

Patterns of FDI in Southern European Periphery: a Tale of Missing FDI?

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Abstract

This paper examines patterns of FDI inflows to Southern European (SE) regions, which seem to be at the margin of the FDI attraction game accounting for a very small share of total inward FDI in the EU. In order to understand why these regions attracted such a low number of foreign investors, this contribution provides the following analysis: i) an overall picture of the main characteristics of patterns of inward FDI in SE regions at geographical and sectoral level; ii) the factors that drive FDI flows into EU regions; iii) as assessment of the potential of attractiveness of SE regions, both in absolute terms and with respect to other EU regions. The main results indicate that SE regions are definitively less attractive than other EU regions, though a lot of variation does exist at both geographical and sectoral level. In order to improve their capacity to attract FDI SE regions should improve their factors of attractiveness by implementing several structural reforms.

key words: foreign direct investment, Southern European periphery, spatial econometrics.

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1. Introduction

The potentials of the single market, as well as the ability of European firms to compete successfully in foreign markets, both within and outside the EU boundaries, have made the European Union (EU) one of the major players in global Foreign Direct Investment (FDI). Generally speaking the EU is considered an attractive location by foreign investors because of its liberal FDI regulation, a highly educated and productive labour force, as well as a large and integrated market for both final goods and services and intermediates. The EU attractiveness is witnessed by the consistency of FDI stock, whose amount has reached impressive figures in the last decades (Eurostat, 2013).

Despite that, the distribution of FDI across space is quite uneven, with some regions attracting more FDI than others both within and across countries. Southern European (SE) regions are at the margin of the FDI attraction game accounting for a very small share of total inward FDI in the EU.

This fact raises two questions: first, why did these regions attract such a low number of foreign investors? And, does it depend on regional characteristics or on country characteristics?

One explanation for this fact is that SER have a low potential to attract FDI, since their characteristics are not those that foreign firms are looking for. This implies that the observed FDI inflows just reflect the scarcity of location advantages of those regions. A second explanation is that the capacity to attract FDI of SE regions is conditioned by their respective countries' performances, characterized with respect to other EU countries by poor market regulations and legal enforcement, as well as low quality and inefficient administrative systems; in a few words, Southern Europe seems to suffer from the lack of a business environment conducive for foreign investments (Golub et al., 2003; Committeri, 2004).

In order to better understand the determinants of inward FDI flows in the EU and potential differences between Southern regions and other EU regions, this contribution provides the following analysis:

- an overall picture of the main characteristics of patterns of inward FDI in SE regions at geographical and sectoral level and their potential differences with patterns of FDI in other EU regions;
- the factors that drive FDI inflows to EU regions;
- an assessment of the potential of attractiveness of SE regions, both in absolute terms and with respect to other EU regions.

The degree of attractiveness of FDI of SE regions and potential differences with respect to other EU regions is analysed by using the number of newly created foreign firms– disaggregated by 252 NUTS2 EU regions, the most important sectors of economic activity, and the origin of foreign firms within or outside the EU – as a proxy for inward FDI in the period from 2005 to 2007.¹ Figures reflect averages over the period instead of

¹ These figures come from FDIRegio database. See Capello et al. (2011) for a comprehensive description of the database and its reliability in describing patterns of FDI in the EU.

annual flows in order to minimize excessive fluctuations in the dependent variable.² Moreover, the period ends in 2007 since this work aims at isolating the structural factors that affect regions' attractiveness rather than at understanding the impact of the recent economic downturn on regions' capacity to attract FDI.

This paper is not the only one dealing with location choices of multinational firms in Europe, but it is the first focusing on Southern European regions in a comparative perspective. Some previous works have addressed the question of why some regions attract more or few FDI than other regions within specific Southern European countries.³ However, a single country perspective does not allow to consider either the potential effects on regions' competitiveness of national factors – an issue particularly relevant for targeting appropriate FDI promotion policies – or the potential effects of inter-country competition, which arises in integrated spaces like the EU where competition to attract FDI may occur not only within but also across countries (Basile et al., 2009; Crozet et al., 2004; Pusterla and Resmini, 2007;).

