Fotini Economou (Greece), Christis Hassapis (Cyprus)

# Foreign direct investment inflows determinants in four South European economies

### Abstract

Foreign direct investment (FDI) has attracted research interest due to its impact on economic growth, especially during periods of crisis. This paper investigates FDI inflows in four highly distressed European economies (Greece, Italy, Portugal and Spain) for the period 1995-2013, using a dynamic panel data approach. The empirical results provide robust evidence that market size, exports, imports and labor cost are significant factors that affect FDI inflows in the South European countries under examination. Additional factors such as the European Commission's construction confidence index, financial depth, corporate taxation and the corruption perceptions index are also examined and display statistically significant results of the expected sign. The authors also confirm the negative impact of the European considered by policy makers in order to improve the countries' FDI attractiveness. The authors document the need for a strategic plan to attract FDI that should make the investing environment friendlier in order to foster economic growth. Policy makers should rebuild trust and confidence providing at the same time incentives to attract FDI, such as further reduction of bureaucracy and corruption, transparency, stability of the corporate tax policies, investor protection and easier access to funding.

**Keywords:** foreign direct investment inflows determinants, dynamic panel. **JEL Classification:** F21.

### Introduction

Foreign direct investment (FDI) has been widely considered to be a significant growth driver for the host economies also promoting international economic integration. Iglesias (2009) describes FDI as an "international loan" from the countries that have a capital surplus to the countries that offer profitable investment opportunities. This funding is fueling economic growth for the host countries, especially for developing and transition economies with liquidity constraints (Busse and Groizard, 2008; Krifa-Schneider and Matei, 2010), through increased labor demand and employee training, increased productivity, technology transfer and development, inflow and accumulation of physical capital, etc.

As a result, it is important to identify the factors that make a country an attractive destination for FDI. Bevan and Estrin (2004) have indicated unit labor cost, source and host market's size, and proximity to be the most important factors for the European transition economies during 1994-2000. In the same lines, Janicki and Wunnava (2004) confirm these findings also referring to trade openness and country risk as important FDI determinants. Alam and Shah (2013) having examined a series of potential FDI determinants for 10 OECD countries also identified market size, labor cost and quality of infrastructure as the most important ones. Moreover, factors related to uncertainty, political risk as well as relatively low country risk ratings negatively affect FDI inflows (Janicki and Wunnava, 2004; Arbatli, 2011; Walch and Wörz, 2012; Hayakawa et al., 2013).

Market size, trade openness, labor cost, human capital and technological inputs have been identified as important FDI determinants for Greece (Pantelidis and Nikolopoulos, 2008; Leitão, 2010), while high taxation, bureaucracy, corruption, labor market structure, and general macroeconomic conditions may discourage foreign investors and have led to the country's poor FDI attractiveness (Apergis and Katrakylidis, 1998; Pantelidis and Nikolopoulos, 2008; Bitzenis et al., 2009, etc.). Leitão and Faustino (2010a) examining FDI inflows from the European Union to Portugal during 1996identified market size, macroeconomic 2006 stability as well as distance as the most important determinants, while Leitão and Faustino (2010b) in a relevant study for the period 1995-2007, also identified trade openness and labor cost as significant factors. Rodriguez and Pallas (2008) indicated that the differential between labor productivity and labor cost, the evolution of human capital and the sector export potential were among the most important FDI determinants for Spain during 1993-2002.

Moreover, a series of studies have analyzed the impact of the creation of the Eurozone on the FDI inflows of the member countries. According to Aristotelous and Fountas (2009), the Euro launch is expected to have a positive impact on the FDI inflows of the member countries attributing this positive effect to the reduced transaction costs and the price related uncertainty. However, the

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Fotini Economou, Centre of Planning and Economic Research, Hellenic Open University & Open University of Cyprus, Greece. Christis Hassapis, University of Cyprus, Nicosia, Cyprus.

Eurozone countries share of global FDI flows has not managed to reach the 2002-2003 levels yet, with developing countries attracting a significant share of global FDI flows. Petroulas (2007) has identified an increase in the Eurozone countries FDI flows that is mostly concentrated though to large economies. Aristotelous and Fountas (2009) confirmed this positive impact, also indicating significant differences among member countries, while Pantelidis et al. (2012) stated that the Euro launch had asymmetric effects on the FDI inflows of the individual Euro zone countries.

