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Determinants of FDI inflows to CEE countries

In comparison to EU-15

Master's thesis within Economics

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Abstract

This paper aims to explore the determinants of foreign direct investment (FDI) inflow to Central and Eastern Europe (CEE) countries and EU-15 countries by estimating a panel regression model over the period of 1993-2013. GDP, corporate income tax rate, hourly wage, corruption, and enrollment rate of tertiary education are used as explanatory variables for FDI inflow, which are proxies for market-seeking FDI, efficiency-seeking FDI, institution, and asset-seeking FDI respectively. For the purpose of efficient analysis, two country groups are divided in this paper, which are CEE country group and EU-15 country group. According to the findings, market-seeking and efficiency-seeking are strong determinants for FDI inflow in CEE group. While country's openness as a strong determinant has been found in EU-15 group. The analysis, however, finds weak evidence for institution as strong determinant for FDI inflow in both CEE and EU-15 countries..

Key words: foreign direct investment, Central and Eastern Europe, EU-15, market-seeking FDI, efficiency-seeking FDI, asset-seeking FDI

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Abbreviations

CE	Central Europe
CEE	Central and Eastern Europe
CPI	Corruption Perception Index
EE	Eastern Europe
EU	European Union
FDI	Foreign Direct Investment
FT	Financial Times
HUF	National currency of Hungary
FUM	Department of Economics of Ferdowsi University of Mashhad
LDCs	Lesser-Developed Countries
M&A	Mergers and Acquisitions
OECD	The Organization for Economic Co-operation and Development
UCL SSEES	University London School of Slavonic & East European Studies
UNCTAD	United Nations Conference on Trade and Development
WE	Western Europe
WTO	World Trade Organization

I Introduction

In this paper the determinants of FDI inflows to the CEE countries and the similarities and dissimilarities in relation to the EU-15 countries are investigated by using panel data for each group covering the same period of time, from 1993 to 2013. The aim is to investigate what are region-specific factors that are significant for FDI inflows for each of the group. Empirical studies on the determinants of FDI to CEE countries differ in terms of the variables, methodologies and the characteristics of FDI. The main determinants affecting the FDI inflows to CEE countries can be classified into two categories, economic-related factors and institutional-related factors. According to UCL SSEES (2011)¹, the economic-related factors mainly include market demand, size and proximity, production costs, labor skills, trade openness, etc. Besides, in Johnson (2006)'s paper, a couple of new factors are taken into account like resource endowment, etc. In terms of institutional-related factors, political institution transparency, macroeconomic policy are included. The effect of these variables on FDI inflows changes over time, according to the countries' economic and institutional conditions. Moreover, in relation to the topic of determinants of FDI inflows to CEE countries, the transitional-specific factors are also referred in the above-mentioned papers, like transitional performance, privatization methods, etc. In this study the emphasis is on the economic-related variables, complemented by one of the institutional-related variables.

The global FDI flows have been sharply increasing during the last two decades. The general attitude towards FDI has changed sharply from restrictive that was prevalent before the 1980s to the current positive view where foreign investment is accessible to almost all the economies and most of them actively support inflows of FDI. One of the significant reasons for the present positive attitude towards FDI is the belief in the benefits both to MNEs (Multinational enterprises) and host country provided by foreign investments (Moosa, 2002). The advantages of FDI to host countries mainly comprise influx of capital, transfer of management skills, job creation, increased exports and transfer of technology. It is believed that these benefits outweigh possible drawbacks such as a loss of economic independence when a large part of the production is controlled by foreigners. Compared with the extent of

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change in attitude towards FDI in the developing economies, it was more dramatic for the CEE countries.

First in terms of the developing economies, one can use China as an example. Since the open-door policy implemented in 1978, China selectively opened certain areas to the outside world. The opened area and sectors was not expanded until the accession to WTO (World Trade Organization) in 2001. Up-to-now, China has become one of the most attractive FDI recipients and shortage of foreign capital is no longer a big problem for China. When referring to Korea, although it was opened up ten-odd years earlier than China, the government concentrated on control and restrict rather than promote and support. The dramatic change in terms of the attitude towards FDI did not take place until the 1997 financial crisis hit Korea, which embody the change from so-called “passive liberalization” to accelerated liberalization. The Korean government not only promoted FDI but also provided professional support, resolved culture issues, created a positive perception and improved a credible and favorable environment for foreign investors. For India, the year 1991 represents the turning point due to the deregulatory environment. Moreover, when turns to most of African countries, after gaining political independence in the 1960s, African countries, like most developing nations, were very skeptical about the virtues of free trade and investment. Consequently, in the 1970s and 1980s, several countries in the region imposed trade restrictions and capital controls as part of policy of import-substitution industrialization aimed at protecting domestic industries and conserving scarce foreign exchange reserves. As the result of the long-term inward-looking development strategy implemented by most of the African countries, the economic performance among African countries has deteriorated from the late 1970s to mid-1990s, which forced them to alter policy framework from inward-looking to outward-looking.