This contribution is organized in four sections. The first section provides some evidence on patterns of intra- and extra-EU foreign investments in SE regions. Factors driving regions attractiveness are investigated from a theoretical and an empirical perspective in the following two sections. In the last section some preliminary conclusions are drawn.

2. Patterns of FDI in Southern Europe

Focusing on SE regions, the aim of this section is to illustrate the main cross-country and cross-industry features of patterns of FDI and highlight some of the questions that need to be addressed to understand the economic factors that underlie this phenomenon as well as the role that policy can play in favouring the inflows of FDI in these regions, both in absolute and relative terms.

The data presented in Table 1 clearly shows that Southern Europe attracted a very low share (less than 4%) of foreign firms established during the 2005-2007 period. This share halves when extra-EU foreign firm investments are taken into consideration. Within the sub-sample of Southern Europe, Spain and Italy play the lion's share, attracting about 90% of foreign firms that invested into the region. This figure indicates that Southern Europe cannot be considered as a homogenous area and that attractiveness in terms of FDI may vary across countries.

(insert table 1 about here)

² Although the evaluation of several consecutive periods of time would have allowed a more in depth and exhaustive study, it should be born in mind that the availability of data is a major constraint in analysis factors driving FDI at regional level.

³ Basile et al, 2005; Bronzini, 2004; and Mariotti and Piscitello, 1995 analyzed the distribution of foreign firms across Italian regions, while Mota and Brandao, 2001, Barbosa et al., 2004; Guimaraes et al., 2000; focused on patterns of FDI across Portuguese regions. The distribution of FDI across Spanish regions has been investigated by Egea and Lopez, 1991; Villaverde and Maza, 2012 and Rodriguez and Pallas, 2008, while Jordaan and Monastiriotis, 2011 and Petrakon, 2013 deals with the attractiveness of Greek regions.

At sectoral level, further heterogeneity emerges. 60% of foreign affiliates in Southern Europe operate in the services sectors and mainly in business services sectors, while about 34% can be classified as manufacturer firms, with a slight preference for traditional, low-technology intensive sectors in case of intra-EU foreign firms and for high-technology intensive manufacturing sectors as for extra-EU foreign firms (Table 2).⁴ These patterns suggest that motivations for becoming multinationals may differ between intra- and extra-EU manufacturing firms: the former seem to be interested in exploiting differences in factor prices, mainly labour costs, across the EU, while the latter may have chosen to delocalize production plants in the EU in order to take advantage from the local technology and the size of the integrated market rather than from global differences in input prices⁵

(insert Table 2 about here)

By crossing the geographical and sectoral dimensions other interesting features emerge. Table 3 reports the index of specialization of inward FDI in six different economic sectors, covering primary, manufacturing and services activities. The index of sectoral concentration of FDI is given by:

$$SPI_{sc} = (FDI_{sc} / \sum_s FDI_{sc}) / (\sum_c FDI_{sc} / \sum_s \sum_c FDI_{sc}) \quad (1)$$

where FDI is the number of foreign firms, and s and c refer to sectors and countries, respectively. The index is built relative to both the EU average (upper panel of Table 3) and Southern Europe average (bottom panel of Table 3) and shows the extent to which each of the four countries under consideration and the Southern European area taken as a whole receive more or few foreign firms than the EU – or Southern Europe as whole – in each of the reported sector. By definition, the average value of the index for a particular sector in the EU (Southern Europe) is 1; therefore, values greater (lower) than 1 indicate that country c shows a concentration of FDI in sector s above (below) the EU (or Southern Europe) average.

(insert Table 3 about here)

Table 3 indicates that Southern European countries attract relatively more FDI in production rather than in services activities. Only Spain and Greece show a SPI index of inward FDI above the EU average in the primary sector, while Italy emerges for a concentration of FDI in manufacturing activities above both the EU and the Southern Europe averages. On the contrary, inward FDI concentration in services activities is below both average values.

Overall these results confirm the idea that patterns of FDI in Southern Europe are different from those of the other EU countries and, therefore, may respond to different motivations and local advantages. Moreover, it

⁴ See Table A1 in the appendix for details on high- and low-tech manufacturing sectors, as well as other sectoral aggregations used in this contribution.