Institutional determinants have also been examined in the recent literature. Krifa-Schneider and Matei, (2010) studied the impact of business climate and political risk using the World Wide Governance Indicators. Khan and Akbar (2013) employed several political risk indices, such as government stability, law and order, corruption, while other studies have used corruption as a measure of political risk displaying a negative impact on FDI (Wei, 2000; Wei and Shleifer, 2000; Getz and Volkema, 2001; Habib and Zurawicki, 2002; Bénassy-Quéré et al., 2007).

The aim of the paper is to examine the factors that affect FDI inflows in four highly distressed Southern European economies (Greece, Italy, Portugal and Spain) that have been widely affected by severe sovereign debt problems. The countries under examination display several similarities facing serious fiscal imbalances and economic slowdown that necessitated the adoption of severe austerity measures. Under such economic uncertainty they also witnessed a generally low level of FDI inflows. These countries have attracted global interest and have not been analyzed as a group before, offering an interesting setting for analysis since they clearly display the need to attract FDI inflows in order to foster growth and economic recovery. In order to examine the FDI inflows determinants in the four economies under examination for the period 1995-2013 we employ a dynamic panel data approach. The results have important policy implications highlighting the factors that should be considered by policy makers in order to improve the countries' FDI attractiveness and restore economic growth. Finally, we test for the impact of the Eurozone crisis that emerged in the four countries under examination.

This paper contributes to the literature on FDI determinants since apart from examining the traditional FDI determinants using the most recent available data for a group of countries that display increased research interest and need to attract FDI, we also test for the impact of indicators that have not been used significantly previously and may affect investment decisions, such as the European Commission's sentiment indicators, taking also into consideration the impact of the Eurozone crisis.

## 1. Data and methodology

In order to examine the FDI inflows determinants in Greece, Italy, Portugal and Spain we employ FDI inflows yearly data (in millions US dollars) for the period 1995-2013 derived from the UNCTAD database. The period under examination was selected based on data availability for all the explanatory variables under examination.

Initially, we test for the impact of several factors that may significantly affect FDI inflows according to previous literature. Market size is expected to have a positive impact on FDI inflows, since investors opt to capture a domestic market share. Moreover, larger host economies promote economies of scope and scale (Bevan and Estrin, 2004; Pantelidis and Nikolopoulos, 2008; Pantelidis et al., 2012). GDP per capita (PPP, in current international dollars) is employed as a proxy for market size, derived from the World Bank.

Trade openness is also considered to have a positive impact on FDI inflows based on the presence of established trading links. It is also related to liberal international trade policies, market integration and trade growth potential (Janicki and Wunnava, 2004; Leitão, 2010; Krifa-Schneider and Matei, 2010; Pantelidis et al., 2012). Several studies use exports plus imports (% of GDP) as a proxy of trade openness. However, in the same spirit with Pantelidis et al. (2012), we claim that exports may have different impact on FDI inflows than imports and they should be examined separately. To this end we employ both exports of goods and services (% of GDP) and imports of goods and services (% of GDP), derived from the World Bank. We expect a positive impact of exports which are mainly linked to openness and a negative impact of imports on FDI assuming that companies aim at the same time at the export orientation and the domestic market demand.

Economic instability may also have a negative effect on FDI attractiveness. In fact, increased inflation is considered to be a sign of economic instability and it is expected to have a negative impact on FDI inflows (Dabla-Norris et al., 2010; Krifa-Schneider and Matei, 2010; Arbatli, 2011). In order to capture this impact we employ in our analysis the annual inflation rate, derived from the World Bank.

Labor cost, the main factor of production, may also determine FDI inflows since it is directly affecting the companies' profitability and it is generally expected to have a negative impact on FDI (Bevan and Estrin, 2004; Alam and Shah, 2013, etc.). However, labor productivity is highly correlated with labor cost and may finally result in the opposite relationship (Júlio et al., 2011), especially in sectors that require knowledge and expertise. We employ the unit labor cost OECD Index (OECD base year 2005 = 100) to test its impact on FDI inflows.

