THE DETERMINANTS OF FDI IN TRANSITION ECONOMIES: A PANEL DATA ANALYSIS

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ABSTRACT

This study investigates the determinants of foreign direct investments (FDI) in transition economies in the period of 1993-2012 by using panel data analysis. Our estimation results reveal that countries, which have large local markets and macroeconomic stabilization are more successful in attracting the FDI. Our findings thus support the hypothesis that FDI inflows to transition countries can be explained by both market seeking and resource-seeking motivations.

Keywords: *Foreign Direct Investments, Transition Economies, Determinants of FDI, Panel Data Analysis.*

JEL classifications: *F21, P36, C33.*

GEÇİŞ EKONOMİLERİNDE DYSY'NİN BELİRLEYİCİLERİ: PANEL VERİ ANALİZİ

ÖZ

Bu çalışmada geçiş ekonomilerine yönelik doğrudan yabancı sermaye yatırımlarının (DYSY) belirleyicileri 1993-2012 dönemleri arasında panel veri analizleri yöntemiyle incelenmiştir. Çalışmada elde edilen bulgular geniş yerel piyasalara ve makro ekonomik istikrara sahip ülkelerin DYSY'leri kendi ülkelerine çekme konusunda daha başarılı olduklarını göstermektedir. Çalışmamızın bulguları sonuç olarak Geçiş Ekonomilerine yönelik DYSY'lerin piyasaya ve doğal kaynağa yönelimli olduğu hipotezini desteklemektedir.

Anahtar Kelimeler: *Doğrudan Yabancı Sermaye Yatırımları, Geçiş Ekonomileri, Doğrudan Yabancı Sermaye Yatırımlarının Belirleyicileri, Panel Veri Analizi.*

JEL Sınıflandırması: *F21, P36, C33.*

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1. INTRODUCTION

With the debt crisis of 1980s, developing countries began to search new financing strategies to solve the problem of insufficient domestic funds to support economic development. Many developing countries have considered FDI inflows as the private capital of choice after durability of FDI especially during financial crises. For instance, the amount of foreign direct investment was remarkably stable during the global financial crises compared to the other forms of cash inflows in Latin America in the 1980s and in Mexico in 1994-95 and in East Asian in the 1997-98 (Narula and Wakelin, 1997; Quazi and Mahmud, 2004; Carkovic and Levine, 2002; Lall and Narula, 2004; Brenton et al., 1998).

Foreign direct investment is also one of the most important channels for the transfer of technologies basically through the provision of capital inputs. The recipient countries can also acquire human capital resources by getting their employees to receive training on the operations of a particular business. Foreign direct investment helps the recipient economy to create new jobs probably with raising the salaries of the workers. Also, by extra revenues realized through tax collection, improving productivity and new export windows, foreign direct investments raise the income of a particular country. It also helps the recipient countries to borrow finance at lesser rates of interest (Uygur, 2005: 88).

While there is substantial evidence that FDI benefits host countries, its effects should be assessed carefully and realistically. There are some other cases in which FDI might not be beneficial to the recipient country. This can happen, for example, when FDI is the local market-oriented type due to the high tariff or non-tariff barriers. FDI under these circumstances may engage in rent seeking activities such as lobbying to perpetuate the misallocation of resources. There could also be an increase in monopoly power that can arise when foreign acquisitions lead to a consolidation in the number of domestic producers, either through takeovers or corporate failures (Loungani and Razin, 2001).

Therefore, there exists a widely-shared view among economists and policy makers that FDI is one of the vital factors to achieve industrialization and economic growth in developing countries (such as Gastanaga et al., 1998). However, high interest rates and low foreign exchange rates policies in some developing countries not only discourage FDI inflows but also cause to foreign capital to move into financial sectors instead of real sectors. This in turn further deepens debt related problems of these economies and also leads to newer financial crisis.

The collapse of communism in Eastern Europe and Central Asia has left significant economic challenges in its wake. The main challenge facing these emerging market economies is the replacement of the centralized economic system with a system of free prices and private ownership of capital (Kornai, 2006). Problems faced during the transition period render these economies unsecure,

unprofitable to most foreign investors. Presently, the rate of foreign direct investments into the transition economies especially to CIS countries is inadequate for meaningful industrial transformation. Although foreign investment has increased relative to previous years, the high degree of political uncertainty remains a deterrent to many Western investors.

