

## **Determinants of Foreign Direct Investment in Portugal**

**Nuno Carlos Leitão**  
**ESGTS, Polytechnic Institute of Santarém**

**Horácio C. Faustino**  
**ISEG-UTL, Technical University of Lisbon**

*The Portuguese economy has been a net recipient of FDI and the Portuguese Government has had to attract more FDI. Understanding the main determinants of FDI is important to take macroeconomic policy decisions. Based on the investment demand model, this manuscript analyzes the impact of variables, such as, market size, labour cost, openness trade, and economic stability. The paper applies a static and dynamic panel data approach (Fixed Effects estimator and GMM system estimator). Our results support the hypothesis that the market size and openness trade are significant factors to explain FDI flows into Portugal. The wage and taxes are also statically significant.*

### **INTRODUCTION**

Globalization is the growing integration of economies around the world. According to World Bank (2002) there have been three waves of globalization. The first wave occurred between 1870 and 1915. The second wave emerged between 1945 - 1980. The third wave which started in 1980 and continue to this present time.

Foreign Direct Investment (FDI) is playing an increasingly important role in the world economy. In the last decade we can talk about a third wave of globalization where the economic linkage between countries has been strengthened mainly by the FDI flows. Despite the role of trade the multinational firms have chosen this way of internationalization and FDI has increased significantly over the last decade outpacing the expansion of the trade in the same period (see UNCTAD, 2006).

The Portuguese democracy process began in April 1974 and in 1986 Portugal became a member of European Economic Community (1986). The Foreign Direct Investment inflows (FDI) in Portugal improved only Portugal adhesion to EEC. The Portuguese economy has been a net recipient of FDI. The great investors in Portugal are European Union countries and more than 70% of the Portuguese FDI inflows are due to European Union.

This manuscript analyses the determinants of FDI location (inward) in Portugal for the period 1995-2007. This study uses country-specific characteristics (per capita income, market size, and openness to trade, labour costs, and the level of economic stability). The countries selected are the European Community partners (EC15), United States, Canada, Brazil and Japan. The main explanatory variables reveal to be statistical significant and with the predicted coefficient sign. The results suggest that Portugal is relatively abundant in labour. May be for the multinational firms Portugal is an export platform from

which they may serve the more developed countries. The paper uses a panel data approach. In panel data, pooled OLS, fixed-effects (FE) and random-effects (RE) estimators are used in this type of study. The RE estimator was excluded because our sample is not random. Furthermore, the Hausman test rejects the null hypothesis RE versus FE. We also introduce a dynamic panel data. The estimator used (GMM-SYS) permits the researchers to solve the problems of serial correlation, heteroskedasticity and endogeneity of some explanatory variables. These econometric problems were resolved developed the first-differenced GMM estimator (GMM-DIF) and GMM system estimator (GMM-SYS). To estimate the dynamic model, we applied the methodology of Blundell and Bond (1998, 2000), but correcting the estimated standard errors using the Windmeijer correction. The remainder of paper is organized as follows. The next section presents the literature review and empirical work. Section 3 shows the econometric model specification and explanatory variables. Economic results are discussed in section 4. The final section concludes.

## LITERATURE REVIEW AND EMPIRICAL STUDIES

The literature on FDI began in 1960s and 1970s with Hymer (1960), Kindleberger (1969), and Caves (1971). Hymer (1960) explained that activities of multinational enterprises do not involve only capital mobility. Caves (1971) considered that relative production costs, technology, trade and barriers are the determinants of foreign direct investments (FDI).

Dunning (1981) with the eclectic theory of FDI, suggested that internalization could explain the movements of MNEs. The author introduced the eclectic paradigm in 1992. The OLI paradigm explains why the investors invest in host country.

Ownership advantages could explain a free access to technology, new products. Firms have ownership characteristics (inputs) as in patents, brand, human resources, and financial assets.

Localization advantages are explained by the motivation of FDI. In this topic, we need to think about efficiency, that J. Dunning calls movement of production where there are lower inputs costs (outsourcing of production). The author also analyses the foreign market proximity (strategic asset-seeking). In this case Dunning explains the relationships between foreign market proximity and exports, or foreign market proximity and new production (i.e, if it is better to move production).