Second regarding CEE, the CEE countries rapidly changed their legal frameworks from a situation where FDI was extremely restricted to a situation where potential host countries now actively compete for inflows of FDI. A typical case is the exemption of tax. According to a paper written by Sedmihradsky & Klazar, they listed how several advanced economies in the CEE region performed to compete in attracting FDI inflows by implementing taxation-relief policy. To start with Poland, exemption of income from taxation up to the amount of invested amount, which is granted for investors for more or less 10 years; for Hungary, the government introduced a 10-year exemption of taxation for investments

exceeding 500 mil, HUF² since 1994, if profit was reinvested in Hungary; for Slovakia, in 1998 the government introduced a tax credit, which allowed exemption from income tax for particular activities. And a new Income Tax Act was introduced to extend the applicability of the tax credit two years after that; and for Czech Republic, adopted a new Investment Incentives Act, in which reduction of income tax is included as well after it had lost several big investment projects.

FDI inflows potentially provide a range of advantages to the CEE countries. But what are the driving forces behind the volume of FDI inflows to the CEE countries? Moreover, what are region-specific factors determine the volume of FDI inflows to the CEE countries. The specific countries that are included in CEE region will be presented in the Appendix. Although majority of the CEE countries have had accession to EU(European Union), there are still large gap between new EU members and the traditional ones³, like wage level. Hence, European countries are divided into two groups in the paper: the CEE countries and the EU-15 countries⁴.

The time series used in this paper covering a period of 20 years, which is much longer than many previous studies on this topic. For example, a period of 10 years were included in both of the papers written by Johnson(2006) and by UCL SSEES(2011) respectively, and a time series of 7 years was used in the Ohlsson(2007)'s paper concerning the impact of corruption to FDI, etc. The reason to select the year 1993 to be the beginning year is that after the first-three-year transition period, the economic conditions tend to be stabilized in most of the CEE countries and the volume of FDI inflows to CEE countries started to surge.

The paper is organized as follows. Section 2 briefly reviews the theories concerning FDI inflows, and then the previous empirical studies concerning FDI inflows to CEE and EU-15 countries are spreaded out in section 3. Section 4 presents the variables used in the empirical study. Section 5 presents the discussion of the regression results Section 6 concludes.

² Stands for Hungary's national currency

³ Refers to the EU membership before 2004

⁴ Specific seen Appendix1

2 The theories of FDI

There are a number of theories that try to explain why MNEs are interested in FDI, and why they choose one country instead of another to locate their production chain. Possible reasons why some countries are more attractive than others to be FDI destinations are also explained by these theories. Two situations mentioned above are exact the two categories of FDI, i.e. outward FDI and inward FDI.

Theories of FDI may be classified under the following three headings suggested by Lizondo (1991) following Agarwal (1980): 1) theories assuming perfect markets; 2) theories assuming imperfect markets; 3) theories based on other variables.

MacDougall (1958) was one of the earliest researchers to present the FDI theory under the assumptions of perfectly competitive market. Kemp (1964) further developed his theory by assuming a two-country model with the equality between capital prices and its marginal productivity. They both specified that the marginal productivity of capital between the two countries tended to be equalized, when there was free capital mobility from a source country to a host country. They found that although the output of the source country fell after the investment had occurred, the national income of the country would not experience any decrease. Similar theories can be found in the works Caves (1971).

Besides, there is a so-called market-size hypothesis under this perfect market assumption, which was raised according to the international capital inflow theory. The hypothesis postulates that FDI is a positive function of the market size of the host country. The market size is usually measured by the GDP of the host country. The country becomes a potential destination for FDI inflows under the circumstance that the country size is large enough to ensure the utilization of economies of scale. A couple of previous studies can be used as evidences for this. For instance, Balassa (1966), argued that a sufficiently large market triggers both the specialization of the production factors and the achievement of cost minimization. Reuber et al. (1973) observed that per capita of FDI into the LDCs⁵ were positively correlated with their GDP. Edwards (1991) investigated the distribution of OECD FDI across 58 LDCs for the period 1971-1981. They found that the higher the real GDP of a country, the larger was its share in the total OECD FDI in the LDCs.

⁵ Stands for lesser-developed countries

However, FDI would not have existed under the perfect market setting (Kindleberger, 1969). As a result of this, the perfect market assumption must be loosed. Hymer (1976) highlighted in 1960, and developed his theory based on an imperfect market assumption, supported by Lemfalussy (1961), Kindleberger (1969), Knickerbocker (1973), Caves (1974), Dunning (1974), and Vaitos (1974). To be more specific, the core of Hymer's theory is that firms operating abroad have to confront a number of challenges, the biggest of which is to compete with domestic firms that possess a number of advantages in terms of culture, language, law system, etc. These disadvantages must be compensated by some form of market power so as to gain profit in the international investment. The firm-specific advantage is the term that Hymer have raised.

Caves (1971) commented that the outstanding characteristic of Hymer's theory is that it emphasizes the advantages are transmitted effectively from one unit to another unit of a firm, no matter where they locate. As the market is imperfect, firms are able to take advantage of their market power to reap profits by investing abroad. Some other researchers also supported this argument. For example, according to Graham and Krugman (1989), the main reason why European firms used to invest in the United States was the technological advantage.