However, as the overall economic conditions and investment climate improve in some of these economies, the pace of foreign direct investment has also accelerated to the region. For example, while both Central Eastern European (CEE) and Commonwealth of Independent States (CIS) countries in 1990 received USD 558 millions of FDI, FDI inflows to these countries skyrocketed to 76.2 billion US dollars in 2007. However, a few countries receive a large proportion of the total inflows whereas most other countries in the region received very low amounts of FDI inflows. The lion share (70 percent) of these investments went to the CEE countries. For the sample period considered (1990-2007), with share of 22 percent Poland was the single largest recipient of the FDI inflows. Hungary, Czech Republic and Kazakhstan followed Poland. Among CIS countries, Kazakhstan and the Russian Federation were the largest recipients most probably due to their natural resources reserves (oil, natural gas, and mining etc).

The focus of this study is the determinants of FDI to the transition economies. These determinants are mostly from macroeconomic and political indicators. Gross Domestic Products, external trade balances, inflation rates as risk indicators, trade openness and political indicators were considered. This study makes two contributions to the empirical FDI literature. In our study, we explicitly control for the natural resources of these countries among other FDI determinants. The determinants of FDI are also tested against a data set that includes a larger number of countries and a longer time span than most previous studies.

The remainder of this paper develops as follows. Section 2 discusses the literature on the determinants of FDI. Section 3 discusses the econometric approach and dataset. Results are presented and discussed in section 4. Section 5 concludes the paper.

2. LITERATURE REVIEW

Faeth (2009) presents an extensive review of the different theoretical models and econometric studies on the determinants of FDI and discusses nine theoretical models: early studies of determinants of FDI (1), determinants of FDI according to the neoclassical trade theory (2), ownership advantages as determinants of FDI (3), aggregate variables as determinants of FDI (4), determinants of FDI in the ownership, location and internalization advantage (OLI) framework (5), determinants of horizontal and vertical FDI (6), determinants of FDI according to the knowledge-capital model (7), determinants of FDI according to diversified FDI and risk diversification models (8) and policy variables as determinants of FDI (9). Thus, existing empirical studies derive the relevant determinants of FDI from

these theories and employ in their estimates. UNCTAD (1998) gives relevant information about determinants of FDI. Host countries' FDI determinants were given in the Table 1.

Table 1: Determinants of FDI

Policy Framework	**Economic Determinants**	**Business Facilitation**
Economic, political and social stability Rules regarding entry and operations Trade and tax policy International agreements on FDI	*Market-seeking:* GDP, GDP per capita, structure of the market, trade openness *Resource/Asset-seeking:* raw materials, low labor cost, skilled labor, physical infrastructure *Efficiency-seeking:* cost of resource and inputs, regional integration	Investment promotion Investment incentives Hassle cost Social amenities After investment services

Source: UNCTAD (1998)

There is a sizeable empirical literature on the determinants of FDI to the developing nations and especially lately a number of studies investigate the determinants of FDI to the transition economies. There, however, exist relatively much more interest on the countries that are either member of European Union or EU candidate countries than the empirical studies on the Central Asian and Caucasian countries. Theoretical studies report that the main determinants of FDI are differentials in factor endowments and rewards, cost structures, scale factors, and market and institutional characteristics of the recipient countries. Institutional features are important determinants of FDI, including the degree of political stability and government intervention, the tax system, and the existence and security of property rights. Economic factors also have repercussions on the level of FDI to a country, such as trade and investment regimes, the openness of the host country, and the level of basic infrastructure. Table 2 presents the empirical literature in an extensive way. As can be seen from Table 2, there exist some inconsistencies between theoretical expectations and empirical findings probably due to the fact that studies differ in terms of time periods, variables, country samples and groupings, and estimation techniques, used in the empirical studies. Thus, it is very difficult to compare the results from wide range of studies and reach some universally agreed conclusions for the determinants of FDI. However, the result emerges from empirical studies that determinants of FDI differ for different types of FDI. Further, recent empirical studies indicate that while even with the current pace of globalization traditional market-related determinants are still dominant factors, among non-traditional FDI determinants, trade and financial openness and public policy incentives provided towards inflows of FDI have clearly gained importance. To solve the problem of insufficient domestic funds to support and sustain national economic development, many developing country governments have taken a variety of policy steps to attract inflows of FDI to their countries.