The economic factors, such as, market size, its growth rate, labour costs, labour skills, per capita income have been considered as explanatory variables in the econometric models.

Recently the researchers of international foreign investment as in, Jeon and Rhee (2008), Maniam (2007), Skabic, and Orlic (2007), and Rodriguez and Pallas (2008) explained the determinants of FDI by market size, labour costs, labour skills, openness risk, macroeconomic and political stability and other factors. Other variables such as Knowledge capital (Markusen 2001), human capital (Sun et al.2002), similar language and cultural levels (Dunning 1981).

It is important to recognize that the relative importance of FDI determinants depend on the motive, the type of investment (vertical FDI export-oriented or horizontal FDI market access-oriented) and the investor's strategy. Vertical FDI is explained by lower production costs (cheap labour, tax incentives, and physical infrastructures). For horizontal FDI the size of host country and its growth is the most important (Helpman 2006). The Multinationals sometimes create export platforms in low-costs countries (localization advantages) from which they serve developed countries around the world.

Jeon and Rhee (2008) analysed the determinants of Korea's FDI from US between the periods 1980-2001. The authors concluded that Korea's FDI inflows from the United States have a significant association with real exchanges rates, relative wages costs, and interest rate differentials using a pooled OLS estimation.

Maniam (2007) used an OLS estimator to analyse the determinants of FDI in Latin America for the period 1975-2003. The author concluded that FDI has increased rapidly in Latin America. According to Maniam (2007:13) there are relationships between the economic variables and investors expectations, latter on the host countries need to develop better their strategies.

Skabic and Orlic (2007) applied the fixed effects estimator from the period 1993 to 2005 for Central

and Eastern European countries and Western Balkan countries. The work of Skabic and Orlic (2007: 348) demonstrates that Western Balkan countries should make additional efforts in order to cut corruption in their economies in order to become attractive to FDI.

Rodriguez and Pallas (2008) utilized a panel data to examine the determinants of FDI in Spain during the period 1993-2002. Rodriguez and Pallas (2008) consider that human capital and the export potential of the sector are the most important determinants.

The recent literature as in Naudé and Krugell (2007), and Alguacil, Cuadros, and Orts (2008) consider that foreign direct investment is a dynamic phenomenon.

Nudé and Krugell (2007) specify a dynamic panel data (GMM-DIF) proposed by Arellano and Bond (1991). The study of Nudé and Krugell (2007) demonstrates that African policy makers have been intensifying their attempts to attract FDI, researching into the determinants of FDI in Africa.

Alguacil et al. (2008) analyses the correlation between European Union enlargement and FDI using a dynamic panel data.

Quazi (2008) investigates the determinants of FDI with a panel data regression model for the period 1995-2000 in East Asia. The study of Quazi (2008: 341) suggests that better domestic investment climate, larger domestic market size, and higher return on investment. So we can conclude that political instability causes the contrary.

## ECONOMETRIC MODEL

The dependent variable used is Portuguese FDI inward. The explanatory variables are country-specific characteristics. The data for explanatory are sourced from World Bank (2009), World Development Indicators. The source used for dependent variable, FDI inward from OECD International Direct Investment Database.

## EXPLANATORY VARIABLES

*Hypothesis 1: The FDI attracting will be influence by market size*

According to the literature (Kravis and Lipsey, 1982, Naudé and Krugell, 2007, and Maniam, 2007) we expected a positive sign.

In this paper we used the following proxy to market size:

- GDP<sub>i</sub> is the absolute value of Portuguese GDP per capita (PP, in current international dollars).

*Hypothesis 2: FDI and the openness of economy has a positive correlation*

TRADE<sub>i</sub> is a proxy for trade openness, defined as the exports/GDP ratio. Sun et al. (2001), Skabic, and Orlic (2007) found a positive sign.

*Hypothesis 3: The taxes levels of the host country manipulate the decision of foreign investors*

The studies of Kemsley (1998) and Billington (1999) found a correlation between taxes rate and FDI. The study of Wheeler and Moody's (1992) conclude that the tax rate of host economy is not significant.