However, critics also exist. For instance Robock and Simmond (1983) claimed that making investment abroad is not the only way for firms that possess firm-specific advantage as firms might exploit their advantages splendidly through exporting or licensing. However, the choice between FDI and licensing/exports is influenced by a quantity of factors, including local market conditions and size, local government policy, and the riskiness of investment, etc.

Nevertheless, the explanation for FDI in Hymer's thesis is not comprehensive because it does not successfully explain in which locations and when FDI takes place. Kindleberger (1969) put forward his theory of FDI on the basis of monopolistic power by extending the work of Hymer. The argument raised by Kindleberger was that advantages enjoyed by MNCs could be valuable only under the market imperfection setting. Superior technology might be included in the advantages, which generally drives a firm to invest in a foreign country instead of sharing them with potential competitors in the foreign market. As long as the chances of earning monopoly profits are high, firms are more inclined to invest abroad. Although, various forms of advantages generally possessed by a firm are described in Kindleberger's

work, the key advantage is not presented. Further, prerequisite of exploitation its monopolistic advantages abroad by a firm is that the support of the host country's policy. In fact, for the purpose of national interest, the host government tends not to permit free entry of foreign firms into the country. Several hypothesis fall under this imperfect market assumption, of which the location hypothesis and the eclectic theory are more relevant to this paper.

According to the location hypothesis, the reason why FDI exists is due to the international immobility of some production factors, such as labor. This immobility leads to location-related dissimilarities in the cost of factors production, one form of which is the locational advantage of low wages. Therefore, the wage gap between host countries and home countries is taken into account by foreign investors.

In a word, evidence on the hypothesis that cheap labor attracts FDI is mixed. Evidence from survey reports is weak, however, some of the time series and cross-sectional studies can prove it right. For example, Riedel (1975) found relatively lower wage costs to be one of the major determinants of export-oriented FDI in Taiwan. Saunders (1983), Schneider and Frey (1985), and Culem (1988) found that a rise in the host country's wages would discourage FDI inflows. Of course, locational advantages are also applicable to other factors of productions, which will not be mentioned in detail.

The second theory under the imperfect market assumption is named the eclectic theory, which was developed by Dunning (1977, 1979, and 1988). According to Dunning, three groups of determinants exist simultaneously in order FDI to occur, namely: existence of ownership competitive advantages in a multinational company, host country's location advantages and internalization advantages (Saucvant et al 1998).

Ownership advantages are based on Hymer's(1976) firm-specific advantages and come in the form of assets such as patents, technology and management skills that reduces firm's production costs so that it can surviving in operating in a foreign country. And ownership is transferable.

Location advantages determine the attractiveness of different locations to production. A firm would minimize production costs, take advantage of large or knowledge spillovers if an advantageous location had been found. And unlike to ownership advantages, location advantages is not transferable.

Besides, there are also theories available based on other factors, which is the third heading mentioned above. According to Agarwal (1980), Lizondo (1991), and Moosa (2002), there are several other factors used to explain FDI, which are political risk and country risk, tax policy, trade barriers, etc.

Lack of political stability have a negative effect on inflows of FDI. Because the economic outcome of a given investment may largely affected by the dramatic change of the legal and fiscal frameworks in the host country. Wang and Swain (1995) use dummy variables to capture specific political events that may have an important impact on FDI. And more interestingly, Schneider and Frey (1985) have reached to a conclusion that models encompassing economic and political factors perform better than other models without political variables.

Regarding tax policy, both domestic and foreign tax policies affect the incentive to engage in FDI. Jun (1989) argued that an increase in the domestic corporate tax rate leads to an increase in the outflow of FDI by using an intertemporal optimization model.

Referring to trade barriers, FDI tends to circumvent trade barriers such as tariffs due to the fact that FDI can be viewed as an alternative to trade. This indicates that open economies without much restriction on global trade tend to receive fewer FDI flows. Yang et al (2000) used ratio of trade to GDP as a measure of the openness of the economy and found FDI flows to be negatively related to the degree of openness of the economy, suggesting that FDI indeed used to circumvent trade barriers.

Finally, four main FDI inflow motives are presented in table 2.1, which is not only the embodiment of the theories mentioned above, but also the fundamental theory to be further tested in the later section.

Table 2.1 Types of FDI inflow motives

FDI motives	Descriptions
Market-seeking FDI	Invest in a host country market in order to be closer to customers and to serve that market directly rather than through exporting ('horizontal' FDI). Market-seeking investors will rate the attractiveness of a host country mostly with respect to its market size and demand potential.
Efficiency-seeking FDI	Enterprises try to exploit economies of specialization and scope across the value chain, and will slice its production chain by allocating different parts (or tasks) to countries that allow low-cost production (vertical fragmentation), particularly where the cost of labor is taken into account.
Asset-seeking FDI	Aims to get access to advanced technologies, skills and other highly developed productive capabilities. Asset-seeking investors value locations depending on the quality of scientific, technological, and educational infrastructure they provide and on the availability of a rich pool of highly skilled labor
Resource-seeking FDI	In order to exploit natural resources or agricultural production in the host country

The aim of this paper is to investigate how the FDI motives except resource-seeking are embodied in CEE countries and what are the distinctions in comparison to EU-15 countries in this regard. Following this logic, there are four basic hypotheses to be listed in order to have them all tested in turn in the empirical part of the paper.

