
FDI Localization, Wage and Urbanization in Central Europe

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This paper studies the impacts of urbanization and wage on foreign direct investment (FDI) in Central Europe. This paper applies the panel data model for study of urbanization and FDI in Central Europe selected countries. We consider Central Europe selected countries over the period 1992-2009. Our estimation shows the urbanization has positive impact on attraction of FDI. We find that human capital and economic growth (market potential) are favorable for FDI flows. Distance has negative effect on FDI. Economic risk (inflation) and increasing in wage level also have negative impact on foreign direct investment.

Keywords: F21, F43

JEL Classifications: Foreign Direct Investment; Wage; Central Europe; Urbanization;

Introduction

In this article we focus on location advantages. Location advantage expresses the host country's resources importance to foreign firms for example, natural resources, cheap labor, population and infrastructures. Foreign investment not only increases national product and employment, it also influences GDP (Gross Domestic

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Product) indirectly by overflow of knowledge and technology. It is why the developing countries are trying like the developed countries to attract such capitals in the recent years. The aim of this article is study of urban concentration and wage level impacts on foreign direct investment. If these variables influences on FDI, countries could apply it as a good policy for FDI attraction.

Today attracting foreign direct investment is an economic importance for all the countries. Nearly, all countries around the world have programs for FDI attraction such as granting of loan, decreasing of tax, subsidies,...Therefore, study of FDI determinants is important beside these policies. One of these determinants is urban concentration. After the years 1990s, the transition countries in central Europe have applied different economic policies for FDI attraction (Carstensen and Toubal 2004). In the last years, with increasing of FDI, economic growth rate and employment have increased during transition towards market economy in CEE countries (Carstensen and Toubal 2004). In the last decade, was shown a high level of changes in economic structures in terms of employment and wage in CEE countries (Havlik and Landesmann 2005).

Onaran and Stockhammer (2008) find that capital mobility and trade play important role in the development of CEE countries, therefore economic policies in these countries is following these variables. Egger and Stehrer (2001) find that increasing in FDI decreases skilled and unskilled labor wages, however they believe this is for a high labor and capital productivity. Carstensen and Toubal (2004) believe new economic structure in CEE countries come from FDI inflow, integration in Europe Union and the acceleration in transition process. Pesola (2006) find that if the labour market structure is such that wages are equal to or to a large extent indicative of the marginal productivity of the worker, the wage offered may be higher than the wage paid by the multinational if the productivity of the worker is higher in the domestic firm. This may be the case e.g. if the knowledge

acquired by the worker at the multinational firm also raises the productivity of other workers at the domestic firm. Under these circumstances, indirect evidence of productivity spillovers may be found in the returns to job mobility between foreign and domestic firms.

Marin (2004) shows that 10 percent wage decrease for affiliates in Central European countries increases employment at home country by 1.6 percent. Domestic employment creation is attributed to cost savings that improved competitiveness which parent companies achieved through FDI.

Urban economics influences on FDI attraction in two ways: direct and in indirect. Cities are center of skilled labor agglomeration and potential markets for sale (direct). So firms have easy access to labor force and sale their goods easily. But, urban concentration causes FDI attraction by increasing economic growth, because high GDP is important for multinational firms (indirect). Cieřlik (2005) shows that urban population as percentage of total population has a negative effect on FDI attraction in Poland. Matei (2007) shows that economies of urbanization positively influenced FDI, but economies of localization are not so relevant for MNEs location decisions in CEE countries.

Theoretical issue

Krugman in 1990 and 1998 studied the relation between firms with due attention to spatial dimension. This case was called new economic geography. Considering view of economic geography approach, Krugman argues that localization of firms concerns to institutional causes such as mechanism of networking, organizations, information and knowledge sharing. Krugman in his study considers the effect of concentration on foreign direct investment. We have two types concentration: the population concentration and the firm concentration (agglomeration). We can the population concentration

in to two sections: educated population (skilled labors) and uneducated population (unskilled labors). This is the educated population whom attract foreign direct investment.

On the other hands, the agglomeration of firms creates the externalities such as infrastructures, technology transfer and knowledge spillovers. But this effect creates two different results: positive or negative effects on foreign direct investment attraction.

