why Does FDI Go Where it Goes? New Evidence from the Transition Economies*, IMF Working Paper, WP/03/228

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Cantwell, John and Narula, Rajneesh (2001) *The Eclectic Paradigm in the Global Economy,* Int. J. of the Economics of Business, Vol. 8, No. 2, pp. 155- 172

Caves, E. Richard (1996) *Multinational Enterprise and Economic Analysis,* Second Edition, Cambridge University Press

Christie, Edward (2003) *Foreign Direct Investment in Southeast Europe,* wiiw Working Papers, No.24

Coase, R. H. (1937) *The Nature of the Firm*, Economica, New Series, Vol. 4, No. 16 (Nov., 1937), pp. 386-405.

Cummins, J. G. and Hubbard, R.G. (1995) *The Tax Sensitivity of Foreign Direct Investment: Evidence from Firm-Level Panel Data,* eds. M. Feldstein, J. Hines, R. Glenn
Hubbard, University of Chicago Press.

De Melo, Martha; Denizer, Cevdet; Gelb, Alan and Tenev, Stoyan (1997) *Circumstances and Choice: The Role of Initial Conditions and Policies in Transition economies,* The World Bank International Finance Corporation

Demekas, G. Dimitri; Horváth, Balázs; Ribakova, Elina and Wu, Yi (2005) *Foreign Direct Investment in Southeastern Europe: How (and How Much) Can Policies Help?,* IMF Working Paper, European Department, WP/05/110.

Di Mauro, Franceska (2000) *The Impact of Economic Integration on FDI and Exports: A Gravity Approach*, CEPS Working Document No. 156.

Dunning, H. John (1988) *The Eclectic Paradigm of International Production: A Restatement and Some Possible Extensions,* Journal of International Business Studies, Vol. 19, No. 1., pp. 1-31.

Dunning, H. John (2001) *The Eclectic (OLI) Paradigm of International*, Int. J. of the Economics of Business, Vol. 8, No. 2, pp. 173- 190

EBRD. *Law in transition online 2006 - Focus on central Europe*

European Bank for Reconstruction and Development (EBRD), (May, 2007) *Transition report update 2007*

Fischer, Paul (2000) *Foreign Direct Investment in Russia : A Strategy for Industrial Recovery.*New York, NY USA: Palgrave Publishers, pp. 23.

Garibaldi, Pietro; Mora, Nada; Sahay, Ratna and Zettelmeyer, Jeronim (2001) *What Moves Capital to Transition Economies?,* IMF Staff Papers, Vol.48, Special Issue.

Greene, H. William (2003) *Econometric Analysis,* Fifth Edition, Prentice Hall

Hartman, G. David (1985) *Tax policy and foreign direct investment.* Journal of Public Economics, Volume 26, Issue 1, February 1985, pp. 107-121

Helpman, Elhan and Krugman, R. Paul (1985) *Market structure and Foreign Trade (Increasing Returns, Imperfect Competition, and the International Economy),* The MIT Press, Cambridge, Massachusetts London, England.

Helpman, Elhanan (1984) *A Simple Theory of International Trade with Multinational Corporations,* Journal of Political Economy, Vol. 92, No.31.

Holland, Dawn and Pain, Nigel (1998) *The Diffusion Of Innovations In Central And Eastern Europe: A Study Of The Determinants And Impact Of Foreign Direct Investment,*
National Institute of Economic and Social Research.

IMF Committee on Balance of Payments Statistics and OECD Workshop on International Investment Statistics, Direct Investment Technical Expert Group (DITEG), *Definition of Foreign Direct Investment (FDI) Terms*, Ridgeway, Art (2004) *Statistics Canada*

IMF/OECD- Directorate for Financial and Enterprise Affairs, *Glossary of Foreign Direct Investment Terms*

Johnson, Andreas (2006) *FDI inflows to the Transition Economies in Eastern Europe: Magnitude and Determinants,* CESIS Electronic Working Paper Series, Paper No.59

Kindleberger, P. Charles and Audretsch, B. David (1983) *The Multinational Corporation in the 1980s',* The Massachusetts Institute of Technology

Kinoshita, Yuko and Campos, F. Nauro (2004*) Estimating the Determinants of Foreign Direct Investment Inflows: How Important are Sampling and Omitted Variable Biases?* Bank of Finland, BOFIT- Institute for Economies in Transition, Discussion Papers. No.10