⁵ The theory of FDI usually distinguishes four types of FDI: *i*) horizontal FDI, which occurs when a firm is interested in exploit foreign markets; *ii*) vertical FDI, which occurs when firms fragment different stage of the production process in one or more locations in order to exploit international differences in input prices; *iii*) resource seeking FDI which occurs when firms are searching for affordable provision of natural resources; and *iv*) strategic asset seeking FDI, which occurs when firms aim at gaining access to advanced technologies, skills and other production capabilities in foreign locations. See Barba Navarretti and Venables, 2004 and Iammarino and McCann, 2013 for a thorough discussion of these and other theoretical issues related to multinational enterprises.

seems, at least at first sight, that SE regions are less competitive than other EU regions in the FDI attraction game, a result further confirmed by Figure 1 which plots the relative attractiveness of each region with respect to the EU average on the vertical axis and to the corresponding national average on the horizontal axis.⁶ By considering simultaneously each region capacity to attract FDI relative to both the EU and the respective country average, four different groups of regions can be identified:

1. Regions performing better than the respective national mean and the EU mean. South-Western European regions are not represented in this group.
2. Regions performing better than the respective national mean but that underperform compared with the EU mean. 22 out of 60 SE regions are included in this group.
3. Regions performing worse than the respective national mean but that perform better than the EU mean. This group does not encompass any SE regions.
4. Regions performing worse than the respective national mean and that underperforms compared with the EU mean. 38 out of 60 SE regions encompass to this group.

(insert Figure 1 about here)

It is clear that all SE regions are less competitive than other EU regions, since none of them performe better than the EU average. Despite that, some of them has attracted a number of foreign firms per million of inhabitants above the national averages. These regions are those hosting the capital cities or the most important industrial centres in the respective countries. Once again, it emerges a clear distinction between Spain and Italy, which are closer to the EU average than Greece and Portugal. The next section is devoted to explain factors underling these potential cross-geographical and cross-sectoral differences.

3. The attractiveness of regions

Table 4 summarizes the main information about the explanatory variables considered in this study in order to analyse factors driving foreign firms' location choice. These variables may be classified into three broad categories: 1) demand side variables; 2) supply side variables; 3) agglomeration economies.

Demand side variables. Studies focusing on the influence of demand side characteristics on foreign firms location choice stress the importance of market size and its accessibility and growth potential of host locations. The market size is usually proxied by GDP per capita (Coughlin and Segev, 2000; Guimaraes et al., 2004) in order to capture local purchasing power, or by a sum of distance-weighted GDPs of all locations different from the observed one in order to capture both market size and its accessibility (Head and Mayer,

⁶ The index of FDI penetration has been computed first as number of foreign firms per million of inhabitants in order to capture the size effect; then, it has been normalized by the EU average and the corresponding national averages in order to make it easier the comparison across regions both within and across countries. This implies that the index of FDI penetration varies between -1 and +1. It assumes the value of zero when a region host the same number of foreign firms per million of inhabitants than the EU or the corresponding national average.

2004). Since it is likely that a foreign firm consider the size of the whole market and transport costs in order to decide where to set up a production plant in an integrated area like the EU (Barba Navarreti and Venables, 2004), a measure of regional market accessibility seems more appropriate than a simple measure of local market size. Therefore, this contribution considers among the explanatory variables a market accessibility measure and the regional GDP growth rate. The idea is that foreign investors willing to exploit foreign markets prefer to locate in dynamic, large and well accessible regions (Neary, 2002). Moreover, highly accessible markets are also preferred by firms engaging in vertical FDI, due to the large flows of trade in intermediate goods that characterize vertically fragmented FDI.

