2012

Þjóðarspegillinn

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Rannsóknir í félagsvísindum XIII. Erindi flutt á ráðstefnu í október 2012

Reykjavík: Félagsvísindastofnun Háskóla Íslands

HÁSKÓLI ÍSLANDS

What determines the inflow of foreign direct investment?

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This paper examines how foreign direct investment (FDI) in a selected group of countries is affected by a range of economic and political factors. The aim is to illustrate the relationship between FDI and various economic and political indicators. More specifically, the aim is to assess to what degree economic and political variables impact inflow of foreign direct investment.

In practical terms, FDI gives an indication of the level of confidence investors have in political and economic conditions within countries. As such it may be regarded as a barometer of economic and political stability. In some instances the level of FDI within a country is even believed to reflect how well politicians manage to fulfill their election promises. For example those of attracting foreign investment to create new jobs and opportunities for their citizens.

The econometrical approach presented in this paper attempts to measure the influences of not only economic factors, that economists have traditionally looked at, but includes political variables as well. Thus the statistical significance of both economic and political variables is measured to better understand what determines the inflow of FDI. By using this combined approach we hope to provide a more complete picture of the interaction of local and global forces that impact investment.

The Global and Local Dimensions of FDI

It is often assumed that the flow of global investment is steadily growing in line with increasing globalization (e.g. Markusen, 2004). However, it is safe to assume that the flow of investment is sensitive to various global and domestic economic factors. And political conditions at home and abroad play a part as well. Wars, degree of political stability, absence of corruption and the degree of economic openness, determined by politicians, are just a few examples of the political variables that can affect investors' decisions to invest in a foreign economy.

Figure 1 shows, for example, how aggregate FDI dropped across the world with the onset of the financial crisis in the fall of 2007. The clusters of countries shown in the figure all appear to follow similar downward and upward trends. These clusters of countries are the OECD countries, G-20 countries and countries belonging to the European Union. The fact that the countries seem to follow a similar trend indicates the existence of a global system which affects investment decisions.

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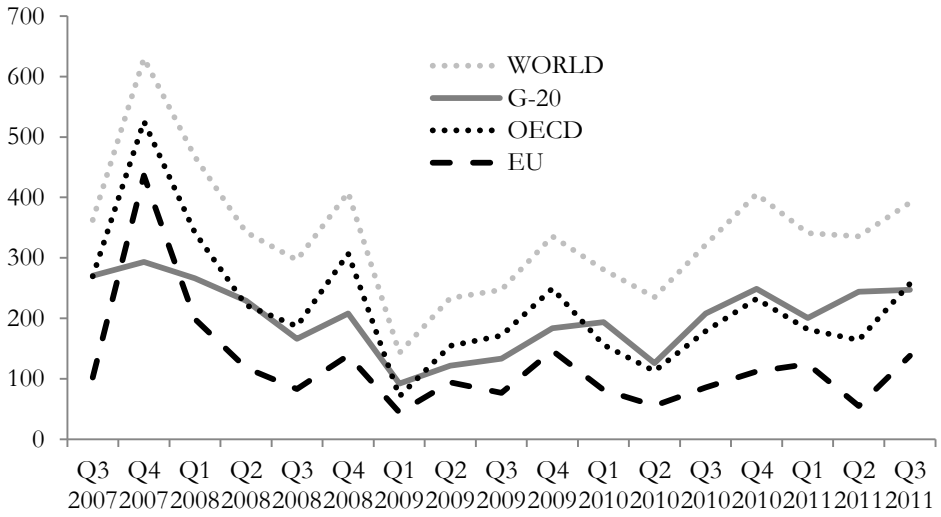

Figure 1. FDI Inflows Q3 2007- Q3 2011 (US$ billion) (http://www.oecd.org)

But decisions to invest in foreign economies are also influenced by local conditions. What are these conditions and what best explains the success of states in attracting FDI? To answer this question we will test a number of variables accounting for both economic and political conditions to find out what determines inward flows of foreign direct investment. In the next section we explain the choice of data and the estimation approach which is adopted in this paper.

Data and Estimation Approach

Our dataset on FDI runs over 11 years, from 2000 through 2010 (http://www.oecd.org). We use FDI inward flows in USD millions, rather than accumulated stocks (Davies, 2008). The economic indicators are chosen with the aim of capturing increasing returns to scale at the macro-economic level. The economics of scale is accounted for by population size and gross domestic product (GDP) along the lines of the Bergstrand's (1985) gravity model. The GDP is reported at current prices and current exchange rates, and reported in USD million (http://www.oecd.org). Population accounting for market size is obtained from the section on infrastructure, as reported by the (http://www.imd.org) in millions.