- 1) Market-seeking FDI is stronger in CEE countries than in EU-15 countries due to market immaturity.
- 2) Efficiency-seeking FDI is a significant determinant of FDI inward to CEE countries.
- 3) Asset-seeking FDI is a significant determinant of FDI inflows to EU-15 rather than to CEE countries.
- 4) The negative significant relation between corruption and FDI inflows would be shown in both CEE and EU-15 countries.

3 Review of previous studies regarding FDI inflows to CEE and EU-15

There are many previous studies of FDI inflows, but for the purposes of this paper the main focus is in studies covering CEE.

Holland and Pain (1998) study determinants of FDI to eleven CEE transition economies during the period 1992 to 1996 by using panel data. The paper finds that labor costs, trade linkages and proximity to EU are important for FDI inflows.

Bevan and Estrin (2000) allows for identification of FDI flows from 18 individual source countries to 10 CEE countries for the period 1994 to 1998. They find that FDI inflows are closely related to market size, distance, risk and unit labor costs. Moreover, they have identified in their second stage of the analysis that perceived country risk is significantly affected by private sector development, industrial development, the government balance, gross reserves and corruption in their sample.

The conclusions Carstensen and Toubai (2004) have reached are quite similar to those of Bevan and Estrin (2000). Although Carstensen and Toubai (2004) uses a different estimation technique, which is called generalized methods of moments (GMM), both of the works have found that market size, low unit labor costs and country risk are closely related to FDI inflows to CEE countries.

Mike and Nikos (2004) use a data set for a sample of 12 CEE countries, which is defined as four clusters, for the period 1997-2001, has verified empirically that market size and the internationalization of the host country explain a significant part of the cross-country variation of FDI inflows. However, institutional factors, like civil rights, which are related to investment decisions, strengthen these location advantages and help a country become an attractive location for such investment.

Bellak and Leibrecht (2005) did a research regarding FDI in CEE using corporate tax rate as the point of penetration. They found that taxes are an important location advantage determining the location decisions of foreign MNEs and that taxation is almost equally important to other cost factors like real unit labor costs.

There are some similarities and dissimilarities in a paper by Johnson (2006) and a research by UCL SSEES (2011). In terms of similarities, the main common aspects of the papers are

that the classification of variables is in the same way, which are traditional and transition-specific variables. And FDI inflows to the CEE region is the major focus of the papers. Whereas for dissimilarities, the main difference is in methodology. The interesting common conclusion, however, from the two papers is that besides the traditional factors, like market demand and labor costs, the impact of transitional variables, like level and method privatization, in the region of CEE should not be neglected either, which is consistent with the finding in the paper by Carstensen and Toubai (2004) mentioned above.

Pinzo and Vjetrov (2012) examine the variables influencing FDI inflows in CEE countries by including 14 countries within the CEE region. The variables analyzed in the paper are: financial sector development, human capital and physical infrastructure. From the empirical analysis, they find that the countries with well-developed capital markets can enhance the level of FDI inflows. Moreover, the same analysis points out a clear link between the total labor forces related to a local market and FDI inflows. Finally, the correlation between physical infrastructure development and FDI inflows is set. In the end, creating stable and efficient business environment may influence a higher level of both foreign and domestic investments within the country.

A recent study is provided by Behname (2013) from FUM⁶, who investigates the impacts of urbanization and wage on FDI in Central Europe, employing a panel data approach over the period of 1992-2009. They conclude that human capital and GDP growth are favorable for FDI flows; distance and increasing in wage level have negative impact on FDI.

The researches on determinants of FDI inflows to CEE countries are not simply restricted to country-level data. Resmini (2000) uses manufacturing sectors as the key sectors in the study of exploring determinants of FDI in 11 CEE economies for a five-year period, from 1990 to 1995. What he has found is that market variables such as population and GDP per capita are primary determinants of FDI inflows.

Besides, due to the fact that one of the key benefits of the process of enlarging the EU is the boost it gives to foreign direct investment (FDI). Inflows of investment to CEE have increased sharply since 1994, when the European Union (EU) committed itself to enlarging, Bevan and Estrin (2000) examines the impact of the public commitment made by EU

⁶ Department of Economics of Ferdowsi University of Mashhad (FUM)

member-states to enlarging eastwards at the Essen European Council in 1994. Having controlled for all the factors that encourage or discourage FDI, the results suggest that the 1994 Essen Council announcement was associated with a significant increase in the level of FDI received by the front-runner countries for EU accession — namely the Czech Republic, Hungary and Poland. Moreover, the results indicate that the EU's decision in 1997 to open negotiations with five CEE applicant countries (but not the other five) led to an increase in the growth rate of FDI to the leading applicants.

There are also some literatures concerning the impact of corruption on FDI inflows to CEE countries. Johnson (2006) uses fixed effect panel data during the period 1993 to 2003 and one of the conclusions he draws is that host country(CEE sample in his paper) corruption indeed deters FDI inflows.

Ohlsson (2007) does the research merely on the impact of corruption on FDI. What he did is to run a regression comparing FDI from developed countries to 46 developing countries, and then he finds that corruption is a significant variable and it does have a negative effect on total FDI.