Supply side variables. In their location decisions, firms are also motivated by labour market conditions, particularly, labour costs and the qualifications of the workforce. The labour cost, measured by the average wage rate, is included in several studies on FDI determinants, which usually find a negative relationship between FDI inflows and labour cost (Coughlin et al. 1991; Barbosa et al. 2004; Figueredo et al. 2002; Holl 2004a, 2004b; Woodward et al. 2006; Basile et al. 2009). Therefore, in this research, the proxy for labour costs is an average of annual labour cost in each EU region. The influence of population skills and abilities on the productivity of the workforce has also been included in several studies. Many authors considered the education-level of population (Bartik 1985; Woodward, 1992; Basile et al. 2009), but results were mostly inconclusive. In this study, the influence of specific skills (e.i. managerial and professional capacities) on foreign firm location choice is used as a proxy for regional endowment of human capital. In addition to these traditional determinants for FDI flows, the influence of the business environment is usually considered. Therefore, an index of the quality of the local governance (Charron et al., 2010) has been introduced and a positive impact on regions' attractiveness is expected.

(insert Table 4 about here)

Agglomeration economies. The relevance of agglomeration economies as a driver for FDI inflows has been acknowledged by several studies (Basile et. al, 2011; Devereux et al., 2007; Head et al., 1999). The literature usually distinguishes between urbanization economies and localized economies. While the former are external to firms and industries and relates to the positive effects of a diversified economic environment, the latter are external to firms but internal to industries and depend on the availability of a specialized labour market (Jacobs, 1961 and 1969), the proximity to suppliers and clients as well as the opportunity to reap technological externalities (Marshall, 1890). Almost all empirical studies dealing with agglomeration economies conclude that foreign firms value positively a location that allows to reap agglomeration economies (Markusen and Venables, 1999; Rodriguez-Clare, 1996; Görg and Strobl, 2001; Altomonte and Resmini, 2002). However, when agglomeration reaches a critical value, congestion effects may arise thus reducing the attractiveness of a given location (Basile et al., 2011; Arauzo-Carod, 2005; Viladecans-Marsal, 2004). In this study, in order to capture the potential role of agglomeration forces in attracting FDI, the shares of low- and high-tech manufacturing sectors in regional value added have been considered as proxies for localization externalities, while the share of business services in regional value added is considered as a

proxy for urbanization economies given that services usually characterized large and diversified urban environment.

All these explanatory variables refer to 2004 or previous years, according to the availability of data. On the one hand, this reflects the fact that foreign firms need time to evaluate the characteristics of a location before making investments; on the other hand, this strategy helps in mitigating potential endogeneity problems.

Another important issue that should be accounted for in the analysis of FDI determinants is the existence of spatial effects, either in the form of spatial heterogeneity and spatial dependence. In order to control for possible spatial heterogeneity, the regression equation includes spatial fixed effects referring either to SE regions, or to single Southern European countries. The aim is to investigate not only whether and to what extent SE regions are, *ceteris paribus*, less attractive than other EU regions, but mainly whether this potential unattractiveness is due to characteristics common to the Southern European periphery or rather to country specific peculiarities. As for spatial dependence, the simplest ways to incorporate spatial dependence in a regression equation are the spatial lag model and the spatial error model (Anselin, 1988).⁷ According to the former, spatial effects occur through the dependent variable, i.e. foreign firms' location decisions are not independent and in choosing the location of a foreign production plant, a firm considers not only the characteristics of this location, but also where other foreign firms have been established. The spatial error model, instead, accounts for the presence of spatially correlated omitted variables, that is, tell us whether and to what extent a shock to FDI in a location spills over neighboring locations.

Many reasons can explain spatial dependence in FDI determinants. First of all, it may be the result of the activities of multinational firms, which may wish to serve multiple markets from a single location, as it is likely in integrated area such as the EU, or because they have fragmented the production process in several stages, each of which is carried out in a different location in order to exploit international input price differences (Baltagi et al., 2007; Blonigen et al., 2007). Moreover, spatial dependence may occur because foreign firms tend to cluster with other foreign firms producing at the same stage of the value chain or in different stages of it in order to exploit input-output linkages and technology spillovers or, more simply, because other foreign firms signal the presence of a business environment conducive for foreign investors (Pusterla and Resmini, 2007; Basile et al., 2009; Braunerhjelm and Svensson, 1996; Woodward, 1992).

Although the theory supports a spatial lag specification, it is not possible to determine *a priori* whether spatially correlated omitted variables do exist. Therefore, a "specific-to-general approach" has been followed (Elhorst, 2010; Florax et al., 2003). Hence, a non-spatial linear regression model has been estimated first by traditional OLS techniques, and then the potential spatial characteristics of the data have been incorporated.