Table 2: Variables affecting FDI Inflows

Variables	Theory /Hypothesis	Direction of effect	Empirical Findings	Studies
Market size (GDP or per capita GDP)	Market size Hypothesis	+	+ / 0	Tsai (1994), Shamsuddin (1994), Wang and Swain (1995), Jackson and Markowski (1996), Billington (1999), Tunman and Emmert (1999), Cheng and Kwan (2000), Love and Lage-Hidalgo (2000), Resmini (2000), Chakrabarti (2001), Tøndel (2001), Nunnenkamp (2002), Kinoshita and Campos (2002), Bos and Laar (2004), Clausing and Dorobantu (2005), Brada et. al., (2006), Zulfiu (2008), Leibrecht et. al., (2009)
Wages	Location Hypothesis	+ / -	+ / - / 0	Lunn (1980), Culem (1988), Wheeler and Mody (1992), Yang, et al. (1993), Moore (1993), Tsai (1994), Bolingen and Feenstra (1996), Kinoshita (1998), Cleeve (2000), Cheng and Kwan (2000), Resmini (2000); Altomonte and Guagliano (2000), Tøndel (2001), Kinoshita and Campos (2002), Clausing and Dorobantu (2005), Johnson (2006), Zulfiu (2008), Leibrecht et. al., (2009)
Trade barriers	Other	-	- / + / 0	Lunn (1988), Culem (1988), Bolingen and Feenstra (1996), Gastanaga et al. (1998), Rodric (1998), Banga (2003), Almonte (2004), Brada et al. (2006), Leibrecht et. al., (2009)
Growth rate	Differential rates of return,diversification, internal financing	+	+ / 0	Jackson and Markowski (1996), Billington (1999), Tsai (1994), Martin and Ottaviano (1999), Sin and Leung (2001), Cevis and Camurdan (2008)
Openness	Other	+	+ / 0	Kravis and Lipsey (1982), Wheeler and Moody (1992), Gyapong and Karikari (1999), Aarle and Skuratowicz (2000), Resmini (2000), Sin and Leung (2001), Nunnenkamp (2002), Kinoshita and Campos (2002), Bouoiyour (2003), Quazi and Mahmud (2004), Globerman et. al., (2004), Clausing and Dorobantu (2005), Brada et. al., (2006), Dhakal et. al., (2007), Zulfiu (2008)
Trade Deficit	Other	?	+ / -	Ferris, et al. (1993), Tsai (1994), Shamsuddin (1994), Pisoresi (2000), Brada et. al., (2006)
Exchange rate	Currency areas hypothesis	+ / -	+ / - / 0	Edwards (1990), Blonigen and Feenstra (1996), Gastanaga, et al. (1998), Tuman and Emmert (1999), Bénassy-Quéré, et al. (2001), Bouoiyour (2003), Backer and Hall (2003), Ruiz (2005), Dhakal, et. al (2007), Cevis and Camurdan (2008)
Taxes	Other	-	- / + / 0	Swenson (1994), Hines (1996), Porcano and Price (1996), Gastanaga,et al. (1998), Billington (1999), Wei (2000), Schoeman, et al. (2000), Krkoska (2001), Bellak and Leibrecht (2005), Leibrecht et. al., (2009)
Country risk	Other	-	-	Gastanaga, et al., (1998), Lehman (1999), Ramcharran (1999), Tuman and Emmert (1999), Wezel (2003), Onyeiwu and Shrestha (2004) Quazi and Mahmud (2004) , Bos and Laar (2004), Zulfiu (2008), Leibrecht et. al., (2009)
Sovereign Rating	Other	+	+	Kabadayi et al (2012)
Incentives	Other	+	+ / 0	Ulgado and Yu (1997), Ihrig (2000), Banga (2003)
Corruption	Other	-	-	Gastanaga et al., (1998), Wei (2000), Altomonte and Guagliano (2000), Kinoshita and Campos (2002), Johnson (2006)
Labour disputes and unionisation	Location Hypothesis	-	- / +	Moore (1993), Ulgado and Yu (1997), Zhao (1995, 1998), Tcha (1998), Yang et al., (2000), Leahy and Montagna (2000), Leibrecht et. al., (2009)
Cost of capital	Location Hypothesis	-	+ / -	Love and Lage-Hidalgo (2000), Ghura and Goodwin (2000), Krkoska (2001), Banga (2003), Uygur (2005)

Variables	Theory /Hypothesis	Direction of effect	Empirical Findings	Studies
Inflation	Other	-	-	Schnieder and Frey (1985), Bajo-Rubio and Sosvillo-Rivero (1994), Yang et al., (2000), Kinoshita and Campos (2002), Brada et. al., (2006), Cevis and Camurdan (2008), Zulfiu (2008), Leibrecht et. al., (2009)
Human capital	Location Hypothesis	+	+ / 0	Jackson and Markowski (1996) Martín and Velázque (2000), Ghura and Goodwin (2000), Tøndel (2001), Kinoshita and Campos (2002), Brada et. al., (2006)
Infrastructure	Concentration theory	+	+	Ulgado and Yu (1997), Kinoshita (1998), Martín and Velázque (2000), Kinoshita and Campos (2002), Banga (2003), Bellak and Leibrecht (2005), Brada et. al., (2006), Johnson (2006), Cevis and Camurdan (2008), Leibrecht et. al., (2009)
Natural Resources	Resource Abundancy Hypothesis	+	+/-/0	Krkoska (2001), Kinoshita and Campos (2002), Johnson (2006)

Note: This table is the modified and extended version of Table 1 of Moosa and Cardak (2006, 202).