On the other hand, literatures concerning what factors determine FDI inflows in traditional EU-15 countries are relatively scarce, due to the fact that most of these countries usually act as source country rather than host country.

Caetano et al. (2009) investigate determinants of FDI performance in EU-25 countries by using panel data regressions, which covers a period of nine year. What he has found is that the pure economic variables (GDP and openness) display positive and significant effect on FDI performance and institutional variables like corruption freedom do not seem significant in the EU-25 countries.

Hunady et al. (2014) also use panel data regression models to identify the key determinants of FDI in EU countries, but they focus particularly on effective and statutory corporate tax rates and their impact on FDI. What they find is that on the one hand, there is no statistically significant effect of corporate taxes on FDI, on the other hand, there is a significant effect of labor costs, openness of the economy, GDP per capita in the country. Besides, some evidence of a negative impact of the financial and economic crisis on FDI inflows in EU has been found in their paper.

4 Model and regression analysis

Empirical studies of CEE economies are plagued by short time series. Data are generally only available for a little more than ten years. To maximize the number of observations, this paper both expands time series to two decades, and also uses panel data. Annual data for total FDI inflows during the period 1993 to 2013 for 11 CEE economies results in approximately 220 observations. Due to missing first-three-year data of some of the variables, I have an unbalanced panel. The paper distinguishes itself by using data for both the CEE and the EU-15 economies. Inclusion of the EU-15 economies also introduces more variation to the data, possibly providing better opportunities to distinguish between efficiency-seeking, market-seeking and asset-seeking motives for FDI. In section 4.1, the variables used in this paper are presented. Results of regressions are summarized in section 4.3.

4.1 Empirical variables and generalized models

Table 4.1.1 describes the variables used in the empirical study. Appendix 2 presents summary statistics and Appendix 3 provides a correlation matrix for the explanatory variables for CEE and EU-15 group respectively.

Table 2.1.1 Regression Variables

Variables	Description
FDI_{jt}	Annual volumes of foreign direct investment inflows, in million USD ⁷
GDP_{jt}	Gross domestic production of host countries, in million USD
$WAGE_{jt}$	Hourly wage of host country's labor, in USD
CTX_{jt}	Corporate income tax rate in host countries
TER_{jt}	Enrollment rate, tertiary in host country
EXR_{jt}	Host countries' annual export-to-GDP ratio
$CORRUPT_{jt}$	Index ⁸ =10, no corrupt; 0 totally corrupt

Fixed and random effects panel data models are used in this paper.

To begin with the fixed effect model, in which the intercept is allowed to vary between countries but does not vary over time. The baseline fixed effects model can be expressed as:

$$FDI_{jt} = \beta_1 + \beta_2 GDP_{jt} + \beta_3 WAGE_{jt} + \beta_4 CTX_{jt} + \beta_5 TER_{jt} + \beta_6 EXR_{jt} + \beta_7 CORRUPT_{jt} + \varepsilon_{jt} \quad (1)$$

Then the random effect model, the specific is as follows:

$$FDI_{jt} = \beta_1 + \beta_2 GDP_{jt} + \beta_3 WAGE_{jt} + \beta_4 CTX_{jt} + \beta_5 TER_{jt} + \beta_6 EXR_{jt} + \beta_7 CORRUPT_{jt} + \omega_{jt} \quad (2)$$

where $\omega_{jt} = \varepsilon_{jt} + u_j$, u_j is a cross-sectional time-invariant country-specific effect, ε_{jt} is a combined time-series and cross-sectional error component.

⁷ For the sake of the consistency of the scale in the empirical analysis, hourly wage data is converted to USD dollars based on the average exchange rate of 2013, i.e. EUR/USD=1.328, resource link: <http://www.oanda.com/currency/average>

⁸ CPI---Corruption Perception Index

Although the Hausman tests (seen specific in the Appendix) for both CEE and EU-15 group reveal that the random effect model is appropriate, the random effect model for EU-15 group has a problem of low R^2 (0.02). That's why the fixed effect model is used in the paper for both groups.

4.2 Explanatory variables

GDP

A country's annual GDP is regarded as the economic volume of that country. Hence, market size is often measured by GDP in a number of previous studies. In order to test market-seeking FDI in CEE and EU-15 groups, GDP is used as a proxy for this type of FDI inflows. Due to the fact that the higher the GDP of a country, the better economic condition would be. Therefore, I expect the sign of this variable to be positive. The data are gathered from the World Bank database.

WAGE

WAGE denotes the annual hourly wage levels of industries and services in host countries, which are collected from the Eurostat database. Hourly wage can be used to represent the labor costs of host countries, and as stated in the table 2.1, efficiency FDI seekers tend to slice their production chain by allocating different tasks to countries where labor costs are low. Therefore, I suggest to use wage as a proxy to efficiency-seeking FDI and the expected sign to FDI inflows is negative.

CTX

The abbreviation CTX represents corporate income tax rate. One of the frequent-used policy by host country's government to attract FDI inflows is tax relief. Because foreign investors tend to benefit more from investing abroad due to the implementation of the policy. Following the logic that foreign investors value the location where the tax rate, especially corporate income tax rate is low, I would expect the sign of CTX to FDI inflows is negative. And this variable can also be treated as a proxy to efficiency-seeking FDI. The data are collected from OECD Tax database.