A final remark concerns the spatial weight matrix used to accommodate spatial dependence. Given the objectives of this paper, the most appropriate structure for capturing the underlying spatial patterns of FDI

⁷ Recently more complex specifications have been developed in order to capture spatial patterns in data generating processes. Both the lag and the error models can be nested within one or more of these specifications. See Elhorst, 2010 for a discussion on this.

inflows is a simple inverse distance matrix. Foreign investors entering Europe, in fact, are theoretically interested in the EU market as a whole rather than that of the host location or its neighbours, especially if it is a small territorial unit, such as a NUTS2 region. Moreover, the further the distance the more difficult it is to develop supplier and/or client linkages due a variety of reasons that can be broadly labelled as the costs of doing business at a distance. This implies that interactions may continue, depending on the degree of distance decay. Therefore, using a first order contiguity matrix or other more or less sophisticated forms of truncated spatial matrix would not be advisable from a theoretical point of view.

4. Results

4.1 Full sample and European vs. Non-European sub-samples

In Table 5 we first assess the role of regional characteristics in attracting FDI in EU regions (column 1). All coefficients turn out to be statistically significant and with the expected sign. In particular, the positive coefficients associated to market accessibility and growth prospect confirm that foreign firms concentrate where demand is highest and dynamic, while the negative coefficient of the labour cost variable indicate that high wages discourage FDI. Both the quality of the workforce and local governance are important determinants of location. As for agglomeration economies, the results confirm the importance of both localization and urbanization externalities. However, the negative though not significant coefficient of high-technology intensive manufacturing sectors indicates that congestion diseconomies may arise and reduce the attractiveness of EU regions.

(insert Table 5 about here)

After having defined the factors of regional potential attractiveness to FDI, the capacity of SE regions to attract few or more foreign firms than other EU regions with similar observable characteristics has been investigated (column 2 of Table 5). In so doing, a dummy for SE regions has been included in the model; it indeed has a negative and significant coefficient, indicating that SE regions attract, *ceteris paribus*, less foreign firms than other EU regions with similar structural characteristics. Alternatively, a dummy for each Southern European country has been considered (column 3). The results indicate that only Portuguese and Greek regions are less competitive than other EU regions, while Spanish and Italian regions seem to be as attractive as other EU regions with similar characteristics. It is worth noting that when the spatial fixed effects are considered, the coefficient of the proxy of agglomeration economies in high-tech manufacturing sectors turn out to be significant, maintaining a negative sign. This indicates that congestion diseconomies affect high-tech manufacturing sectors and that local firms may suffer from competitive pressures exerted by foreign firms in labour markets and other intermediate input.⁸

⁸ The change in sign of the high-tech manufacturing sector variable may also indicate that the importance of this variable as factor able to drive FDI may be different in SE and in other EU regions.

These results may also depend on the fact that the potential attractiveness of European regions is not accurately measured because of the presence of spatial effects. Spatial diagnostics (see table A.2 in the appendix) provide evidence on the existence of spatial dependence, although its nature cannot be precisely identified.⁹ For that reason, both the spatial error and the spatial lag model have been estimated. Results are shown in columns (4) and (5) of Table 5, respectively. On the basis of these results, the spatial lag model seems to be the most appropriate, as indicated by the R^2 , the log-likelihood and the AIC and BIC tests, which are all better in the spatial lag rather than in the spatial error model. As far as the standard FDI determinants are concerned, the results are robust to the inclusion of the spatial effects and in line with the underlying theory.

As a first attempt to see how the results for total inflows of FDI are robust to changes in FDI flows, the basic model has been re-estimated for two different sub-samples, i.e. FDI inflows from EU and non-EU countries. The reason to look at FDI originating within or outside the EU is, on the one hand, to test for the relevance of the EU single market and, on the other hand, to investigate whether and to what extent FDI coming from different source countries share the same patterns. Table 6 shows the results of the spatial models only since these specifications are to be preferred over the OLS estimations (see spatial diagnostics in Table A.2 in the Statistical Annex).