The Eurozone membership impact on FDI inflows is expected to be asymmetric across different countries. In the same spirit with recent studies (Petroulas 2007; Aristotelous and Fountas, 2009; De Sousa and Lochard, 2011; Pantelidis et al., 2012 etc.), we test for the Euro zone membership impact on FDI flows, using a dummy variable that takes the value 1 since the adoption of the Euro in 1999 for Italy, Portugal and Spain and in 2001 for Greece<sup>1</sup>.

Moreover, economic sentiment indicators are expected to significantly affect investors' confidence in the host economy and finally its FDI European attractiveness. The Commission's indicators are considered to be significant leading economic indicators. To this end we employ in our estimations the one lagged yearly average value of the relevant indicators. To the best of our knowledge this is the first paper to examine the impact of the economic sentiment into FDI inflows employing the indicators derived from the European Commission's business and consumer surveys. Specifically, we examine the potential impact of the European Commission's economic sentiment indicator, the industry/business climate indicator, the consumer confidence indicator, the retail trade confidence indicator and construction confidence indicator on FDI inflows.

Financial depth is also expected to have a positive impact on FDI inflows since it facilitates business financing (Walsh and Yu, 2010). Our proxy for financial depth is the domestic credit provided by financial sector (% of GDP) derived from the World Bank. At the same time corporate income taxation may significantly affect FDI inflows, expecting a negative relationship (Cassou, 1997; Wei, 2000). Our variable is the adjusted top statutory tax rate on corporate income, derived from the Eurostat.

Finally, corruption may also have a negative impact on FDI inflows creating additional cost and uncertainty for potential investors (Castro and Nunes, 2013). In order to test this hypothesis we employ the Corruption Perceptions Index (CorPI), derived from Transparency International. A high score of the index is interpreted as a low corruption level.

In the same spirit with the recent literature that considers FDI to be a dynamic phenomenon (Kirfa-Schneider and Matei, 2010; Grubaugh, 2013), we employ the Arellano-Bover/Blundell-Bond dynamic panel analysis to account for the problems of serial correlation and endogeneity<sup>2</sup>. The dynamic panel model takes the following form:

$$FDI_{it} = a_i + \beta_1 FDI_{it-1} + \beta_2 GDP_{it} + \beta_3 X_{it} + \beta_4 M_{it} + \beta_5 Infl_{it} + \beta_6 ULC_{it} + \beta_7 Z_{it} + \varepsilon_{it}, \quad (1)$$
  
$$i = 1, ..., N, t = 1, ..., T,$$

where  $FDI_{it}$  stands for FDI inflows,  $GDP_{it}$  for GDPper capita,  $X_{it}$  for exports of goods and services,  $M_{it}$ for imports of goods and services,  $Infl_{it}$  for inflation,  $ULC_{it}$  for unit labor cost,  $a_i$  is a vector of m individual effects and  $\varepsilon_{i,t}$  is a multivariate white-noise vector of residuals. We also employ several  $Z_{it}$  variables in order to examine the impact of the Eurozone membership, the EC economic sentiment/confidence indicators, financial depth, corporate taxation and corruption.

## 2. Empirical results

Table 1 reports some descriptive statistics of the employed dataset presented by country<sup>3</sup>. Greece clearly displays the lowest average FDI inflows among the countries under examination for the period 1995-2013, accompanied by higher inflation and corruption. The recent OECD economic survey (2013) for Greece highlighted the negative impact of prolonged uncertainty, weak demand, financial costs, as well as lack of credit on Greek FDI. Portugal also displays relatively low FDI levels in absolute terms. However, it corresponds to 3.6% of GDP on average for the years 2000-2013. Moreover, Portugal has implemented structural reforms that will promote economic recovery and further attract investments. FDI inflows in Italy are quite volatile (display the highest standard deviation) reacting to the economic crises. On the other hand, Spain traditionally attracts more FDI being the largest economy among the four countries under examination displaying higher competitiveness and investors' confidence.