As reviewed in Table 2, while there is a large literature on the determinants of FDI, relatively fewer amounts of empirical studies on FDI inflows to the transition economies exist. However, latter studies reveal some remarkable conclusions on the determinants of FDI. By using wide range of explanatory variables such as economic, geographic, religious and cultural variables, Bos and Laar (2004) find that while the size of GDP and geographical proximity are important, the size of population is not statistically significant determinants of FDI inflows to the Central and Eastern European countries in transition. By using industry-level data on 10 Mediterranean and 8 Central and East European (CEE) host countries, Altomonte and Guagliano (2000) report that countries with higher market potential and industries with higher market share receive higher FDI inflows. Aarle and Skuratowicz (2000) find that the trade volume and market size, geographical proximity and competitiveness are important determinants of FDI inflows to the transition economies in Europe. In other words, the process of trade, labor and capital liberalization are important factors to steer FDI to the region. In addition to the economic integration effect, some studies also emphasize the importance of the case that countries with small but effective governments are in better position to attract FDI inflows. For example, by estimating a panel of 35 bilateral country-relationships over a period of 1995-2002, Bellak and Leibrecht (2005) find that even though tax lowering strategies have been successful for attracting FDI in the past, better investment conditions such as high quality public infrastructure certainly are more decisive location factor. Brada et al., (2006) examines how transition policy, and conflict and political instability affect foreign direct investment flows in transition economies in Central Europe and the Balkans and report that due to their transition status they receive higher than expected FDI inflows and much of the shortfall in FDI inflows to Balkan countries is attributable to political instability of these countries though.

Krkoska (2001) assesses the importance of FDI in financing capital formation in transition countries, relative to the other forms of enterprise financing using SUR estimation technique with annual data for 25 transition countries over 11 years (1989-2000). He finds that lower domestic credit

to enterprises, higher real interest rates, foreign credit to enterprises privatization process and natural resources endowment are positively correlated with foreign direct investments. Tøndel (2001) investigates the difference in motive for investing in CIS and in CEE and reports that while size of the market is a significant determinant in CIS, only progress in transition seems to influence the inflow of FDI in the CEE. Resmini (2000) reports that the locational determinants of FDI in transition economies vary greatly across different sectors. Kinoshita and Campos (2002) study the factors explaining the geographical distribution of FDI inflow across 25 transition economies by utilizing panel data between 1990 and 1998 and find that the role of agglomeration economies is the most significant determinant of foreign investment inflows in the transition economies. They also conclude that CIS and non-CIS countries (e.g. CEECs and the Baltic states) differ in the sector in which they attract FDI. While for CIS countries, there is a greater effect of agglomeration at work, the more liberalized regime is the most important factor in attracting FDI in non-CIS countries.

3. DATA AND METHODOLOGY

In this paper, we examine the determinants of FDI inflows into 18[*] out of 27 transition economies by utilizing the panel data between 1993 and 2012. The choice of countries is determined solely by the data availability. Following the empirical literature as listed in Table 2, a number of FDI determinants are employed in our estimates. Hoping to provide a more complete and detailed picture of the reasons for locating FDI in transition countries. The variables used in the empirical analysis are given in Table 3.

Table 3: Variables used in the analysis

VARIABLE	DEFINITION
FDI	Foreign Direct Investment (in US dollar)
GDP	Gross Domestic Product (current in US dollars)
INF	Inflation (calculated from deflator)
OPEN	Trade openness that calculated by the proportion of the sum of export and import to GDP
CABTGDP	Current account balance to GDP
PR	Political rights index.
FUELX	The share of fuel exports in total merchandise exports

Notes: PR was obtained from Freedom House. It takes the values from 1 to 7, 1 representing the most free countries and 7 the least free.

We have time series data on net total FDI inflows and for other explanatory variables for 18 transition economies for the period of 1993 to 2012. Our dependent variable is total FDI inflows (TFDI, in millions of US dollars) and following explanatory variables are utilized in the estimates: GDP to control market size, trade shares in GDP (OPEN) to proxy for integration; current account balance as a share of GDP (CABTGDP) to assess the need for foreign currencies; the rate of inflation

[*] 18 transition countries we analyze in the paper are Albania, Armenia, Belarus, Bulgaria, Croatia, Czech Republic, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, and Ukraine.