*Hypothesis 4: Macroeconomic stability influence the decision of foreign investors*

The inflation rate is used to measure the level of economic stability. High level of inflation rate means low level of economic stability. It is expected a negative sign (Sun et al., 2002, Naudé, and Krugell, 2007).

*Hypothesis 5: Countries with lower wages would attract more FDI*

Lipsey (1999), Wang and Swain (1995), Zhao, and Zhu (2000), and Skabic, and Orlic (2007) found a negative correlation between labour costs and FDI. Recently Contractor and Madambi (2008) demonstrate that human capital investment has an impact in international transactions.

*Model specification*

$$FDI_{it} = \beta_0 + \beta_1 X_{it} + \delta t + \eta_i + \varepsilon_{it} \quad (1)$$

Where  $FDI_{it}$  is the Portuguese foreign direct investment flows,  $X$  is a set of explanatory variables. All variables are in the logarithm form;  $\eta_i$  is the unobserved time-invariant specific effects;  $\delta t$  captures a common deterministic trend;  $\varepsilon_{it}$  is a random disturbance assumed to be normal, and identical distributed (IID) with  $E(\varepsilon_{it})=0$ ;  $Var(\varepsilon_{it})=\sigma^2 > 0$ .

The model can be rewritten in the following dynamic representation:

$$FDI_{it} = \rho FDI_{it-1} + \beta_1 X_{it} - \rho \beta_1 X_{it-1} + \delta t + \eta_i + \varepsilon_{it} \quad (2)$$

## ESTIMATION RESULTS

In this section we present the results with country characteristics as explanatory variables. We include in this estimation the European countries (EU-15), United States, Canada, Brazil and Japan. Table 1 presents the estimation results using the fixed effects (FE) estimator. The general performance is of satisfactory. All the variables are statically significant and the explanatory power of FDI regression is very high (Adjusted  $R^2= 0.72$ ). The hypothesis for market size (GDP) in logs presents a positive sign and is significant at 10% level. Naudé and Krugell (2007), and Maniam, (2008) found a positive sign.

As expected, the variable LogTRADE (openness trade) has a significant and positive effect on LogFDI inflows. The elasticity value is very high: when the ratio of exports to GDP increases 1% the FDI increases 13.078%. This is particularly good for Portugal.

The coefficient of LogTAXES (taxes levels) is negative as expected. This result confirms the hypothesis formulated.

**TABLE 1**  
**THE DETERMINANTS OF FOREIGN DIRECT INVESTMENT (FDI): FIXED EFFECTS ESTIMATOR**

Variables	Fixed Effects	t-statistics	significance	Expected Signs
LogGDP	34.901	(1.663)	*	(+)
LogTRADE	13.078	(3.089)	***	(+)
LogTAXES	-1.156	(-3.884)	***	(-)
LogINF	0.622	(1.795)	*	(-)
LogW	-30.004	(-1.714)	*	(-)
N	122			
$\overline{R^2}$	0.72			

T-statistics (heteroskedasticity corrected) are in round brackets.

\*\*\*/\*\*/\*- statistically significant at the 1%, 5% and 10% levels.

The lower wages in Portugal are an important factor to attracting FDI. As in Lipsey (1999), Wang and Swain (1995), Zhao, and Zhu (2000), and Skabic, and Orlic (2007) we found a negative sign.

For the variable LogINF (inflation), this is the proxy of the economic stability, it was expected a negative sign (Sun et al., 2002, Naudé, and Krugell, 2007). Our result is different: the coefficient is positive and significant at 10% level. May be the higher inflation rate allows, in Portugal, a specific type of FDI.

As table 2 shows, the equation presents consistent estimates, with no serial correlation (m1, m2 statistics). The specification Sargan test shows that there are no problems with the validity of instruments used in both equations. The model presents four significant variables LogGDP, LogTRADE, LogTAXES and LogW).