A closer examination of raw FDI inflows data in Figure 1 indicates that Greece and Portugal have remained at relatively low FDI levels over time, while Spain and Italy experienced significant increase starting from 1999. However, in the aftermath of the Eurozone crisis the four economies under examination have not managed to reach their pre-crisis levels. It seems that the group under

<sup>&</sup>lt;sup>1</sup> We have also tested for the impact of the Eurozone membership using dummy variable that takes the value 1 from the year that Euro was adopted in each country since 2002, assuming that after the first year(s) of its implementation any positive/negative effect would be captured by the lagged FDI value. However, the results do not differ qualitatively and are not presented in the paper in the interest of brevity.

<sup>&</sup>lt;sup>2</sup> Previous studies also employ simple OLS estimations to examine individual countries' determinants (see for example Pantelidis et al., 2012). However, panel data estimations provide more robust results taking always into consideration our data yearly frequency and limited data availability for several variables.

<sup>&</sup>lt;sup>3</sup> All variables are log transformed in order to be employed in the estimation of Equation (1).

examination followed the same pattern as other developed countries, whose total share of world FDI inflows is significantly reduced from 81% in 2000 to 39% in 2013 according to UNCTAD official data. However, FDI inflows to Italy and Spain rebounded sharply in 2013. In fact, Spain became the largest European FDI recipient in 2013. According to UNCTAD (2014), lower labor cost in Spain attracted manufacturing transnational corporations.



Source: UNCTAD.

Fig. 1. FDI inflows per country, millions USD (annual data, 1995-2013)

Variables	FDI inward flows	GDP per capita	Exports of goods and services	Imports of goods and services	Inflation	Unit labor cost	EC construction confidence indicator	Domestic credit provided by financial sector	Adjusted top statutory tax rate on corporate income	Corruption perceptions index
Greece										
Mean	3.007	4.342	1.352	1.521	0.502	1.914	1.885	2.017	1.509	1.634
Std. dev.	0.524	0.106	0.059	0.045	0.293	0.064	0.163	0.090	0.102	0.055
Min	1.701	4.162	1.246	1.438	-0.358	1.771	1.502	1.883	1.301	1.531
Max	3.729	4.473	1.464	1.598	0.951	2.000	2.063	2.185	1.602	1.728
Italy*										
Mean	4.008	4.452	1.423	1.403	0.349	1.940	1.888	2.057	1.583	1.654
Std. dev.	0.611	0.072	0.032	0.054	0.187	0.052	0.070	0.101	0.078	0.068
Min	1.966	4.326	1.376	1.300	-0.125	1.858	1.772	1.948	1.497	1.476
Max	4.642	4.539	1.483	1.480	0.720	2.019	1.991	2.240	1.726	1.740
Portugal										
Mean	3.527	4.304	1.478	1.576	0.352	1.943	1.810	2.147	1.504	1.801
Std. dev.	0.338	0.098	0.054	0.027	0.305	0.056	0.141	0.134	0.065	0.023
Min	2.829	4.130	1.433	1.530	-0.562	1.829	1.466	1.908	1.423	1.745
Max	4.047	4.413	1.609	1.629	0.643	2.006	1.986	2.320	1.598	1.843
Spain										
Mean	4.387	4.398	1.433	1.465	0.420	1.930	1.937	2.182	1.521	1.797
Std. dev.	0.282	0.108	0.045	0.051	0.188	0.059	0.152	0.145	0.032	0.063
Min	3.898	4.203	1.350	1.350	-0.123	1.833	1.647	2.001	1.477	1.634
Max	4.886	4.517	1.533	1.527	0.670	2.007	2.086	2.371	1.544	1.851

Table1. Descriptive statistics (log transformed annual data, 1995-2013)

Notes: \*Due to log transformation there is one FDI observation less for Italy (negative FDI flow value).

The results of the Arellano-Bover/Blundell-Bond dynamic panel data estimations using robust standard errors are reported in Table 2. Panel A presents the estimated coefficients of equation (1) employing the construction confidence indicator as a proxy for economic sentiment. The empirical results indicate a negative statistically significant relationship with the one lagged FDI. Market size and exports display a positive statistically significant relationship, consistent to previous literature. On the other hand FDI inflows are negatively affected by imports and increases in unit labor cost as expected, while inflation does not display any significant impact on FDI for the period under examination. It has to be mentioned that our assumption that exports and imports may have a different impact on FDI is confirmed by the empirical results. Exports present a positive relationship as expected, while imports display a negative relationship due to imports substituting FDI.