In our study we can consider the effect on foreign direct investment on the level of wages. Brown, Deardorff and Stern (2003) say: “All of the cases we have considered in this theoretical overview – capital flow, technology flow, and fragmentation – have failed to yielded unambiguous conclusions about the effects of FDI and multinational firms on equilibrium wages in host countries. ... It is therefore an empirical question whether the actual operations of multinationals have raised or lowered wages in developing countries.” They argue that foreign direct investment has several effects on the wage levels: first foreign direct investment creates the additional capital in host countries and this addition capital will increase marginal production of labor force and augmentation in marginal production of labor force would increase the level of wages. Second, foreign direct investment transfers the new technology and the effect of new technology on wages depends on the circumstances. Third, the foreign capital could create a market power in the wages on the labor markets. Then they can offer the lower or higher wages in labor markets.

Methodology

To survey the effects of urban concentration and wage on FDI, we use panel data model. This model considers urban concentration and wage variables impact on FDI for Central Europe countries with time dimension. For fixed effect or random effect model, we apply the unite root tests and we choose the model by Hausman (1978) test.

Unit Root test

Before estimation of the model, we should be insured of the stationarity of variables. Dickey-Fuller, Augmented Dickey and Phillips-Perron tests are used to measure the stationarity of time-series variables, however, for panel data which have higher power compared with time-series, other tests are applied. These tests comprise: Im, Pesaran and Shin (2003), Levin, Lin and Chu (1992). Among different unit root tests in econometrics literature, the LLC and IPS are more famous than other tests. Both of these tests have been made based on ADF (Behname(2012)).

Assuming the data are homogeneous, LLC test has been made for dynamics of autoregressive coefficients for all panel parts. But, IPS more considers heterogeneity of this dynamics.

The benchmark model of autoregressive is as follows:

$$Y_{it} = \rho_i Y_{it-1} + \delta_i X_{it} + \varepsilon_{it} \quad (1)$$

where shows $i = 1, 2, \dots, N$ of the countries from the times of $t=1, 2, \dots, T$. X_{it} are exogenous variables in the model. ρ_i is the autoregressive coefficient and ε_{it} is the static process. If $\rho_i < 1$, Y_i is weakly stationary and if $\rho_i = 1$, then Y_i has unit root. In this paper, IPS test was used for the unit root, because the economic structures of the respective countries are different Behname (2011c).

Table 1.

Unit root test and Panel data						
GDP	INF	WAG	HU	FDI	URC	
	-2.03*	-2.14*	-2,11*	-3.01*	-2.04**	-3.22*

***, **show that the variables are stationary at the 5% and 10% confidence levels in the first difference.*

As defined in Table 1, all the variables were significant in 5% and 10% levels. It means the variables are stationary, and so, spurious regression is avoided.

Data and model

In our model we apply urban concentration, GDP (gross domestic product), inflation, distance, openness, human capital and foreign direct investment. The data resources are follows: UNCTAD, World Bank, UNDATA, IMF, and WDI. We have applied UNCTAD for the data on foreign direct investment. We have held the data for GDP from World Bank and CPI from IMF. The other variables come from WDI.

These variables are the most important variables for the study of our model, so we have chosen these variables Henderson (2003), Ades & Glaeser (1995), Wheaton and Shishido (1981)). Wage is an important variable and it has negative impact on FDI attraction. GDP shows the market size and openness shows the impact of trade on FDI it has also two opposite effects on FDI: positive and negative. Inflation considers the economic risk and has negative impact on FDI. Distance has negative impact on FDI. Urban concentration is essential variable in our study. In this model we test suppose that wage level has a negative effect on FDI and urbanization has a positive effect on FDI. This paper applies the panel data model for estimation of the parameters for Central Europe selected countries (such as Czech Republic, Slovakia, Poland, and Hungary). We have chosen these countries because their economic structures are the same and they are transition countries. Our period is 1992-2010. This period is limited because of the lack of data. The basic specification for the model is

$$FDI_{it} = \beta_0 + \beta_1 INF_{it} + \beta_2 URC_{it} + \beta_3 HU_{it} + \beta_4 GDP_{it} + \beta_5 DIS_{ij} + \beta_6 OPE_{it} + \beta_7 WAG_{it} + \varepsilon_{it}$$

where GDP is gross domestic production of country i , INF is inflation (CPI index), URC is rate of urban concentration (% urban population) and HU is human capital (students) in host economy. FDI is the foreign direct investment and WAG is the wage level. DIS is distance between two countries and OPE is openness. The panel data model is far more efficient than times series.

