DETERMINANTS OF FOREIGN DIRECT INVESTMENT IN CEECS: THE ROLE OF FINANCIAL STABILITY

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Abstract

The globalization process has an important impact on the foreign direct investment flows. The FDI are increasingly important to developing countries, such as the Central and Eastern European countries. The EU accession has stimulated the investors’ confidence, and it has contributed to their economic development.

According to the economic theory, the factors influencing the FDI are numerous and related to the country, sector and company’s characteristics. One classification groups these factors in three broad categories: economic policy of host country, economic performance and attractiveness of national economy. In this paper, we point out a new FDI determinant: financial stability. The financial system stability represents an attractive factor for the foreign investors and can be considered as a FDI determinant, alongside the categories mentioned above.

Using a large sample of Central and Eastern European countries and panel data techniques, we investigate the impact of the financial stability on the FDI flows. The financial stability’s measure is based on a financial stability aggregate index and we use as control variables the number of inhabitants, the trade openness, the labor productivity, and the landing rate. The results show that the stability of the financial systems played a significant role in attracting FDI inflows in Central and Eastern Europe during the 1998-2008 period.

Keywords: foreign direct investment, financial stability, Central and Eastern European countries
JEL classification: G11, G24, O16, P33
1. INTRODUCTION

There is an extensively economic literature on foreign direct investments (FDI), on their impact and their determinants.

It has long been recognized that the benefits of FDI for the host country can be significant, including knowledge and technology transfer to domestic firms and the labour force, productivity spillovers, enhanced competition and improved access for exports abroad, notably in the source country. More specific, the influence of the FDI on the economic performance was studied in terms of macroeconomic stabilization [OECD, 2002; Bundesbank, 2003; BIS, 2004; Fukao, 2007], in terms of industrial specialisation [Aubin et al., 2008], in terms of firms productivity and profitability [Torlak, 2004; Rutkowski, 2006; Pirtea et al., 2009] or in terms of international trade [Kaminski and Smarzynska, 2001]. The FDI can also be considered as an engine of convergence [Levasseur, 2006] or as a factor contributing to local air pollution reduction [Liang, 2006].

The impact of the FDI on the host economies depend on the types of the FDI. As such, different types of FDI were identified: market-seeking FDI (horizontal FDI), usually connected with the market size and per capita income, resource-asset seeking FDI, which depend on raw materials prices and on lower unit labour cost, and finally, efficiency-seeking FDI (vertical FDI), which are motivated by the creation of new sources for firms’ competitiveness. It must be said that the market-seeking and efficiency-seeking do not exclude each other [Aubin et al., 2008]. If the market-seeking FDI have a penetration logic (it looks for the market size and market parts), the efficiency-seeking FDI and resource-asset seeking FDI may be considered as delocalisation investments [see Aubin et al., 2006].

While the FDI impact on the host economies was well investigated, a special attention was paid, in literature, to the FDI determinants. The factors which influence the FDI are of a very different nature [Lim, 2001]. Usually they are related to the size of the host market [Ali and Guo, 2005], the agglomeration effects [Kinoshita and Campos, 2002], investments profitability [Lehmann, 2002], the institutional reform [Anghel, 2005; Wernick and Haar, 2009], the fiscal incentive [Moore and Ruane, 2005; Egger et al., 2008], the human resources quality [Morisset and Pirnia, 2000], the exchange rate regime [Aizenman, 1992; Bénassy-Quéré et al., 1999; Choi and Jeon, 2007; Aubin et al., 2006], and the trade integration [Dupuch and Milan, 2003].

All these factors could be grouped in three broad categories [Botrić and Škuflić, 2005]: host country economic policy, economic performance and attractiveness of national economy. The FDI determinants might be also grouped into (Bîrsan and Buiga, 2009): basic factors, which refer to primary comparative attractiveness conditions of host countries and complementary factors, which enforce or, contrary, reduce the attractiveness of a host country. In this paper, we point out another significant FDI determinant: financial stability. Financial stability does not represent only a factor which favours the investment sustainability, but it also stands for an attractiveness factor or a determinant of FDI.

The reminder of the paper describes, in section 2, the FDI trend and their driving forces in CEECs, highlighting the role of a stable financial systems in attracting FDI. Section 3 describes a quantitative method for measuring financial stability, based on an aggregate financial stability index (AFSI). Section 4 presents the econometric tests’ results in respect of the link between financial stability and FDI and the last section summarizes our main findings.
2. THE FDI DRIVING FORCES INTO CEECs

The FDI analysis is particularly compelling in transition economies. The need for extensive enterprise restructuring and modernization in view of limited domestic resources creates an environment where the potential benefits of FDI are significantly valuable. Also, transition economies are well placed to benefit from the technology and knowledge transfer associated with FDI [Demekas et al., 2005; Torlak, 2004].