(INF) to measure the degree of macroeconomic stability; the Political Rights Index (PR), used by Freedom House, to measure a multidimensional classification of political and civil liberties. Political Rights are measured on a 1-to-7 scale, with one representing the highest degree of Freedom and seven the lowest. The share of fuel exports in total merchandise exports (FUELX) to explicitly control for the richness of natural resources. All the data used in the estimates are taken from World Bank and Freedom House web site. Summary statistics for the panel are reported in Table 4.

Table 4: Summary statistics (1993-2012)

	CABTGDP	FDI	FUELX	GDP	INF	OPEN	PR
Mean	-6.66	4.22E+09	13.27	9.65e+10	24.03	101.12	2.74
Median	-4.00	1.20E+09	6.21	3.03e+10	7.19	99.53	2.00
Maximum	21.72	7.50E+10	72.82	2.01e+12	1500.00	182.50	7.00
Minimum	-52.78	-2.10E+10	0.002	1.14e+09	-17.58	41.05	1.00
Std. Dev.	11.80	1.00E+10	17.31	2.31e+11	103.93	31.10	1.90
Observations	324	324	324	324	324	324	324

Note: See the text for the definition of variables and the data sources.

Transition economies are not homogenous group of countries at all. They are actually different in terms of many respects. In 2012, while Kyrgyzstan is the poorest country with 575 US dollars of GDP per capita, Slovenia is the richest transition economy with 18,621 US dollars of GDP per capita. Some countries can be considered as fully integrated to the world economy but some with very low trade shares in GDP are very closed economies. For example, Slovak Republic with the share of 175.8% in GDP is the most open economy and Russian Federation with 51.5% of trade shares in GDP is the most closed transition economy. In terms of political and civil liberties, transition economies are also widely different in the sense that some can be classified as fairly democratic countries but some have primarily authoritarian regimes with very poor maintenance of rule of law. In terms of macroeconomic stability, countries with low inflation and fairly stable real exchange rates have very sound macroeconomic policies but some do not.

Following the existing empirical literature, this study employs a standard empirical model for the determinants of FDI that consists of supply and demand factors. The model has the general form:

$$y_{it}=\alpha_i+\beta' x_{it}+\varepsilon_{it} \quad (1)$$

where y_{it} is an amount of inflows of total FDI that each country receives in period t, and x_{it} is a vector of conditioning variables that have been found to be key determinants of FDI inflows, and the variables we deem to be the important determinants of FDI. It is possible to write this model in the following way:

$$FDI_{it} = \alpha_0 + \beta_1 GDP_{it} + \beta_2 INF_{it} + \beta_3 OPEN_{it} + \beta_4 CABTGDP_{it} + \beta_5 PR_{it} + \beta_7 \mathrm{FUELX}_{it} + \varepsilon_{it} \quad (2)$$

4. PANEL DATA ESTIMATES

Panel data estimation techniques have been widely utilized in empirical literature in recent years, primarily due to the motivation for raising the sample size to reliably estimate certain economic relationships.

We evaluate the stationary properties of the variables using several panel unit root tests proposed by the IPS (Im, Pesaran and Shin, 2003), the LLC (Levin, Lin and Chu, 2002) and the CADF (Cross Sectional Augmented Dickey Fuller) test (Pesaran, 2007) in order to get rid of spurious regression. A regression analysis between two variables that both of them have similar trends could have a strong relationship and higher R^2 (coefficient of determination). Also the variables are not stationary do not fit the standard assumptions of asymptotic analysis (t- distribution). Because of these reasons, firstly stationary properties of the variables were checked by several unit root tests.

In these tests, the null hypothesis is non-stationary (see for details Baltagi, 2005). Table 5 presents the panel unit root test results. The IPS and LLC panel unit root test results for levels of the series indicate that the null hypothesis could be rejected for some of the variables and could not be rejected for the others. This implies that the variables have mixture stationary properties (I(0) and I(1) repressors).