TER

The abbreviation TER is used to stand for enrollment rate of the tertiary education in host countries, which are collected from the World Bank database. It is generally believed that the higher extent the labor forces get involve in the education, the more skilled they will be. And as noted in the earlier section, asset-seeking investors value locations not only depending on the technological quality, but also on the availability of a rich pool of highly skilled labor. Hence, in this paper I believe it is expected to be appropriate to use enrollment rate of the tertiary education as a proxy to asset-seeking FDI. And a positive sign is expected to show.

EXR

The abbreviation stands for the country's export share to GDP in percentage. It is believed that for the purpose of cost reduction, MNEs' production is often relocated, implying the need to export the production to another destination within a production chain. Due to this, Remini (1999) states that investors are often attracted by country's export possibilities which represent the degree of openness of the economy. Hence, the variable is expected to have a positive effect to FDI inflows. The data are taken from the World Bank database.

Corruption

Besides, this paper also introduces one institution variable, which is corruption, in order to find out its impact on FDI inward to the CEE and EU-15 countries respectively.

Concerning the relationship between corruption and FDI, host country corruption is negatively related to the volume of FDI inflows since it increases the costs of operation in the host country for MNEs and reduces the benefits. It does so because in some cases the company has to pay bribes. In this sense it could have the effect of an extra tax, but as it is not ruled by law, there is no "official bribe rate", corruption is more than just a higher cost. Table 4.2 presents some data for Transparency International's Corruption Perceptions Index (TI). The TI ranges from 0 to 10, where 10 equals a perfectly clean country while 0 denotes a country where business transactions are entirely dominated by corruption.

Table 4.2 Corruption Perceptions Index (TI)

Country/country group	TI score 1999	TI score 2013
Czech Republic	4.6	4.8
Hungary	5.2	5.4
Poland	4.2	6
Slovenia	6	5.9
Estonia	5.7	6.8
Country groups		
CEE	4.08	5.19
EU-15	7.58	7.18

Source: *author's own compilation based on Transparency International (1999) and (2013)*

Table 4.2 reveals that corruption indeed is perceived to be substantially higher in the CEE countries than in EU-15 countries. Based on the comparison of TI between 1999 and 2013, it is found that TI in the CEE countries is mounting along the years, indicating a less-corrupted trend, though fluctuating in certain years, while TI in EU-15 countries is descending though not that dramatically.

4.3 Results from regressions

To begin with, the first column in table 4.3.1 presents the results of fixed effect estimation, controlling for the specifics of each country. As can be seen from Table 4.3.1, according to related P-values, the coefficients of GDP, CTX, and TER are found to be statistically significant. Labor costs appears with the unexpected positive sign yet insignificant. Corruption, however, appears with the opposite sign that was initially expected and is statistically not significant.

The second column yields the results of random effect model. GDP, CTX and TER are found significant at 1 percent level. But the sign of TER is negative, which is not the same as expected.

Table 4.3.1 Determinants of FDI inflows in CEE: fixed and random effects model estimations

Independent variables	Fixed effect	Random effect
Constant	9066.01 ^{***}	6533.32 ^{***}
GDP	0.03 ^{***}	0.03 ^{***}
WAGE	105.30	-39.88
CTX	-11875.86 ^{***}	-9315.92 ^{**}
TER	-8846.03 ^{***}	-5653.54 ^{***}
EXR	3608.40	483.38
CORRUPT	-587.52	-61.82
R ²	0.68	0.65
N	141	141

Source: *Author's own calculations*

Note: T-statistics within parenthesis. The symbols *, ** and *** denote statistical significance at the 10, 5 and 1 per cent level, respectively

The second step is to estimate of various specifications using fixed effect model. The research starts with estimation of traditional market- and efficiency-seeking variables in specification 1(S1) which are argued to be main driving forces behind investment decisions. And asset-seeking and institution variables will be added thereafter (S2-S3). In specification S2, asset-seeking FDI proxy by enrollment rate of tertiary education and country openness proxy by share of export to GDP are added. Corruption is added in S3. Results are presented in Table 4.3.2

Table 4.3.2 Determinants of FDI inflows in CEE

IDV⁹	Specification1	Specification2	Specification3
Constant	4684.66***	-26.13	2129.40
GDP	0.02***	0.03***	0.03***
WAGE	-98.31		
CTX	-10459.***		
TER		151.48	-2902.06
EXR		1555.32	4308.52
CORRUPT			-364.47
R ²	0.68	0.69	0.68
N	159	213	165

Source: *Author's own calculations*

Note: T-statistics within parenthesis. The symbols *, ** and *** denote statistical significance at the 10, 5 and 1 per cent level, respectively

From the group of market-seeking determinant, GDP is found to be an important factor, keeping their stable significance throughout all specifications. Because of the high correlations between WAGE and TER, and so does CTX, so WAGE and CTX are removed in specification2 (S2). In addition, there is no indication of significance of corruption in S3. These results are in accordance with the theory and recent empirical work where market size

⁹ Short for Independent variables

is found to be an important factor, facilitating foreign investment (Resmini, 1999; Bevan and Estrin, 2000; Johnson, 2006).