Distance from markets, which has been widely used in economic geography, is accounted for by the cultural measurement proposed by Hofstede (2001), rather than actual kilometer distance. Here the usage of distance can be viewed as an extension of the gravity model, which also applies distance. So to proxy distance we use the Hofstede cultural index (2001). It is composed of five cultural measures developed from Hofstede's previous work (Hofstede, 1980; Hofstede & Bond, 1988). These measures are: Power distance, individualism, masculinity, uncertainty tolerance and long-term orientation. The power distance measure has a higher value the more top-down the management is within organizations. Secondly, individualism receives a high value the more individualism is appreciated in the culture. Thirdly, masculinity, has a higher value the more societies appreciate competitiveness and the accumulation of wealth. Fourthly, uncertainty tolerance shows a high value when there is an avoidance of uncertainty; meaning that within a society people value rules and structured

situations. Finally, the fifth measure of cultural distance is long-term orientation, with a high value indicating willingness to wait for results.

Data for Iceland is not included in the conventional Hofstede index. However, Aðalsteinsson, Guðmundsdóttir, & Guðlaugsson (2011) obtained measures from applying the Hofstede index for Iceland by using the Hofstede questionnaire and data processing. The Hofstede measure obtained by Aðalsteinsson et al. (2011) is included in our data analyses. Since the Hofstede measures obtained for the sample countries occasionally take values over 100, we also rescale the values so they take a maximum value of 100 , and then sum up the five measures to create the overall Hofstede index applied in the regressions analyses.

The language factor is incorporated by including a dummy to capture whether countries with English as a native language are more successful in attracting foreign direct investment.

In our model we also include elements from the knowledge capital model introduced by Markusen, Venables, Konan, and Zhang (1996), by incorporating skilled labor in our model. This variable is of importance when it comes to investment decisions (Kristjánsdóttir, 2010). The variable for skilled labor represents: "Skilled labor is readily available" and comes from an IMD executive survey based on an index from 0 to 10 (http://www.imd.org).

We also seek to estimate the effects of belonging to regional trade agreements (RTAs). The RTAs included in this study are the European Union (EU), European Free Trade Agreement (EFTA) and North America Free Trade Agreement (NAFTA). A dummy variable is included that takes the value of 1 if a country is a member of one of these regional trade agreements, but zero otherwise. One of the advantages of our research is that it is also includes changes in membership from one trade bloc to another one. For example, switching from EFTA membership to EU membership is accounted for in the model.

The political variables used in the model to test the significance of political factors are "risk of political instability" and "government efficiency". The first one, the risk of political instability (presented as INST in the model) is obtained from the (http://www.imd.org) executive survey, and is based on an index running from 0 to 10. The risk of political instability is found to be very low if the indicator value is high for the statement: "The risk of political instability is very low" (IMD, 2012). The data on the second political variable, government efficiency, captures the statement: "government decisions are effectively implemented". It is taken from the same executive survey mentioned above and is also based on an index from 0 to 10 (http://www.imd.org).

Data for investment risk is taken from the business efficiency section of the IMD (2012), the one which states "Euromoney country risk overall (scale from 0-100)" IMD (2012). Country credit rating is from a rating on a scale of 0-100. The country credit rating comes from the section on corporate tax rate of the IMD (2012). In order to make the economic variables CREDIT and RISK comparable to the political variables (instability INSTB and government decisions GMT), the CREDIT and RISK variables are rescaled to run from 0-10, by dividing by 10 to the original values obtained.

Countries included in the sample are the following: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, and the United States. We also seek to take the G-20 countries into account by including Argentina, Brazil, China, Russia, and South Africa as well in the sample.

Model Setup

This section introduces the equations to be estimated in this research. In our model setup, we extend the conventional logarithm functional form to an Inverse Hyperbolic Sine Functional (sinh-1) form, when treating the dependent variable FDI. The sinh-1 functional form as been used in treatment the dependent variable in international trade (Kristjánsdóttir, 2012) and is presented as the following: $\sinh^{-1}(x) = \ln(x + (1 + x^2)^{0.5})$.