Almost inexistent at the beginning of the ’90, the FDI flux toward the CEECs has exploded in the last ten years [Henriot, 2005]. As it can be observed in Figure 1, the FDI flow to GDP is larger in the CEECs as compared to the flow recorded at global level or in all the transition countries.

The FDI driving forces into the CEECs were intensely analysed in the economic literature. There are several empirical studies which describe the specific role of some factors like transition-specific factors [Carstensen and Toubal, 2004], economic development [Henriot, 2005], economic reforms [Stoian and Vickerman, 2005], exchange rate regime [Aubin et al., 2006], wages differential [Dupuch and Milan, 2003] or announcements related to the EU accession [Bevan and Estrin, 2004]. While there is evidence that almost all of these factors have played a role in attracting FDI into CEECs, we think there is another important factor that could also be advanced in order to explain the surge of FDI into the CEECs over the last 10-15 years. As such, we think that the financial stability level has had a significant role in attracting FDI inflow into CEECs.

The relation between financial stability and FDI was studied in literature at a theoretical level, for explaining the positive contribution of the FDI to the economic and financial sector stabilisation [Bénassy-Quéré, 1999; Bundesbank, 2003; BIS, 2004]. Thus, probably the most frequently cited positive aspect of FDI lies in its alleged stability as compared to other types of capital flows:
• **The FDI can enhance the overall soundness of host country financial system.** The introduction of the foreign parent risk management practices enhances the overall soundness of the local financial system.

• **The FDI flux can reduce the sensitivity to host country credit cycles.** The ability to manage credit risk, together with stronger capitalisation, access to market or parent funding and diversification of the parent’s risks, tends to make foreign banks less sensitive to both home and host country business cycles.

• **Finally, the FDI can be considered as a stabilizing factor during financial crisis.** A stronger capitalisation and the possibility of an injection of additional funds by the parent, if needed, reduce the probability of failure. However, it must be said that the stabilizing role of the FDI during turbulence periods is not so obvious. First, the foreign-owned institutions are not always stronger capitalized. Secondly, during crisis periods, the investors can decide to reduce their activity in emerging markets. According to the financial stability theory, this “public good” can be ensured by ameliorating the institutional performance and the systemic risks monitoring (qualitative frame) and also by reducing financial system vulnerabilities, by obtaining an adequate level of financial system development or by securing financial institutions (quantitative frame).

In this paper, we suggest that the relation between FDI and stability can also be analysed in the other sense. The financial system stability represents an attractive factor for the foreign investors and can be considered as a FDI determinant (among other determinants like those presented above – market size, wages differential, trade integration, etc). The investors analyse all the factors which maximise their profit during a period, and the financial system stability represents such a factor. The stability sustains the profitability and positively influences the investment decision. On the other hand, the financial instability discourages FDI and causes important economic costs for the investors. That is why a stable financial system can be considered as a driving force of the FDI. Indeed, an important part of the FDI toward CEECs was directed to the financial sector. The international banks look for markets where they seize investment opportunities into the real economy, but they also look for a stable financial system, well organized, where the regulation and supervision activity is conforming to the international standards and where the banking institutions are sound enough in order to not represent a source of risk on the interbank market.

On the other side, the companies look for resources availability, high productivity, reduced unit labour costs, but also for a well developed financial system with stable financial institutions and low vulnerability, which can support their activities. The last mentioned aspects are included in this study into an aggregate financial stability index. The FDI flow into CEECs is influenced by the lending relations, by the real interest spread or by the macroeconomic variables quality. An important role in the investment strategy is played by the banking sector soundness (capitalization, liquidity, profitability), which offers important information on the quality of credit activity and on the contract terms which remain stable. Sound banking institutions enjoy good risk management skills and can also offer advises to their clients, favouring the investment process and attracting new FDI.

A sound financial system plays an important role in attracting FDI during international financial turbulences, like the present ones. The stability creates a favourable perception to investors. The financial system stability reflects the economy capacity to function close to the optimal level. An instable financial system (underdeveloped and vulnerable) does not have the necessary power to help the revival of the economic activity.
3. FINANCIAL STABILITY MEASUREMENT

The construction of an aggregate financial stability index (AFSI) represents, beside the early warning systems and the stress-tests, one of the quantitative methods for measuring the stability of a financial system [for an exhaustive presentation, see Albulescu, 2008]. We have chosen this technique in the present study because, on the one hand, the index offers the possibility to make comparisons between different periods, different financial systems, enabling also the observation of the stability level dynamics. On the other hand, it presents numerous advantages such as high transparency, easier access to statistic data, simplicity of calculations and possibility to forecast financial stability level.