And then the case of EU-15 is analyzed. From the first column of table 4.3.3, it is obvious to see that only EXR has a positive sign and is significant at 5 percent level. In comparison to the first column, the second shows that there are no significance in any of the imported variables.

Table 4.3.3 Determinants of FDI inflows in EU-15: fixed and random effects model estimations

IDV	Fixed effect	Random effect
Constant	-51.94	-14.97
GDP	0.01	0.008
WAGE	-557.06)	-177.81
CTX	-11828.54	-6613.09
TER	-5853.90	-3185.36
EXR	57066.68**	21450.94
CORRUPT	7673.90	3577.492
R ²	0.53	0.03
N	210	210

Source: *Author's own calculations*

Note: T-statistics within parenthesis. The symbols *, ** and *** denote statistical significance at the 10, 5 and 1 per cent level, respectively

Followed by the same logic as in the case of CEE, as shown in table 4.3.4, to begin with the estimation of market and efficiency-seeking FDI determinants. Based on S1, no statistical significance is found. In S2, with the absence of CORRUPT, shows that only EXP is significant at 5 percent level indicating that country openness is seriously considered by investors to make foreign investments in EU-15.

In the end, WAGE is ruled out in S3 due to the high correlation to CORRUPT. The corruption is found unexpected significant with positive sign.

Table 4.3.4 Determinants of FDI inflows in EU-15

IDV	Specification1	Specification2	Specification3
Constant	-2239.76	12266.98	-57310.24**
GDP	0.003	0.01	0.008
WAGE	355.18	-506.56	
CTX	44589.54	-9843.53	-2817.14
TER		-14456.15	6818.30
EXR		49227.16**	46037.64***
CORRUPT			6218.76
R ²	0.44	0.53	0.48
N	248	211	247

Source: *Author's own calculations*

Note: T-statistics within parenthesis. The symbols *, ** and *** denote statistical significance at the 10, 5 and 1 per cent level, respectively

5 Discussion of Results

This paper aims at testing how market-seeking FDI, efficiency-seeking FDI and asset-seeking FDI are reflected in both CEE and EU-15 countries. From the regressions in the previous section, the results imply different relationships between explanatory variables and FDI inflows. The purpose with this section is to discuss potential reasons for the obtained results and how can they be interpreted.

5.1 Types of FDI inflows motives in CEE countries

How the market-seeking FDI and efficiency-seeking FDI are embodied in CEE countries? The market-size hypothesis postulates that FDI is a positive function of the market size of the host country. In this paper both market-size and hypothesis1, i.e. *market-seeking FDI is stronger in CEE countries than in EU-15 countries due to market immaturity*, are proved correct. According to the theory of FDI mentioned in section2, the country becomes a potential objective for FDI inflows under the circumstance that the country size is large enough to ensure the utilization of economies of scale. The CEE countries have experienced a long transitional period from the Soviet Union's pattern of centralized economy to capitalized market economy. Due to the dramatic adjustments of the economic pattern, CEE countries' economic volumes start to surge. Moreover, with the accession of majority of CEE countries to EU, free movement of capital, labor and technology between CEE countries and other traditional EU countries consequently occurs and together with the support of EU common policies to CEE countries' industries, the economy of CEE countries have stepped to a brand new stage during the first ten-odd years of the 21st century.

Both CTX and WAGE are used in the paper to represent efficiency-seeking FDI. The CTX, which denotes corporate income tax rate, is found to significantly negative affect influx of FDI to CEE countries while there is no indication of labor costs to be a significant factor that drives FDI inflows, which is in line with the findings that Johnson(2006) have obtained. As stated in the introduction section of the paper, tax relief policy has been implemented by majority of the CEE countries' governments in the middle of the 1990s to attract foreign investments from the rest of the world. Together with the data gathered from the Trading Economics, the corporate tax rate of all the CEE countries have decreased below 30% in the year of 2005 and have reached, on average, an even lower level of 20% in 2013. The sharp decrease of the corporate tax rate makes CEE region as a whole a more attractive

destination for foreign investors even though the labor costs in CEE region have mounted along the last two decades. All in all, the conclusion is that the efficiency-seeking FDI can be reflected in the CEE countries, which is in accordance to the H2 of the paper, i.e. *efficiency-seeking FDI is a significant determinant of FDI inward to CEE countries.*

5.2 Types of FDI inflows motives in EU-15 countries

Throughout all the regressions in case of EU-15, there is unexpected no indication of any of the three types of FDI inflows motives, which is inconsistent with the H3, i.e. *asset-seeking FDI is a significant determinant of FDI inflows to EU-15 rather than to CEE countries.* Reasons behind this probably are that foreign investors regard EU-15 region as a whole as relative mature markets, so the focus of them is on the CEE region and Asia-Pacific region. And EU-15 countries mainly act as source countries instead of host countries.

The variable found significantly positive related to FDI inflows is the share of export volume to GDP, which denotes the country's openness. It seems that high level of country's openness is considered as an important factor by investors to invest in EU-15 countries.