Table 5: First and Second Generation Panel Unit Root Tests

	LLC		IPS		CADF	
Variable	Constant	Constant Trend	Constant	Constant Trend	Constant	Constant Trend
FDI	-2.23^{B}	-2.804^{A}	-0.604	-0.872	-1.449	-1.393
FDITGDP	-2.932^{A}	-1.598^{B}	-2.980^{A}	-0.132	-1.936	-1.846
LGDP	-0.482	0.013	3.770	0.807	-2.494^{A}	-2.425
GRWT	-8.878^{A}	-7.666^{A}	-6.834^{A}	-3.337^{A}	-2.757^{A}	-2.761^{A}
INF	-342.5^{A}	-333.486^{A}	-176.050^{A}	-154.907^{A}	-3.812^{A}	-3.994^{A}
OPEN	-2.73^{A}	-2.86^{A}	-2.50^{A}	-3.29^{A}	-2.518^{A}	-2.494
CAB	-1.59^{B}	-1.72^{B}	-2.43^{A}	-2.53^{A}	-1.747	-2.630^{A}
FUELX	-2.40^{A}	-3.05^{A}	-0.82	-0.213	-1.542	-1.356
DFDI	-11.172^{A}	-9.765^{A}	-10.627^{A}	-8.391^{A}	-2.830^{A}	-3.250^{A}
DFDITGDP	-7.830^{A}	-5.662^{A}	-8.939^{A}	-6.670^{A}	-3.361^{A}	-3.369^{A}
DLGDP	-7.831^{A}	-6.975$_{A}$	-5.643^{A}	-2.852^{A}	-3.231^{A}	-3.943^{A}
DGRWT	-13.03^{A}	-12.615^{A}	-12.723^{A}	-11.276^{A}	-3.557^{A}	-3.634^{A}
DINF	-211.59^{A}	-147.435^{A}	-90.77^{A}	-76.68^{A}	-4.602^{A}	-4.909^{A}
DOPEN	-10.77^{A}	-8.83^{A}	-10.23^{A}	-7.178^{A}	-3.395^{A}	-3.328^{A}
DCAB	-7.82^{A}	-6.46^{A}	-8.78^{A}	-6.51^{A}	-3.741^{A}	-4.229^{A}
DFUELX	-10.38^{A}	-11.02^{A}	-7.70^{A}	-7.07^{A}	-2.067^{A}	-2.479^{A}

Note: See Levin, Lin, and Chu (2002), Im, Pesaran, and Shin (2003) and Pesaran (2007). The statistics are asymptotically distributed as standard normal with a left hand side rejection area. A (B) indicates the rejection of the null hypothesis of nonstationarity at the 0.01 (0.05) level of significance. Newey-West bandwidth selection with Bartlett kernel is used for both LLC and IPS. Schwarz info criteria are used in order to determine optimal lags. Critical values for CADF tests were obtained from Pesaran (2007)'s article.

Possible cross-section dependencies among the variables were tested by several tests. The estimation reports were given at the Table 6. Friedman (1937), Breusch-Pagan (1980) and Pesaran (2003) tests were used to check whether variables in the panel are cross-sectionally independent. The tests were run after static panel data analysis. According to the all three tests, the null hypotheses of cross-sectional dependency were rejected at 1 percent level of significance. Thus, strong correlation between the macroeconomic variables of Transition Countries does exist. Because of this fact, CADF tests generated by Pesaran were given in Table 5. The results of CADF test show some of the variables are stationary in level, some of them not. The regression analysis with mixture structure of the stationary properties of the variables can cause spurious results. Pooled Mean Group (PMG) estimators give us an opportunity to study with the variables have mixture stationary properties

Table 6: Cross Section Dependence Test for Model 1

Friedman Tests		B-P LM Test		Pesaran Test	
Stat	P Value	Stat	P Value	Stat	P Value
60.295	0.00	308.46	0.00	6.690	0.00

In this paper, Pooled Mean Group (PMG) estimators generated by Pesaran et al (1999) were used to check long-run effects of Transition Countries' macroeconomic and political variables on FDI. PMG allows us to get long-run coefficients even heterogeneity in short-run has been observed. Considering political and economic relations between the countries and the multi-dimensional impact of globalization, PMG models would be more appropriate to see the effects of the determinants of FDI in Transition Countries. Other advantages of using PMG models can be ordered like (Peseran et al, 2001),

i- PMG models allow us to check long run relationships between variables even they are I(0) and I(1).

ii- PMG models allow us to study with the shorter samples.

iii- PMG allows us to get long-run coefficients even heterogeneity in short-run has been observed

The equations of PMG models were stated like,

Model 1

$$\Delta FDI_{i,t} =$$

$$\alpha_i + \varphi_i^* FDI_{i,t-1} + \delta_i^* GDP_{i,t} + \theta_i^* INF_{i,t} + \phi_i^* OPEN_{i,t} + \Phi_i^* CAPTGDP_{i,t} + \sum_{j=1}^{pi-1} \beta_{ij}^{**} \Delta FDI_{i,t-j} +$$

$$\sum_{j=0}^{qi} \delta_{ij}^{**} \Delta GDP_{i,t-j} + \sum_{j=0}^{ki} \theta_{ij}^{**} \Delta INF_{i,t-j} + \sum_{j=0}^{li} \phi_{ij}^{**} \Delta OPEN_{i,t-j} + \sum_{j=0}^{mi} \Phi_{ij}^{**} \Delta CAPTGDP_{i,t-j} + \varepsilon_{i,t} \quad (3)$$