Moreover, FDI inflows are positively affected by the European Commission's lagged construction confidence indicator. We have also tested alternative confidence indices, like the economic sentiment indicator, the consumer confidence indicator, the services confidence indicator and the retail trade confidence indicator; however the estimations do not provide statistically significant results. The estimations using the construction confidence indicator<sup>1</sup>, which reflects confidence in a cyclically sensitive industry, can be considered to be more representative and the relevant model has superior explanatory power compared to the rest confidence/sentiment related estimations<sup>2</sup>.

As far as the Eurozone membership is concerned, the respective dummy variable coefficient does not indicate a statistically significant relationship between FDI inflows and the Eurozone membership. Previous research indicated an asymmetric Euro zone effect. In fact, Pantelidis et al. (2012) indicated a negative impact for Greece, Portugal and Spain<sup>3</sup>.

The empirical results regarding financial depth are in accordance with previous research indicating a

country's FDI attractiveness when domestic credit provided by financial sector (% of GDP) increases<sup>4</sup>. Moreover, the results confirm the negative impact of increasing corporate taxation on FDI inflows.

Finally, the positive statistically significant coefficient of the corruption perceptions index, which constitutes an important institutional determinant, indicates that as a country improves its position in the relevant corruption index, FDI inflows are positively affected, as expected.

According to the Sargan test, the null hypothesis of over-identifying restrictions is not rejected for any model. Moreover, the null hypothesis of the Arellano-Bond serial correlation test is not rejected for any model. These results support the validity of our estimations.

Finally, Panel B reports the estimated coefficients of the estimated model in Panel A, augmented by the Eurozone crisis dummy to account for the impact of the recent crisis on our estimation<sup>5</sup>. The dummy variable takes the value 1 from 2010 to 2013. All coefficients but lagged FDI and inflation are statistically significant displaying the expected signs, similar to the ones presented in panel A. The results indicate the negative statistically significant impact of the Eurozone crisis on FDI inflows in the countries under examination. This finding confirms our initial hypothesis that FDI inflows in this country group has been significantly affected by the crisis and policy makers should provide incentives to restore FDI attractiveness and investors' confidence.

Panel A.	Coef.	Robust std. err.	z	P > z	
A	-7.607*	2.468	-3.080	0.002	
FDI <sub>t-1</sub>	-0.163*	0.012	-13.550	0.000	
GDPt	5.713**	2.429	2.350	0.019	
Xt	2.513**	1.224	2.050	0.040	
M <sub>t</sub>	-3.427*	0.815	-4.200	0.000	
Inflt	-0.005	0.295	-0.020	0.986	
ULCt	-10.422**	4.587	-2.270	0.023	
CC <sub>t-1</sub>	1.377*	0.485	2.840	0.005	
D <sub>EZt</sub>	0.065	0.117	0.560	0.577	
Creditt	1.653**	0.667	2.480	0.013	
Taxt	-1.785**	0.796	-2.240	0.025	
CorPlt	3.041*	0.739	4.120	0.000	
Observations: 74	Wald chi2: 68.82 Prob > chi2 = 0.00	Sargan test: chi2 (77) = 64.85 Prob > chi2 = 0.84	Arellano-Bond test (p-values): 1st order 0.09 2nd order 0.78		

Table 2. Determinants of the FDI inflows (yearly data, 1995-2013)

<sup>&</sup>lt;sup>1</sup> The European Commission's construction confidence indicator has two components based on survey questions regarding order books as well as employment expectations. The consumer confidence indicator is based on survey questions regarding the households' financial situation, the general economic situation, unemployment expectations and savings over the next 12 months. Finally, the business climate indicator is based on survey questions regarding the production trends and expectations, order-books and stocks. See European commission (2007).

 $<sup>^{2}</sup>$  The results are not reported in the paper in the interest of brevity and are available upon request.

<sup>&</sup>lt;sup>3</sup> Italy was not included in their sample.