6 Conclusions

This paper mainly investigates the driving forces behind the decision of foreign companies to invest in CEE and then make comparisons to the EU-15 in order to test how market-seeking FDI, efficiency-seeking FDI and asset-seeking FDI are reflected. The paper is based on the sample of 11 CEE countries and 15 EU countries over a period of 20 years giving a 145 and 232 observations of a unbalanced dataset respectively due to lack of data in the certain year. The particular interest is also paid to one of the institution determinants and country's openness. The fixed effect model is used although the Hausman test reveals that random effect is more appropriate.

The fact that all variables are taken from reliable sources and have been used in the existing literature in the field result in interpretable results of the study except corruption due to the use of Corruption Perception Indices. Based on the empirical analysis, there is an indication that efficiency-seeking FDI is an important determinant of FDI inflows to CEE, which in the Johnson (2006)'s paper was not proved mainly due to the choice of the variable; then asset-seeking is not found to be a significant determinant of FDI inflows in EU-15, which is inconsistent with my third hypothesis; and traditional market-seeking FDI is a particular important determinant of FDI inflows for CEE rather than EU-15, which is accordance to the first hypothesis. However, what is interesting is that FDI inflows in EU-15 is found to be affected by country's openness.

The further implications of the conclusions above to governments and enterprises of host countries are quite much. As some of the governments of CEE countries together with some Asian developing countries have done in the middle of 1990s, it is necessary to keep implementing tax relief policy for foreign investors. Moreover, for governments must shoulder more responsibilities to vigorously support domestic innovative industries like green energy, internet, and bio-pharmaceuticals, particular in immature markets in order to attract more FDI inflows.

However, due to lack of some other variables, determinants for FDI inflows in CEE are still not comprehensive. Following what has been said, a further research should start with including more variables in the paper, like macroeconomic stability and previous volumes of

FDI inflows, etc. And in terms of chosen models, my suggestion is that the Mundlak¹⁰'s specification may be used since the fixed effect model and random effect model can be presented in one specification. Taking everything into consideration, the exploration of determinants of foreign direct investment in the region is left open to further advancements of future researchers.

¹⁰ An alternative methods in addition to fixed effect and random effect model, called WB, i.e. within and between, was suggested by him in 1978

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Appendix

Appendix 1 *List of countries:*

CEE countries: Albania, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Lithuania, Slovakia, Slovenia, Latvia, and Poland.

EU-15 countries: Austria, Belgium, Germany, Denmark, Spain, Finland, France, Ireland, Italy, Luxemburg, Portugal, Sweden, Greece, Netherlands, and United Kingdom.

Appendix 2 *Descriptive statistics*

For CEE countries

	FDI	GDP	WAGE	CTX	TER	EXR	CORRUPT
Mean	2505.137	66604.82	7.46178	0.235	0.469	0.490	4.594
Median	1070.92	30956.69	7.118	0.21	0.45	0.47	4.6
Maximum	23560.76	530185.1	19.787	0.45	0.88	0.93	6.8
Minimum	-6037.739	1228.071	1.461	0.1			2.3
Observations	231	225	168	196	221	223	177

Source: Author's own calculation by Eviews

For EU-15 countries

	FDI	GDP	WAGE	CTX	TER	EXR	CORRUPT
Mean	21600.36	1156734	24.306	0.319	0.568	0.486	7.481
Median	10750	609999.5	25.28	0.32	0.57	0.38	7.7
Maximum	200039.2	5013221	40.1	0.568	1.17	2.03	10
Minimum	-31689.3	18899.83	7.18	0.125		0.14	2.99
Std. Dev.	32195.24	1155941	7.481	0.0747	0.190	0.345	1.623
Observations	315	315	248	315	278	315	284

Source: Author's own calculation by Eviews

Appendix 3

Correlation Matrix

CEE group

	GDP	WAGE	CTX	TER	EXR	CORRUPT
GDP	1.000000					
WAGE	0.208192	1.000000				
CTX	-0.043305	-0.199075	1.000000			
TER	0.118296	0.543039	-0.543527	1.000000		
EXR	-0.157526	0.416447	-0.389957	0.291453	1.000000	
CORRUPT	-0.032047	0.584871	-0.053529	0.441438	0.404280	1.000000

EU-15 group

	GDP	WAGE	CTX	TER	EXR	CORRUPT
GDP	1.000000					
WAGE	0.413129	1.000000				
CTX	-0.013412	-0.298358	1.000000			
TER	0.178820	0.177610	-0.447800	1.000000		
EXR	-0.274928	0.442716	-0.181147	-0.445996	1.000000	
CORRUPT	0.191115	0.525549	-0.273768	0.063601	0.347001	1.000000

Appendix 4 Hausman Test of the Regression Results calculated from Eviews

For CEE group

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	10.893018	7	0.1434

H0: Random effect model is appropriate

H1: Fixed effect model is appropriate.

Because the P-value of the Chi-Sq. is bigger than 0.05, so we can't reject the null hypothesis.

For EU-15 group

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	5.810346	7	0.5621

As the P-value of Chi-Sq is bigger than 0.05, so we can't reject null hypothesis, which is random effect model is appropriate.