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**Article**

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SPOUDAI - Journal of Economics and Business

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*Suggested Citation:* Pantelidis, Pantelis; Kyrkilis, Dimitrios; Nikolopoulos, Efthymios (2012) : European Monetary Union and foreign direct investment inflows, SPOUDAI - Journal of Economics and Business, ISSN 2241-424X, University of Piraeus, Piraeus, Vol. 62, Iss. 1/2, pp. 47-55

This Version is available at:

<https://hdl.handle.net/10419/96202>

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**SPOUDAI**  
*Journal of Economics and Business*

Σπουδαί  
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## European Monetary Union and Foreign Direct Investment Inflows

By

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### Abstract

The aim of this paper is to construct and test a model explaining the inward Foreign Direct Investment (FDI) position of various members of European Monetary Union (EMU), on the basis of their location advantages during 1980-2010 period. The model focuses on the impact of EMU on FDI inflows and indicates that the monetary union has differentiated impact on FDI inflows across individual member countries. Euro zone membership is statistically significant but a negative determinant in the cases of Greece, Portugal, France, Belgium and Spain. Furthermore, for both Germany and Ireland the Euro area membership is a negative but statistically insignificant FDI inflow factor, while in the cases of Netherlands and Finland it is positive but also statistically insignificant. The results imply that countries with low competitiveness have not gained from the entrance in European Monetary Union, in terms of Foreign Direct Investment inflows.

**JEL Classifications:** F10, F30, O50.

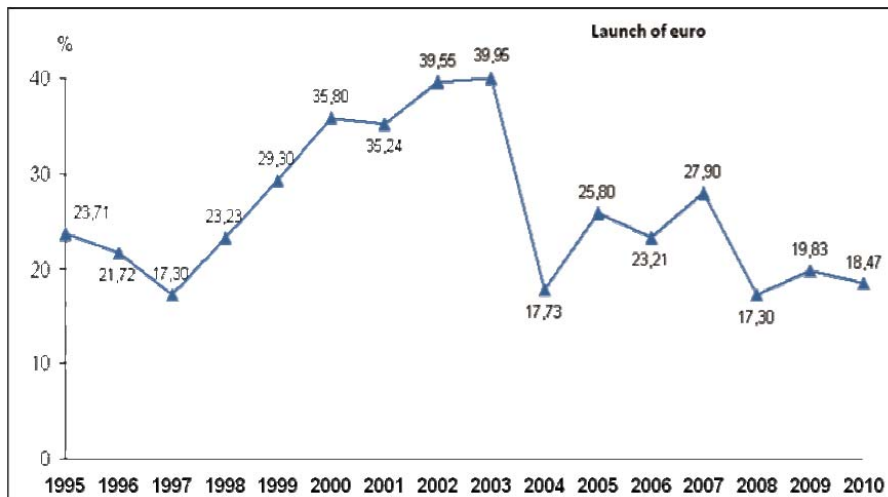
**Keywords:** FDI, EMU, euro.

## 1. Introduction

The launch of euro in 2002 was a milestone in the history of Europe. The creation of the European Monetary Union (EMU) created the conditions for increased trade (Rose, 2004) and economic growth for the member countries. The initial hypothesis regarding the impact of euro launch in terms of FDI inflows was that monetary integration would affect positively the FDI inflows both due to elimination of uncertainty regarding price variables and due to reduction of transaction costs associated with international investment flows (Aristotelous and

Fountas, 2009). The FDI of EMU member countries vs. the total world FDI increased during the years before euro launch, reached a high of 39.95% in 2003 but then declined to 18.5% in 2010 (Figure 1). Same trend followed also the share of EMU, FDI vs. the FDI of developed countries (Figure 2).

**FIGURE 1**  
FDI of EMU countries vs. World FDI



Source: UNCTAD, World Investment Report, Various issues.