<sup>&</sup>lt;sup>4</sup> We have also tested the impact of the domestic stock market on FDI inflows as an alternative funding channel. The stock market is also considered to be a leading indicator. Moreover, the impact of financial market's size and stability on FDI has been documented by Seghir (2009). To this end we employed the domestic stock market returns. However, the results are not statistically significant.

<sup>&</sup>lt;sup>5</sup> We employ a dummy variable to account for the crisis period since the limited data availability does not allow for sub-period estimations (before and during/after the crisis).

Panel B.	Coef.	Robust std. err.	Z	P > z	
A	-7.401*	1.972	-3.750	0.000	
FDI <sub>t-1</sub>	-0.220*	0.006	-36.000	0.000	
GDPt	5.563*	1.797	3.100	0.002	
Xt	3.636*	1.056	3.440	0.001	
Mt	-3.838*	0.740	-5.180	0.000	
Inflt	0.031	0.283	0.110	0.913	
ULCt	-10.829*	3.681	-2.940	0.003	
CC <sub>t-1</sub>	0.949***	0.545	1.740	0.082	
D <sub>EZt</sub>	0.071	0.081	0.880	0.379	
Credit	2.591*	0.613	4.230	0.000	
Tax <sub>t</sub>	-1.924**	0.786	-2.450	0.014	
CorPIt	2.803*	0.539	5.200	0.000	
D <sub>CRISISt</sub>	-0.448***	0.238	-1.880	0.060	
Observations: 74	Wald chi2: 223.80 Prob > chi2 = 0.00	Sargan test: chi2 (76) = 63.83 Prob > chi2 = 0.84	Arellano-Bond test (p-values): 1 <sup>st</sup> order 0.09 2 <sup>nd</sup> order 0.67		

Table 2 (cont.). Determinants of the FDI inflows (yearly data, 1995-2013)

Notes: Standard errors are robust derived from an Arellano-Bover/Blundell-Bond dynamic panel data estimation. \*, \*\* and \*\*\* represent statistical significance at the 1%, 5%, and 10% level, respectively. All variables are log transformed in order to estimate Equation (1).

## Conclusions

In the light of the unprecedented crisis that occurred in the Southern European countries along with a dramatic economic slowdown, policy makers should turn their attention to attracting FDI as a means to face unemployment, accelerate growth and facilitate economic recovery.

In this paper we examine the FDI determinants using a dynamic panel data approach for Greece, Italy, Portugal and Spain for the period 1995-2013. According to the empirical results, market size, exports, imports and labor cost significantly affect FDI inflows in the South European countries under examination. However, the Eurozone membership does not have a statistically significant impact on FDI inflows. An important contribution of this study is the use of the indicators derived from the European Commission's business and consumer surveys in order to capture the impact of economic sentiment on FDI inflows. The results indicate that FDI inflows are positively affected by the construction confidence indicator. Our results also indicate that the country's financial depth has a positive impact on FDI. We confirm the negative impact of increasing corruption and corporate taxation on FDI inflows. Finally, we document the negative impact of the Eurozone crisis on FDI inflows.

The results have important policy implications highlighting the factors that may improve the countries' FDI attractiveness and create a friendlier investment environment, especially during crisis periods. Policy makers should provide incentives to attract FDI that will finally boost domestic economic activity. Moreover, they have to fight corruption that creates additional cost and risk for investors. Corporate taxation is a crucial factor too. It has to be mentioned though that apart from the corporate tax level, the taxation system's stability and transparency are also important in order to restore investors' confidence and attract FDI. At the same time, financial depth reflects the companies' ability to raise funds and has a positive effect on FDI inflows. As a result, financial stability and credit supporting policies are expected to have a positive impact in FDI inflows. Finally, another important finding is the need to restore economic sentiment after a long period of uncertainty. The relevant European Commission's indicators provide useful insights into FDI dynamics, revealing a positive statistically significant relationship.

Therefore, a strategic plan to attract FDI in the countries under examination should make the investing environment friendlier in order to foster economic growth. It is evident that governments should rebuild trust and confidence providing at the same time incentives to attract FDI, such as further reduction of bureaucracy and corruption, transparency, stability of the corporate tax policies, investor protection and easier access to funding.

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