The empirical results

The Hausman (1978) test was used to select the fixed effect or random effect models. This test shows the random effect model should be applied.

In the table 2 we have estimated benchmark model. In column 2.1 first we introduce the variables of HUM, GDP. Impacts of human capital and economic growth are positive on FDI and the variables are significant in the 5% level. It means that an increase in these variables augments FDI. GDP in this region shows market size, with a great market a firm can sell its product easier therefore; the foreign investors search the countries with a high level of GDP. Behname (2008, 2011a, 2011b, 2011c, 2011d) shows the same results for GDP. A country with high human capital can attract FDI more easily, because skilled labors can attract technology easily. So the multinational firms search the countries with high GDP and high HUM. Poelhekke and van der Ploeg(2008) and Blonigen et al. (2007) show similar results. They found that a potentially larger market, a higher education, lower trade costs and investment costs in host country can attract more FDI.

Table 2

Impact of urban concentration on FDI inflow

	2.1	2.2	2.3	2.4	2.5	2.6	
Cons.		2.01** (2.22)	1.09 (1.30)	2.0* (1.87)	-2.71* (-1.89)	-3.21* (1.88)	2.01 (1.04)
HUM		0.19** (2.54)	0.21** (2.07)	0.21** (2.18)	0.11* (2.10)	-0.24** (-2.32)	-0.10 (-1.09)
GDP		0.05* (1.89)	0.04** (1.99)	0.04** (2.09)	0.01** (2.18)	0.08* (1.81)	-0.04 (-1.04)
URC			0.45* (1.88)	0.26** (2.15)	0.11** (2.41)	0.29* (1.81)	0.41 (1.31)
INF				-0.27** (-2.12)	-0.18** (-2.09)	-0.31 (-1.09)	-0.32** (-2.02)
WAG					-0.21** (-2.00)	-0.41** (-2.44)	-0.41* (-1.88)
DIS						-0.61** (-2.32)	-0.92** (-2.03)
OPE							0.25*** (3.01)

Notes: *t*-values reported in parentheses; *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

In the second column, we consider urban concentration. This variable shows people concentration in cities (% urban population). The impact of this variable is positive and significant in 5% level. A country with more cities and sufficient size offers the externalities for

firms. Poelhekke and Van Der Ploeg (2008) report the same results for impact of urbanization on FDI. Blonigen et al. (2007) also get the same results. In the fourth column this variable is negative. This means when we add WAG and INF in the model, the result for urban concentration will change.

After the third column, we introduce economic risk (inflation) in the model that its impact on FDI is negative and significant. This variable in another column is also negative because firms know that in these countries economy is unstable. A high wage and distance decrease FDI attraction. Because an increase in wage shows a high production cost and decreasing in profit. Behname (2011b) shows the wage has negative significant effect on FDI. Trade openness attracts FDI. Openness is $\text{import} + \text{export} / \text{GDP}$. This variable is significant and positive in 5% level. Ades & Glaeser (1995) and Garretsen & Peeters (2008) show similar result for trade.

Conclusion

The aim of this article is an investigation of urban concentration effect on FDI attraction. After applying unit root test and choice of fix effect model, we have estimated the model.

The results show that urban concentration augments FDI. This result shows that foreign firms could find their labor forces in concentrated cities. In large cities we can find easier the educated populations (skilled labors). This means, access to skilled labor and human capital is more facile. These firms expect human capital in these countries is high and the educated labor force could increase marginal product. So, we encourage the first theory that means extension of urban concentration is supportive for FDI attraction. The countries in this zone can extend urbanization as a policy for FDI attraction.

Human capital and economic growth cause FDI attraction. Because the marginal product and efficiency in these clusters is high and investors could profit from this point. GDP shows the purchase

power of people. The augmentation of GDP would increase foreign direct investment. But inflation and distance have negative effects on FDI. With inflation in economy the economic risk would increase. Wage level increases production cost and decrease supply. Increasing in wages push expenditures and create supply side inflation.

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