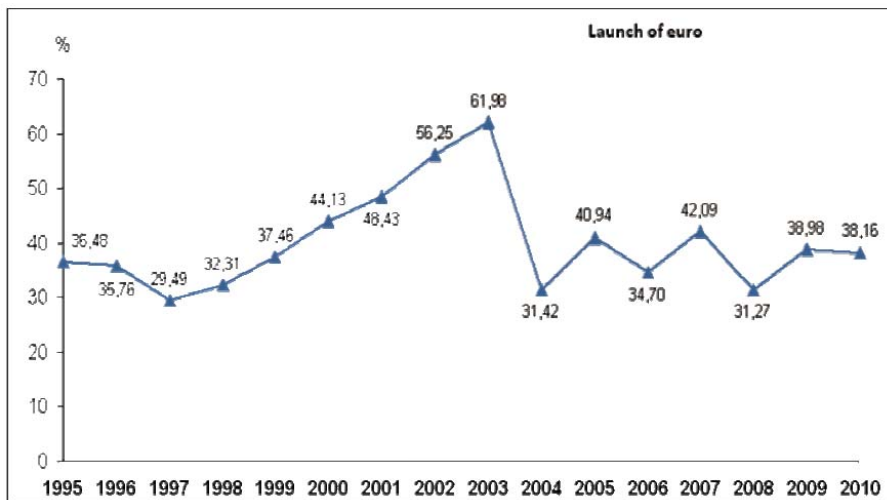
Various major theories have been developed throughout the years concerning the rationale, motives and determinants of FDI (Hymer, 1960; Caves, 1982; Vernon, 1966; Meyer, 1998; Dunning, 1977, 1988a, 1993; Markusen *et al.*, 1998). According to Clegg *et al.* (1999), the multinationals have constraints both globally and in regions. This means that a flow of a FDI in one part of the EU or EMU might have, as a result, a reduction somewhere else, and this is how the race for the attraction of FDI among the countries can be explained.

Various empirical studies took place during the first years after the creation of EMU in order to identify the impact of the union on inward FDI. More specifically Aristotelous (2005) identified that EMU had a positive and statistically significant impact on US FDI inflows and that the increase of FDI into the EMU members was not accompanied by a decrease in FDI into the three countries (Denmark, Sweden and UK) which did not participate in the union.

Furthermore the research of Petroulas (2006) indicated that the introduction of euro increased FDI by 14-16% within the euro area but also that the FDI is concentrated to large economies. Additionally the research study of Brouwer *et*

al. (2007) provided evidence which support the argument that a potential EMU enlargement to the ten new EU countries could result to positive effects on the amount of FDI these countries are expected to receive. Aristotelous and Fountas (2009) suggest that EMU led to a statistically significant overall increase in FDI to countries that adopted the euro. However the research study indicates that the flows differ substantially across member countries with the core countries having benefited mostly. Souca and Lochard (2011) showed that the creation of EMU increased intra-EMU FDI stocks on average by around 30% , while also they indicated that there was no negative effect on non-EMU countries from the creation of euro.

**FIGURE 2**  
FDI of EMU countries vs. FDI of developed countries



Source: UNCTAD, World Investment Report, Various issues.

It should be stated that these studies have used relatively few years of data after creation of EMU and thus further research is needed to verify the impact of the launch of euro on inward FDI. Also the majority of the papers use as kickoff point of eurozone the year 1999 when the euro was created (however with no physical presence). Thus it would be interesting to examine potential differentiation in terms of the impact of EMU on FDI after the physical launch of euro bank note and with significant number of years as data of observation, after launch of euro. The aim of this paper is to construct and test a model explaining the impact of EMU in terms of FDI inflows for various countries. The assumption is that the

impact on FDI proved to be mixed among countries and that EMU did not have a positive effect in terms of FDI inflows for all member countries.

## **2. The model**

The model equation is estimated by OLS and the data used are annual. The model has as dependent variable the FDI inflows per country. The independent variables of the model are the market size, the technological capabilities, host country exports and imports, the labor cost and a dummy variable for the entrance in the European Monetary Union.