Where

$$\varphi_i = -\left(1 - \sum_{j=0}^{pi} \beta_{i,j}\right), \delta_i^* = \sum_{j=0}^{qi} \delta_{i,j}, \theta_i^* = \sum_{j=0}^{ki} \theta_{i,j}, \phi_i^* = \sum_{j=0}^{li} \phi_{i,j}, \Phi_i^* = \sum_{j=0}^{mi} \Phi_{i,j} \quad (4)$$

; n = 1, 2, …, 18; t = 1993, 1992, …, 2012

Model 2

$$\Delta FDI_{i,t} = \alpha_i + \varphi_i^* FDI_{i,t-1} + \delta_i^* GDP_{i,t} + \theta_i^* INF_{i,t} + \phi_i^* OPEN_{i,t} + \Phi_i^* CAPTGDP_{i,t} + \lambda_i^* PR_{i,t} + \sum_{j=1}^{pi-1} \beta_{ij}^{**} \Delta FDI_{i,t-j} + \sum_{j=0}^{qi} \delta_{ij}^{**} \Delta GDP_{i,t-j} + \sum_{j=0}^{ki} \theta_{ij}^{**} \Delta INF_{i,t-j} + \sum_{j=0}^{li} \phi_{ij}^{**} \Delta OPEN_{i,t-j} + \sum_{j=0}^{mi} \Phi_{ij}^{**} \Delta CAPTGDP_{i,t-j} + + \sum_{j=0}^{ni} \lambda_{ij}^{**} \Delta PR_{i,t-j} + \varepsilon_{i,t} \quad (5)$$

Where

$$\varphi_i = -\left(1 - \sum_{j=0}^{pi} \beta_{i,j}\right), \delta_i^* = \sum_{j=0}^{qi} \delta_{i,j}, \theta_i^* = \sum_{j=0}^{ki} \theta_{i,j}, \phi_i^* = \sum_{j=0}^{li} \phi_{i,j}, \Phi_i^* = \sum_{j=0}^{mi} \Phi_{i,j}, \lambda_i^* = \sum_{j=0}^{mi} \lambda_{i,j} \quad (6)$$

; n = 1, 2, …, 18; t = 1993, 1992, …, 2012

Model 3

$$\Delta FDI_{i,t} = \alpha_i + \varphi_i^* FDI_{i,t-1} + \delta_i^* GDP_{i,t} + \theta_i^* INF_{i,t} + \phi_i^* OPEN_{i,t} + \Phi_i^* CAPTGDP_{i,t} + \lambda_i^* PR_{i,t} + \sum_{j=1}^{pi-1} \beta_{ij}^{**} \Delta FDI_{i,t-j} + \sum_{j=0}^{qi} \delta_{ij}^{**} \Delta GDP_{i,t-j} + \sum_{j=0}^{ki} \theta_{ij}^{**} \Delta INF_{i,t-j} + \sum_{j=0}^{li} \phi_{ij}^{**} \Delta OPEN_{i,t-j} + \sum_{j=0}^{mi} \Phi_{ij}^{**} \Delta CAPTGDP_{i,t-j} + + \sum_{j=0}^{ni} \lambda_{ij}^{**} \Delta FUELX_{i,t-j} + \varepsilon_{i,t} \quad (7)$$

Where

$$\varphi_i = -\left(1 - \sum_{j=0}^{pi} \beta_{i,j}\right), \delta_i^* = \sum_{j=0}^{qi} \delta_{i,j}, \theta_i^* = \sum_{j=0}^{ki} \theta_{i,j}, \phi_i^* = \sum_{j=0}^{li} \phi_{i,j}, \Phi_i^* = \sum_{j=0}^{mi} \Phi_{i,j}, \lambda_i^* = \sum_{j=0}^{mi} \lambda_{i,j} \quad (8)$$

; n = 1, 2, …, 18; t = 1993, 1992, …, 2012

The estimations reports of PMG model are given at Table 7.