The GMM system estimator is consistent if there is no second-order serial correlation in the residuals (m2 statistics). The dynamic panel data is valid if the estimator is consistent and the instruments are valid. We used the criterion of Windmeijer (2005) to small sample correction. The instruments in levels used are LogFDI (2, 6), LogGDP (2, 6), LogTRADE (2, 6) for first differences. For levels equations, the instruments are used first differences all variables lagged t-1.

Comparing the GMM estimates with the fixed effects estimates we note that inflation (INF) becomes statistically insignificant. The variable labour cost (LogW) is statistically significant with the expected negative sign. One of the main determinants of FDI in Portugal is its cheap labour. There are also variables that are significant with the expected sign as LogGDP (market size), openness trade (LogTRADE), taxes (LogTAXES).

**TABLE 2**  
**THE DETERMINANTS OF FOREIGN DIRECT INVESTMENT (FDI):**  
**GMM-SYS ESTIMATOR**

Variables	Coefficient	t-statistics	significance	Expected Signs
LogFDI <sub>it-1</sub>	0.146	(0.961)		(+)
LogGDP	0.217	(2.37)	**	(+)
LogTRADE	5.991	(2.16)	**	(+)
LogTAXES	-0.318	(-2.28)	**	(-)
LogINF	-0.143	(-1.22)		(-)
LogW	-0.014	(-1.88)	*	(-)
C	-0.043	(-0.570)		
M1	-0.2784 [0.781]			
M2	-0.1987 [0.843]			
Sargan df=111	12.62 [1.000]			
Observations	104			

T-statistics (heteroskedasticity corrected) are in round brackets. The null hypothesis that each coefficient is equal to zero is tested using second-step robust standard error. T-statistics (heteroskedasticity corrected) are in round brackets. \*\*, and \* indicates statistical significance, respectively at the 5%, and 10% level. P-values are in square brackets. Year dummies are included in all specifications (this is equivalent to transforming the variables into deviations from time means, i.e. the mean across the fourteen countries for each period). M1 and M2 are tests for first-order and second-order serial correlation in the first-differenced residuals, asymptotically distributed as  $N(0, 1)$  under the null hypothesis of no serial correlation (based on the efficient two-step GMM estimator). Sargan is a test of the over-identifying restrictions, asymptotically distributed as  $\chi^2$ , under the null of instruments' validity (with two-step estimator). \*\*\*/\*\* - statistically significant at the 1% and 5% levels.

## CONCLUSIONS

The objective of this study is to analyse the determinants of foreign direct investment (FDI) in Portugal. This article examined the link between Portuguese FDI flows from European countries and their principal determinants. The FDI flows from European countries indicate that Spain, Netherlands, and the United Kingdom are the major investors. The main results can be summarized as follows. We find empirical evidence for the effect of some economic variables on Portuguese FDI: market size, openness trade, labour costs, and economic stability. As Portugal is a small open economy and a relatively labour abundant country the results confirm what has been hypothesized: as more open to trade and cheaper labour, higher will be the FDI flows in Portugal. The study has however, some limitations. A deeper analysis needs to include other control variables: market growth, language and cultural similarity, and human capital.

## REFERENCES

- Alguacil, M, Cuadros, A, and Orts, V. (2008). EU Enlargement and Inward FDI. Review of Development Economics, 12 (3), 594-604.
- Arellano, M. and Bond, S. (1991). Some Test of Specification for Panel Data: Monte Carlo Evidence and An Application to Employment Equations. Review of Economic Studies 58, (2), 277-297.
- Arellano, M. and Bover, O. (1995). Another Look at Instrumental Variable Estimation of Error-Components Models. Journal of Econometrics, 68, (1), 29-51.
- Billington N. (1999). The Location of Foreign Direct Investment: An Empirical. Applied Economics 31, 65-76.
- Blundell, R and Bond, S. (1998). Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. Journal of Econometrics Review, 87, (1), 115-143.
- Blundell, R and Bond, S. (2000). GMM Estimation with Persistent Panel Data: An Application to Production Functions. Econometrics Review, 19 (3), 321-340.
- Caves, E. (1971). The Industrial Economics of Foreign Investment. Economics, 18, 1-27.
- Contrator, F. Mudambi, S. (2008). The influence of Human Capital Investments on the Exports of Services and Goods: An Analysis of the Top 25 Services Outsourcing Countries. Management International Review, 48, 433-445.