### **2.1 Market size**

A positive relation between market size of the host country and inward FDI is expected. A large host market facilitates the exploitation of economies of scale and gives scope for the production of more varieties of the same product. Production and marketing of differentiated products is a strong competitive advantage of MNEs. However, in the case of product differentiation the absolute quantity of demand should be associated with differentiated consumption. The latter is attributed to economies of adequate incomes and therefore of development levels<sup>1</sup>.

GDP is proposed as an approximation for both market size and level of development. The higher the level of GDP the more advanced the country and the greater its aggregate demand is expected to be, and then the higher the level of inward FDI.

### **2.2 Technological Capabilities**

The ability of a country to transfer, adapt and create technological inputs constitutes a very important part of its location advantages. Both rationalised and strategic asset seeking FDI, take advantage of locally available technological inputs which either complement or strengthen the ownership advantages of the parent company. The proposed approximation for a country's technological ability is the number of patent applications. The higher this number the higher the country's technological ability is, and then the higher the rate of FDI inflows.

### **2.3 Host Country Exports and Imports**

World market integration of a country is associated with both export orientation and a liberal attitude towards imports. An internationally oriented strategy is based on the country's competitive advantages and applies policies aiming at their restructuring. Usually FDI is more likely to be attracted in countries pursuing liberal policies because, first, it is considered as a vehicle of world mar-

ket integration and advancement of local competitive advantages; second, intra-firm trade of resources and goods is easily pursued; third, it may take advantage of the continuous upgrading of local resources in order to build exports; and fourth, imports may be used for creating demand, that at a later stage will be met by direct production if other factors, e.g. economies of scale and scope, production and transportation costs, possibility of using the specific country as a regional center of production and marketing, etc. favor this option.

## **2.4 Labor Cost**

Relatively low labor cost either of the general workforce or of specific types of labor and skills is an important motive for FDI. Cheap unskilled labor may attract export platform FDI of goods at the declining phase of their cycle or the labor intensive parts of vertical regionally integrated FDI. Cheap semi-skilled or skilled labor may motivate rationalized FDI. Strategic asset FDI may be oriented to countries with available low cost research and scientific personnel. However, as FDI accumulates that may cause pressures in segments of the host country labor market and eventually wage increases. The same may occur in the case of fast productivity increases in conditions of skills scarcity either generally or in segments of the market.

## **2.5 European Monetary Union**

The elimination of exchange rate risk, after the launch of euro, would tend to increase the FDI inflows inside the currency union. Also the increase on trade volume would tend to create a stronger incentive to expand the production activities inside the union and thus increase FDI. However this does not mean that the impact will be same and positive for all the members of the monetary union. A country in order to gain from the monetary union and increase its FDI inflows should have specific competitive advantage vs. the rest members of the union in order to attract investment. At the same time since both direct and indirect (exchange rate) potential trade barriers have been eliminated by the membership of the countries in EU and especially in EMU, specific countries might have a positive impact while others might have mixed or even negative impact from the participation in a monetary union, in terms of FDI.

## **3. Estimation and Results**

The model can be summarised in the following equation estimated by OLS:

$$\text{FDI} = f(\text{Y}, \text{PA}, \text{W}, \text{X}, \text{M}, \text{EMU}) \quad (1)$$

(+)(+)(-)(+)

Where:

FDI = Inward foreign direct investment.

Y = Real GDP which is a proxy for market size.

TE = Patent applications. That variable is a proxy for technological capabilities.

W = Wage rate index is a proxy for labour cost.

X = Exports.

M = Imports.

EMU = Dummy variable for membership in Euro area (takes the value 1 since 2002).

The equation is estimated by OLS in log-linear form with annual data for period 1980-2010<sup>2</sup> for nine EU countries. The expected signs are shown below the relevant coefficients. The equation has a log linear form because under this specification elasticities given by the estimated coefficients are constant. There is also no strong indication of multicollinearity, since all the statistically significant coefficients have the expected signs.

The estimated equation after correction for autocorrelation is presented in Table 1.