Table 7: Results for Panel ARDL Model

Dependent variable: FDI						
	Model 1		Model 2		Model 3	
	Long-term Relationships					
Variables	Coefficient	t stat	Coefficient	t stat	Coefficient	t stat
GDP	0.020[A]	5.70	0.02[A]	5.65	0.0094[B]	1.90
INF	-0.622[A]	-2.65	-0.700[A]	-2.66	8.037[A]	2.96
OPEN	1.607	0.91	2.039	1.07	-0.583	-0.17
CABTGDP	-2.917435	-0.89	-2.266	-0.6	-5.731	-1.20
PR			-2870.00	-0.72		
FUELX					10900[A]	4.45
	Short-term Relationships					
EC	-0.51[A]	-6.22	-0.511[A]	-5.94	-0.437[A]	-5.41
DGDP	0.167[A]	2.61	0.167[A]	2.6	0.162[A]	2.71
DINF	11700	1.07	12000	1.09	120600	1.08
DOPEN	5720[B]	1.91	6000[B]	2.02	7500[A]	2.01
DCABTGDP	-13300	-1.03	-14800	-1.13	-8810	-0.72
DPR			-255,00	-1.27		
DFUELX					4000	0.9
Cons	5010	0.27	6800	0.37	5620	0.21
chi2(3)	0.84	0.84	0.79	0.94	0.60	0.96

A (B) indicates the rejection of the null hypothesis of nonstationarity at the 0.01 (0.05) level of significance. EC indicates error correction coefficient.

Hausman tests were examined in order to give a decision between Mean Group and Pooled Mean Group estimators. Chi statistics for Hausman tests were not rejected, so PMG model were regressed to see the effects of explanatory variables on FDI to Transition Countries.

Estimation results in three models indicate that the size of the market[†] is a significant determinant of total net FDI inflows to the transition economies. These results favor the market size hypothesis that Multinational Companies (MNCs) primarily go to the large markets to exploit scale economies.

Several macro economic variables are utilized in the estimates. Current account balance (CABTGDP) has negative coefficients but it is statistically insignificant, indicating that countries with higher current account deficit receive less FDI inflows. Countries with current account balance problems are more likely to experience depreciation in national currency, higher inflation rates and volatile exchange rates. If these considerations are seriously taken by multinational corporations, they then lead to reduction in FDI inflows. The inflation rates (INF) were taken to measure the degree of

[†] We have also tried the total population and GDP per capita; the estimated coefficients are similar but total real GDP gives the best results.

macroeconomic stability. INF has the statistically significant and negative coefficients, indicating that countries with higher inflation rates receive less FDI inflows. The other two, OPEN and PR, are not statistically significant but OPEN has positive sign in the first and second models, PR has negative sign that means political quality of the countries has positive effects on FDI inflows.

The level of richness of natural resources is not explicitly included in the previous empirical studies. Several previous studies (Krkoska, 2001; Kinoshita and Campos, 2002; and Johnson, 2006) utilize a dummy variable for resource abundancy in their models though. We employ fuel exports (both as a percentage of merchandise exports and a percentage of GDP) which are primarily used in the literature (Krkoska (2001), Kinoshita and Campos (2002), Johnson (2006)) as proxies for resource dependency and abundancy, respectively, in the estimates because some countries are especially rich in oil and natural gas reserves. To the best of our knowledge, these variables are not used before in the literature in this context.

The statistically significant and positive coefficients on FUELX indicate that resource abundant countries receive more FDI inflows. This result provides evidence for the resourse-seeking FDI hypothesis.

The importance of natural resources as a determinant of FDI inflows is consistent with casual evidence that UNCTAD (1998 and 2006) reported that majority of the total foreign direct investments have been in natural resource and related sectors in Azerbaijan and Kazakhstan. The existence of natural resources is important for all economies not only for these two economies though. Note that even controlling the resource abundancy, the levels of political rights are important determinants of FDI inflows[‡], which is important because it is not difficult to find studies (see, Tøndel, 2001) that argue that direct investment in resource- rich sectors and economies are not sensitive to the level of democracy or the rule of law. The importance of political rights and natural richness were controlled separately in two different models because of the lack of data.

In three PMG models, short term coefficients and error correction coefficients were obtained. GDP and trade openness have statistically significant and positive effects on FDI. Negative signs for error correction coefficients were taken and all of them are statistically significant. The possible biases or shocks on the variables will tend to equilibrium approximately in two years.

5. CONCLUSION

This study examines the determinants of FDI inflows into transition economies by utilizing the pool mean group models between 1993 and 2012. Our results indicate that transition economies with higher market size, lower inflation rates and abundant natural resources receive more FDI flows.

[‡] If we employ log-log models in the estimates, the estimatation results are similar, not reported in the text but available from the authors.

In summary, it is vitally important to have three pillars those are political, economic as well as socio-culturally liberalist structure for stable economic growth in transition countries. In other words, at the beginning of liberalization phases, the ability to quickly overcome recession in transition countries has been possible with the establishment of strong institutional structure. While the transition countries who can plant strong institutional structure pull higher amount of FDI which are robust and stable source of foreign investment, FDIs evoke to have economic growth and establishment of institutional structure in a healthy way. Therefore, fiscal and monetary discipline, external balance and being more liberal in the political sense lie at the root of the observed mutual causal relationship between FDI and growth.

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