Lall, Sanjaya & Streeten, Paul (1977) *Foreign Investment, Transnationals and Developing Countries,* The Macmillan Press LTD

Lall, Sanjaya and Narula, Rajneesh (2004) *FDI and its role in economic development: Do we need a new agenda?,* MERIT-Maastricht Economic Research Institute on Innovation and Technology, International Institute of Infonomics

Lipsey, E. Robert (2000) *The Role of Foreign Direct Investment in International Capital Flows,* National Bureau of Economic Research, Inc, NBER Working Papers: 7094

Mayer, Thierry and Zignago, Soledad (2006) *Notes on CEPII's distances measures*

Mc Gee, W. Robert (2003) *Foreign Direct Investment in Southeastern Europe*, Andreas School of Business Working Paper Series, Barry University, Miami Shores, FL 33161 USA

Mcmillan, Susan M. (1999) *Foreign Direct Investment in Three Regions of the South at the End of the Twentieth Century,* New York, NY USA: Palgrave Publishers.

Meyer, E. Klaus (2001) *Institutions, Transaction Costs, and Entry Mode Choice in Eastern Europe,* Copenhagen Business School, Journal of International Business Studies, 32, 2, pp.357-367

Moosa, A. Imad (2002) *Foreign Direct Investment-Theory, evidence and practice,* PALGRAVE

PROSPECTS FOR FOREIGN DIRECT INVESTMENT AND THE STRATEGIES OF TRANSNATIONAL CORPORATIONS, 2004-2007, (http://www.unctad.org/Templates/webflyer.asp?docid=5600&intItemID=1397&lang=1)

Pugh, Geoff (2007) *RME2 Feedback.* Staffordshire University

Resmini, Laura (2000) *The determinants of foreign direct investments in CEECs,* Economics of Transition, Volume 8 (3), pp. 665-689

Roodman, David (2005) *XTABOND2: Stata module to extend xtabond dynamic panel data estimator,* Center for Global Development, Washington

Roodman, David (2006) *How to Do xtabond2: An Introduction to "Difference" and "System" GMM in Stata*, The Center for Global Development, Working Paper, No. 103.

Rugman, M. Alan (1986) *New Theories of the Multinational Enterprise: An Assessment of Internalization Theory,* Bulletin of Economic Research, 38, 2.

Saunders, S. Ronald (1982) *The determinants of interindustry variation of foreign ownership in Canadian manufacturing,* Canadian Journal of Economics XV, No.1.

Serbu, Simona-Gabriela (2005) *FDI flows towards CEECs: an analysis on the Romania, Hungary and Slovenia's performances,* University of Orleans, France and "Babes-Bolyai" University, Cluj-Napoca, Romania

Seyf, Ahmad (2001) *Can Globalisation and Global Localisation Explain Foreign Direct Investment? Japanese Firms in Europe*, Int. J. of the Economics of Business, Vol. 8, No. 1, pp. 137- 153

State Statistical Report, Republic of Macedonia, Skopje, 12.11. 2004, *Foreign Direct Investments in the Republic of Macedonia in 2003.*

State Statistical Report, Republic of Macedonia, Skopje, 26.10. 2006, *Foreign Direct Investments in the Republic of Macedonia in 2005.*

UNCTAD INVESTMENT BRIEF, No. 1, 2007, Foreign direct investment surged again in 2006, 01/02/07 (UNCTAD/ITE/IIA/MISC/2007/2), 2 pages, 58KB

Vernon, R. (1966) *International Investment and International Trade in the Product Cycle,* Quarterly Journal of Economics, vol.80, p.190-207

Wooldridge, M.Jeffrey (2006) *Introductory Econometrics,* Third Edition, Thomson South-Eastern

World Investment Report 2003: FDI Policies for Development:, 322 pages.

World Investment Report 2004: The Shift Towards Services. 468 pages.

WORLD INVESTMENT REPORT 2005 – Transnational Corporations and the Internalization of R&D

WORLD INVESTMENT REPORT 2006 - FDI from Developing and Transition Economies: Implications for Development

http://dss.princeton.edu/online_help/analysis/panel.htm#choice

http://dss.princeton.edu/online_help/analysis/panel.htm#choice

http://www.imf.org/external/pubs/ft/weo/2007/01/data/index.aspx

http://www.nbrm.gov.mk/default-MK.asp

http://www.stat.gov.mk/english/glavna_eng.asp

http://www.unctad.org/Templates/Page.asp?intItemID=2468&lang=1

www.indo.com/distance

www.timeanddate.com