**TABLE 1**  
OLS Estimates of Inward FDI for Period 1980-2010

	Y(+)	PA (+)	W (-)	euro	X(+)	M	R <sup>2</sup>	F stat
<b>Greece</b>	+*	+*	-*	-*	+	-*	0.92	31.09
<b>Portugal</b>	+*	-	-*	-*	+	+	0.81	17.12
<b>Germany</b>	+*	+*	-*	-	+	-*	0.65	4.01
<b>Netherlands</b>	+*	+*	-*	+	+	-	0.64	3.52
<b>Ireland</b>	+*	+*	-	-	+	-	0.63	3.70
<b>France</b>	+*	+*	-*	-*	+*	-*	0.95	78.47
<b>Finland</b>	+*	+*	-*	+	+	-	0.60	3.50
<b>Spain</b>	+*	+*	-*	-*	+*	-*	0.90	40.17
<b>Belgium</b>	+*	+*	-	-*	+	+	0.94	82.95

The introduction of the Euro has asymmetric effects on the FDI inflows across individual Euro zone members. Euro zone membership is statistically significant but negative determinant in the cases of Greece, Portugal, France, Belgium and Spain. For both Germany and Ireland their Euro area membership is a negative but statistically insignificant FDI inflow factor, while in the cases of both the Netherlands and Finland it is positive but also statistically insignificant.

These mixed results verify the hypothesis made earlier that the monetary union is expected to have differentiated impact on FDI inflows across individual member countries. The introduction of a common currency completed the pre-existing common market and advanced the financial integration in Europe, thus it led to the complete elimination of barriers to trade and to the movement of capital. The consequent market integration degraded the motives for market seeking FDI. Individual markets are now easier to be served through the conventional trade networks, and import substituting FDI becomes a less attractive option for the expansion of firms in Europe. Import substituting FDI is significant in the cases of Greece, France, Spain, and Germany, thus any depreciation of the motives for such FDI after the introduction of the Euro would lead to a negative influence of Euro membership on FDI inflows. Although the motivation for market seeking FDI is now less significant, motives for both rationalized and strategic assets seeking FDI remain strong after the formation of the Euro zone. Both FDI types are based on the competitive advantages individual countries have to offer on production cost, agglomeration economies, and technological inputs. Both factors are proved to be positive and statistically significant determinants of FDI, see the variables “technology”, “wages”, and “Income”. The fact that the impact of these factors is amplified after the formation of the common currency zone make the deterioration or appreciation of such factors across economies to skew FDI upwards or downwards accordingly. In addition, the EU membership of low cost production sites neighbouring to the main European markets reduces the attractiveness of other EU member countries, e.g. South Europe as production sites for exporting, i.e. export platform FDI, and for production cost rationalization within a European context.

#### **4. Conclusion**

The econometric model has an adequate explanatory ability and highlights market, labour cost, technological capabilities and openness (mainly linked with exports) as the more decisive determinants. Moreover regarding impact of EMU on FDI inflows, the model identifies that there are mixed results among member countries. On the one hand, Greece, Portugal, France, Belgium and Spain have a negative and statistically significant correlation, while Germany and Ireland have negative but statistically insignificant correlation. On the other hand, Finland and Netherlands have a positive but also a statistically insignificant correlation between launch of Euro and inward FDI. These results imply that after the creation of EMU, the motivation for market seeking FDI is less significant while motives for both rationalized and strategic assets seeking FDI, based mainly on the competitive advantages of individual countries, remain strong. These fac-



tors provide explanation regarding the reasons of mixed results of EMU countries in terms of FDI inflows, while at the same time highlight as crucial determinants of success various elements of potential competitive advantage (technology, income, wages).

## Notes

1. There is extensive literature on the relationship between FDI and market size. For theory see indicatively Buckley *et al.* (1981) and for empirical testing see among others Scaperlanda *et al.* (1969, 1972) and Culem (1988).

2. The FDI variable has been taken from UNCTAD, Patent applications, exchange rate, GDP and exports and imports of goods and services have been taken from World Bank. Unit labour cost has been taken from OECD.

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