Dunning, J. (1981). Explaining the International Direct Investment Position of Countries: Towards a Dynamic Development Approach. Weltwirtschaftliches Archiv, 119, 30-64.

Dunning, J. (1992). Trade, Localization and Economic Activity and the Multinational Enterprise: A Search for an Eclectic Approach, in Dunning, J. (ed.) *The United Nations library on transnational corporations- the theory of transnational corporation*, 1, New York: Routledge 183-218.

Dunning, J. (2003). Some Antecedents of internalization theory. Journal of International Business Studies, 34, (1), 108-115.

Dunning, J. and Fortanier, F. (2007). Multinational Enterprise and the New Development Paradigm: Consequences for Host Country Development. Multinational Business Review, 15,(1), 25-45.

Dunning, J. and Lundan, M. (2008). Institutions and the OLI paradigm of the multinational enterprise. Asia Pacific Journal of Management , 25, 573-593.

Helpman, E. (2006). Trade, FDI and the organization of firms. Journal of Economic Literature, 44, 568-630.

Hymer S. (1960). *The International Operations of National Firms: A Study of Direct Foreign Investment*, MIT Press, Cambridge, MA.

Kravis, I. and Lipsey, R. (1982). The Location of Overseas Production and Production for Export by US Multinational Firms. Journal of International Economics, 12, 201-223.

Kemsley D. (1998). The Effect of Taxes on Production Location. Journal of Accounting Research 36, 321-341.

Kindleberger, C, P. (1969). *American Business Aboard Six Lectures on Direct Investment*, New Haven: Yale University Press.

Jeon, B.and Rhee, S. (2008). The Determinants of Korea's Foreign Direct Investment from the United States, 1980-2001: An Empirical Investigation of Firm-Level Data. Contemporary Economic Policy, 26 (1), 118-131.

Lipsey, R. (1999). The Location and Characteristics of US. Affiliates in Asia, NBER working Paper n°6876.

Markusen, J. (2001). Contracts, intellectual property rights, and multinational investment in developing countries. Journal of International Economics, 53(1) 189-204.

Maniam, B. (2007). An Empirical Investigation of US. FDI in Latin America. Journal of International Business Research, 6 (2), 1-15.

Naudé, W and Krugell, W. (2007). Investigation as Determinants of Foreign Direct Investment in Africa using Panel Data. Applied Economics, 39, 1223-1233.

Quazi, R. (2007). Economic Freedom and Foreign Direct Investment in East Asia. Journal of the Asia Pacific Economy, 12 (3), 329-344.

Rodríguez, X. and Pallas, J. (2008). Determinants of Foreign Direct Investment in Spain. Applied

Economics, 40, 2443-2450.

Rugman, A. and Verbeke, A. (2008). A New Perspective and the Regional and Global Strategies of Multinational Services Firms. Management International Review, 48,(4), 397-411.

Sun, Q, Tong, W, and Yu Q. (2002). Determinants of Foreign Direct Investment Across China. Journal of International Money and Finance, 21, 79-113.

Skabic, I. and Orlic, E. (2007). Determinants of FDI in CEE and Western Balkman Countries (Is Accession to the EU important for Attracting FDI?). Economic and Business Review, 9 (4), 333-350.

UNCTAD. (2006), World Investment Report.

Wang, Z, Q. and Swain, N.J. (1995). The Determinants of Foreign Direct Investment in Transforming Economies: Evidence from Hungary and China. Weltwirtschaftliches Archiv, 131, 359-382.

Windmeiger, F.2005. A finite sample correction for the variance of linear efficient two-step GMM estimators. Journal of Econometrics, 26 (1), 25-51.

Wheeler D, Mody A. (1992). International Investment Location Decisions: The case of U.S. firms. Journal of International Economics 33, 57-76.

World Bank. (2002). World Economic Report.

Zhao, H. and Zhu, G. (2000). Location Factors and Country of Origin Differences: An Empirical Analysis of FDI in China, Multinational Business Review, 8 (1), 60-73.