In order to build an AFSI for the ten CEECs, namely Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia and Slovak Republic, we used annual data. An empirical method was employed for the normalisation of the individual financial stability indicators value, for each country retained for the analysis.

\[
I_{ij} = \frac{I_{ij} - \text{Min}(I_i)}{\text{Max}(I_i) - \text{Min}(I_i)}
\]

where: \(I_{ij}\) represents the indicator \(i\) during the \(j\) period, \(\text{Min}(I_i)\) et \(\text{Max}(I_i)\) represents the minimum value and respectively the maximum value registered by the indicator \(i\) during the analyzed period (1998-2008) and \(I_{ijn}\) is the normalized indicator value.

The empirical method retains the worst and the best of the values reached by the corresponding indicator for the whole period in each analyzed country. The normalized indicators receive values within the interval \([0;1]\). The individual indicators, grouped into the partial stability indexes are presented in Table 1.

<table>
<thead>
<tr>
<th>Individual indicators</th>
<th>I_{ij}</th>
<th>Partial stability index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market capitalisation / GDP</td>
<td>I_{d1}</td>
<td>Financial Development Index (FDI)</td>
</tr>
<tr>
<td>Total credit / GDP</td>
<td>I_{d2}</td>
<td></td>
</tr>
<tr>
<td>Interest spread</td>
<td>I_{d3}</td>
<td></td>
</tr>
<tr>
<td>Banking reform &amp; interest rate liberalisation</td>
<td>I_{d4}</td>
<td></td>
</tr>
<tr>
<td>Inflation rate</td>
<td>I_{v1}</td>
<td>Financial Vulnerability Index (FVI)</td>
</tr>
<tr>
<td>General budget deficit (% GDP)</td>
<td>I_{v2}</td>
<td></td>
</tr>
<tr>
<td>Current account deficit (% GDP)</td>
<td>I_{v3}</td>
<td></td>
</tr>
<tr>
<td>REER excessive depreciation or appreciation</td>
<td>I_{v4}</td>
<td></td>
</tr>
<tr>
<td>(Reserves / Deposits) / (Note &amp; coins / M2)</td>
<td>I_{v5}</td>
<td></td>
</tr>
<tr>
<td>Loans as a percentage of deposits</td>
<td>I_{v6}</td>
<td></td>
</tr>
<tr>
<td>Deposits / M2 (variation %)</td>
<td>I_{v7}</td>
<td></td>
</tr>
<tr>
<td>Non-performing loans / Total loans</td>
<td>I_{s1}</td>
<td>Financial Soundness Index</td>
</tr>
<tr>
<td>Indicator</td>
<td>Code</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Own capital ratio (Own capital / Total assets)</td>
<td>$I_{s2}$</td>
<td></td>
</tr>
<tr>
<td>Regulatory capital / Risk weighted assets</td>
<td>$I_{s3}$</td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>$I_{s4}$</td>
<td></td>
</tr>
<tr>
<td>Liquidity Ratio (Liquid assets / Total assets)</td>
<td>$I_{s5}$</td>
<td></td>
</tr>
</tbody>
</table>

The selected indicators (a total of 16) are often used in financial stability literature. Due to the fact that banking sector stands as the sector with the most significant importance within the CEECs financial systems, most indicators refer to credit institutions.

In order to analyze the financial system development level, we took into consideration the indicator “market capitalisation to GDP”, indicator reflecting the development of the capital market, because this market knew a continuous ascending trend during the last years in CEECs. The interpretation of this indicator must be however careful because an exponential increase of market capitalisation can reflects a financial bubble. We took also into consideration the “total credit to GDP”. The highest this level is, more developed and more mature the banking system is considered. The “interest spread”, calculated as the difference between the average lending rate and the average borrowing rate, represents another indicator which reflects the system’s development. In the context of increased competition and the penetration of the Eastern European banking market by the important international financial groups, the interest spread shows a decreasing trend, even if a few years ago its level was quite high. An increased interest spread can point out financial instability periods when the credit institutions undertake additional protection measures against potential risks. The last indicator in this category reflecting the financial system development is an indicator calculated by the European Bank for Reconstruction and Development (EBRD), indicator which shows the status of banking reforms and the interest rate liberalisation.