The first equation to be estimated is the following:

$$\begin{aligned} \text{ihs}(FDI_{ij,t}) = {} & \beta_0 + \beta_1 \ln(GDP_{j,t}) + \beta_2 \ln(POP_{j,t}) + \beta_3 SKILLS_{j,t} \\ & + \beta_4 HOFSTEDE_j + \beta_5 English_{j,t} + \beta_6 RTA_{j,t} \\ & + \beta_7 RISK_{j,t} + \varepsilon_{ij,t} \end{aligned} \quad (1)$$

Also the following equations were estimated:

$$\begin{aligned} \text{ihs}(FDI_{ij,t}) = {} & \beta_0 + \beta_1 \ln(GDP_{j,t}) + \beta_2 \ln(POP_{j,t}) + \beta_3 SKILLS_{j,t} \\ & + \beta_4 HOFSTEDE_j + \beta_5 English_{j,t} + \beta_6 RTA_{j,t} \\ & + \beta_7 GMT_{j,t} + \varepsilon_{ij,t} \end{aligned} \quad (2)$$

Further more Equation (3) goes as follows:

$$\begin{aligned} \text{ihs}(FDI_{ij,t}) = {} & \beta_0 + \beta_1 \ln(GDP_{j,t}) + \beta_2 \ln(POP_{j,t}) + \beta_3 SKILLS_{j,t} \\ & + \beta_4 HOFSTEDE_j + \beta_5 English_{j,t} + \beta_6 RTA_{j,t} \\ & + \beta_7 CREDIT_{j,t} + \varepsilon_{ij,t} \end{aligned} \quad (3)$$

Finally, we estimated Equation (4):

$$\begin{aligned} \text{ihs}(FDI_{ij,t}) = {} & \beta_0 + \beta_1 \ln(GDP_{j,t}) + \beta_2 \ln(POP_{j,t}) + \beta_3 SKILLS_{j,t} \\ & + \beta_4 HOFSTEDE_j + \beta_5 English_{j,t} + \beta_6 RTA_{j,t} \\ & + \beta_7 INST_{j,t} + \varepsilon_{ij,t} \end{aligned} \quad (4)$$

Estimation Results

The estimation results obtained. All regressions present robust standard errors.

Table 1. Regression Results

Regressors	(1)	(2)	(3)	(4)
ln(GDPj,t)	-.559	-.348	-.503	-.450
	(-0.91)	(-0.87)	(-0.95)	(-1.04)
ln(POPj,t)	1.311**	1.211***	1.236***	1.217***
	(2.65)	(3.83)	(3.22)	(3.61)
SKILLSj,t	-.435	-.470**	-.266	-.417*
	(-1.78)	(-2.04)	(-1.48)	(-1.90)
HOFSTEDEj	.004	.008	.003	.007
	(0.46)	(1.02)	(0.42)	(0.84)
Englishj,t	-.410	-.419	-.295	-.559
	(-0.37)	(-0.45)	(-0.32)	(-0.61)
RTAj,t	1.761*	2.191***	1.860**	2.014**
	(1.87)	(2.88)	(2.30)	(2.54)
RISKj,t (econ)	.296			
	(0.76)			
GMT j,t (pol)		.457*		
		(1.74)		
CREDIT j,t (econ)			.214	
			(0.77)	
INST j,t (pol)				.315
				(1.35)
Constant	9.989*	6.957	9.534*	8.167*
	(1.66)	(1.39)	(1.90)	(1.67)
Observations	261	317	317	317
R-squared	0.09	0.11	0.10	0.10

Robust t-statistics reported in parentheses. ***, **, * significant at the 1, 5 and 10 per cent level respectively.

The results presented in Table 1 show that the market size (population) of the host country, and regional trade agreement membership seem to matter most for attracting foreign direct investment. However, government efficiency, i.e. the ability to effectively implement government decisions, is also found to be of significance for the inflow of direct foreign investment.

On the other hand, foreign direct investment is not significantly affected by the economic size (GDP) of the host countries of firms investing abroad (multinationals). We also receive mixed evidence when it comes to the impact of skilled labor in the host country on the success of attracting FDI. When it comes to culture of the host country it is estimated to have positive, although insignificant effects. Furthermore, the analyses indicate that it does not matter significantly whether English is the native language of the host countries. Finally, the economic variables of risk, credit and instability are estimated to have positive, yet insignificant effects on FDI.

Conclusions

The econometrical approach presented in this paper attempts to measure the influences of not only economic factors that economists have traditionally looked at, but includes variables measuring political instability and government efficiency. By using this combined approach we hope to provide a more complete picture of the interaction of local and global forces that impact decisions about undertaking investment abroad.

The results of the analyses presented in this paper show that the market size of the investor´s host country gives the greatest significance, followed by membership in regional trade agreements. Government efficiency, i.e. the ability to effectively carry out government decision, is also estimated to have positive effects on decisions on whether to invest abroad or not.

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