The starting-point in assessing financial vulnerability is represented by the analysis of the indicators that the International Monetary Fund (IMF) presents in its country reports. In this set of indicators we can distinguish a group which characterizes the macroeconomic stability and another group which describes the credit activity. The first indicator considered in this category is the “inflation rate” which represents a macroeconomic vulnerability indicator. A sustainable level of this indicator increases the investors’ confidence, which is very important for the financial stability as we have seen over the last months. Another macroeconomic indicator which describes the government performance is the “general budget deficit to GDP”. If the budget deficit is high, the investors lose their confidence in the government’s capacity to ensure a future sustainable economic growth. The third vulnerability indicator is the ratio “current account deficit to GDP”. An important current account deficit shows a macroeconomic imbalance which supposes a future correction, affecting the financial stability. The next indicator is the excessive appreciation or depreciation of the real effective exchange rate (REER). A considerable volatility of the REER shows that the economy undergoes major corrections by means of the exchange rate. The banks reserves represent a guarantee related to the bank’s capacity to respond to severe money withdrawals. At the same time, the liquidity preference is important because the stronger the cash payments preference manifests, more significant the increase of withdrawals probability is. To highlight these assumptions, we have retained as indicator the ratio between “reserves to deposits” and “note & coins to M2”. The last two vulnerability indicators retained in our analysis have the capacity to issue signals about an eventual financial crisis. The credit
boom which is not accompanied by a deposits’ expansion shows a potential imbalance within the financial system (the confidence in the national currency diminishes). The “deposits to money supply - M2” ratio reflects the relation between savings and consumption.

The third category of selected indicators is related to **financial system soundness**. These indicators are proposed and used by the international financial institutions in assessing financial system soundness exercises. The first soundness indicator is represented by the “NPL to total loans ratio” and reflects the loans quality. The second indicator in this category – “own capital to total assets” – is a proxy of the banking system capitalization level. The third indicator, “regulatory capital to risk weighted assets ratio”, also characterizes the banking sector capitalization, but the most important information offered by this indicator is related to banking institutions’ solvability. The “return on assets” (ROA) is the next soundness indicator retained in our analysis. Its value is relatively high for the East-European banking institutions, but this situation can be considered normal for a transition country. A higher level of the ROA reflects a more profitable and sounder banking system. Finally, we took into consideration the “liquidity ratio” (liquid assets / total assets), indicator calculated by the IMF in its country reports, on annual basis. The liquidity index offers important information on financial system stability. Better the banking institutions’ liquidity, better their capacity to cope with the shortage of liquidities on the market.

The AFSI for each country is calculated as an arithmetic mean of the data available for the 16 normalized individual indicators (the standard procedure):

\[
AFSI = \frac{\sum_{i=1}^{3} I_{ij}}{16}
\]  

(2)

Thus, we have:

\[
\sum_{i=1}^{3} I_{ij} = \sum_{j=4}^{4} I_{dj} + \sum_{j=7}^{7} I_{vj} + \sum_{j=5}^{5} I_{sj}
\]  

(3)

and we reach the following formula:

\[
IASF = \frac{4 I_{dj}}{16} + \frac{7 I_{vj}}{16} + \frac{5 I_{sj}}{16}
\]  

(4)

where: \( I_{ij} \) are the partial indexes (\( I_{dj} \) – financial development index FDI; \( I_{vj} \) – financial vulnerability index FVI and \( I_{sj} \) – financial soundness index FSI).

The evolution of the aggregate stability index of each country is presented in Figure 2.
An amelioration of the financial stability can be observed up to 2006 (the highest financial stability level, in average), the year before the burst out of the present international crisis. The stability trend reverses starting with 2007. At the same time, in 2007, the FDI flow into CEECs knew a decrease (see Fig. 2). These observations indicate that the FDI inflows moved alongside the financial stability.

4. ECONOMETRIC TESTS RESULTS

We use a panel data technique in order to test the influence of the financial stability on the FDI flows into CEECs. Several control variables (FDI additional determinants) are included in the econometric model. Their interpretation and their coefficients’ sign are presented in Table 2. All the variables, including the FDI inflows, were expressed in logarithm.
Determinants of Foreign Direct Investment in CEECs: The Role of Financial Stability

Labor cost is not counterbalanced by a weak level of productivity [Lehmann, 2002]. A high productivity favours the investments’ profitability. The variable indicates the labour productivity per hour. *(Eurostat database)*

<table>
<thead>
<tr>
<th>Lending rate (lendr)</th>
<th>Source countries with lower lending rates have a higher level of FDI inflows [Pan, 2003]. A lower level of the indicator facilitates the financing of the economic activities. <em>(EBRD database)</em></th>
</tr>
</thead>
</table>

The tested equation is:

\[
\ln_{\text{fdi}} = c + \alpha \ln_{\text{afsi}} + \beta Z_t + \epsilon_t \tag{5}
\]

where: \(\ln_{\text{fdi}}\) represents the natural logarithm of FDI inflows (the dependent variable), \(c\) is the model’s constant, \(\ln_{\text{afsi}}\) is the natural logarithm of the aggregate financial stability index, \(Z_t\) is the control variables vector and \(\epsilon_t\) are the errors of the model.

In order to adjust for the residual autocorrelation and heteroskedasticity problems, we performed a GLS estimation. As the constant was not significant, we dropped it out and estimate the model without the constant. While all the variables have the expected sign, the impact of labor productivity is not significant. The financial stability index seems to play a positive and significant role in attracting FDI inflow but has a lower significance (5%) than the other variables. Nevertheless, the high level of the DW statistic suggests a significant residual correlation. Indeed, this is not surprisingly having witnessed quite the same economic and political transformations over the period of the study. Accordingly, we estimated the same equation using the Seemingly Unrelated Regression (SUR) method which corrects for the residual correlation between countries. The results of the econometric tests are presented in Table 3 below. The t-statistic appears in brackets.

**Table no. 3 Econometric results**

<table>
<thead>
<tr>
<th>Dependent variable: (\ln_{\text{fdi}})</th>
<th>GLS method</th>
<th>SUR method</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\ln_{\text{afsi}})</td>
<td>0.774512 **</td>
<td>0.531395 ***</td>
</tr>
<tr>
<td></td>
<td>(2.433)</td>
<td>(4.059)</td>
</tr>
<tr>
<td>(\ln_{\text{inhah}})</td>
<td>1.176676 ***</td>
<td>1.139969 ***</td>
</tr>
<tr>
<td></td>
<td>(19.15)</td>
<td>(28.96)</td>
</tr>
<tr>
<td>(\ln_{\text{trade}})</td>
<td>1.119440 ***</td>
<td>1.376918 ***</td>
</tr>
<tr>
<td></td>
<td>(5.635)</td>
<td>(12.81)</td>
</tr>
<tr>
<td>(\ln_{\text{prod}})</td>
<td>0.390228</td>
<td>0.390283 ***</td>
</tr>
<tr>
<td></td>
<td>(1.563)</td>
<td>(3.210)</td>
</tr>
<tr>
<td>(\ln_{\text{lendr}})</td>
<td>-0.326801 ***</td>
<td>-0.342112 ***</td>
</tr>
<tr>
<td></td>
<td>(-3.109)</td>
<td>(-12.91)</td>
</tr>
<tr>
<td>(R^2)</td>
<td>0.85</td>
<td>0.71</td>
</tr>
<tr>
<td>DW</td>
<td>1.25</td>
<td>0.97</td>
</tr>
</tbody>
</table>

Observations: 91

*Note: *, ** and *** mean statistic relationship significant at 10%, 5% respectively 1%*
The results of the two econometric methods are nearly similar proving the tests robustness. Indeed, when the equation was estimated via SUR method, all the variables are significant and the regression coefficients have the expected sign. As such, the market-size seems to be a strong determinant of the FDI inflow in CEECs as the inhabitants’ number coefficient is the highest one and very significant in both used methods. The trade openness is also very important in explaining FDI inflows into CEECs. The labor productivity impact on the FDI inflows also became significant suggesting that the foreign companies also take into account this factor in their investment decisions. While a lower lending rate seems to attract more FDI inflows into CEECs, the stability of the CEECS financial and banking systems also proved to play a significant role in attracting FDI inflows.

5. CONCLUSIONS

The FDI inflows into CEECSs have strongly increased over the last 10 years. This growth is often regarded as being driven by the process of CEECs integration into the European Union and the associated elimination of the barriers to FDI and acceleration of the transition process of those economies. Beside these processes, many factors influence the FDI inflows in CEECs.

In our study, we found that apart the classic FDI inflows determinants, the financial stability also plays an important role in attracting FDI. A stable financial system, with sound financial institutions, attracts and sustains the investments, both in expansion periods and during international turbulences periods.

Using panel data techniques and a quantitative method for measuring the financial stability, we have demonstrated the link between financial stability and FDI inflows in the CEECs case. As control variables, we have used the inhabitants’ number, the trade openness, the labour productivity and the lending interest rate. The results of our econometric tests show that the stability of the financial CEECs systems played a important role in attracting FDI inflows in these countries.

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Determinants of Foreign Direct Investment in CEECs: The Role of Financial Stability


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