(Insert Table 6 about here)

It turns out that our results are indeed sensitive to the sample selection. Main differences concerned patterns of extra-EU FDI, which seems to respond to a small set of location advantages than intra-EU FDI. In particular, extra-EU FDI is sensitive to demand side variables, as well as to the quality of both the labour force and the local governance. Moreover, non-EU foreign investors perceive only Portuguese and Greek regions as less attractive than other EU regions, all other things equal. Finally, the results suggest that the two sub-samples of FDI follow different spatial patterns, with extra-EU FDI patterns better explained by a spatial lag model and intra-EU FDI patterns better modelled with a spatial error model. This may reflect a higher propensity of the former to cluster all together, given the lack of knowledge of EU regions' similarities and differences.

Overall the estimation results in Tables 5 and 6 allow to conclude that:

- SE regions are *ceteris paribus* less attractive than other EU regions;
- SE regions unattractiveness is mainly driven by Greek and Portuguese regions;
- Spatial effects matter for both intra- and extra-EU FDI, though its nature differs across the two sub-samples of foreign firms. In particular, the location of extra-EU foreign firms depends more on the location of other extra-EU foreign firms, rather than from the transmission FDI shocks in a location across space. The opposite holds for intra-EU foreign firms.

⁹ As it is shown later on in this contribution, this depends on the fact that the dependent variable contains aggregate FDI data and thus it is the summation of all FDI decisions undertaken by foreign firms on the basis of rather different motivations.

- The standard determinants of FDI as well as the relative unattractiveness of SE regions are rather robust to the inclusion of spatial effects;
- Extra-EU foreign firms are attracted mainly by rich, accessible and dynamic markets, as well as by regions well-endowed with skilled workers and an environment conducive for business;
- Intra-EU foreign firms instead follow a more complex pattern, being in search for a combination of relatively low production costs, good market access, and agglomeration economies;

4.2 Sectoral FDI

Previous results help in understanding which location advantages are able to drive the distribution of FDI across EU regions and in particular, in SE regions. Since the magnitude of the effects these location advantages can exert on FDI flows may differ across sectors it is useful to disaggregate FDI data. Therefore, the original sample has been split first between manufacturing and services sectors and then between high- and low-tech manufacturing sectors and business services, respectively. Results are shown in Tables 7 and 8, respectively.

Although the level of aggregation is quite high, these results indicate that sectoral disaggregation is important to understand the attractiveness of EU regions in general and SE regions in particular, as well as the role of spatial linkages.

Starting from the latter, the results confirm the existence of spatial patterns of FDI that differ across sectors. In particular, manufacturing foreign firms in one region are able to affect manufacturing foreign firms in other regions, while spatial spillovers are weak or non-existent in case of services foreign firms (see Table A.1 in the appendix). This result may reflect that manufacturing firms are usually vertically integrated and significant flows of intermediates may occur among them. Therefore, they tend to locate close to each other in order to minimize transportation costs. On the contrary, the spatial distribution of foreign services suppliers is conditioned by proximity to clients, rather than to other foreign producers given the non-tradability of several services. Therefore, spatial interrelations, if they do exist, arise because of the spatial propagation of regional shocks on FDI across space.

(insert Table 7 and 8 about here)

By and large, factors determining FDI in manufacturing and services are not the same, a result already highlighted by the literature (Casi and Resmini, 2010). The main differences concern the labour cost, which is not significant for the FDI in services sub-sample, and the local development of the business services sectors, which is not able to improve FDI inflows of FDI in manufacturing. This indicates that urbanization economies are not among the location advantages considered by manufacturing firms. Other differences between manufacturing and services foreign firms concern regions' specialization in high-tech manufacturing sectors and the quality of governance, whose significance becomes negligible in the manufacturing FDI sub-samples. Demand size variables instead are significant in both sub-samples but

somewhat larger in case of FDI in services. A finer disaggregation between low- and high-tech manufacturing FDI indicates that low-tech manufacturing foreign firms positively evaluate the opportunity to exploit linkages with indigenous firms operating in the same sectors, while fear possible competition effects from indigenous high-tech manufacturing firms. On the contrary, high-tech manufacturing firms exploit agglomeration externalities with other manufacturing firms, regardless of their sectoral affiliation. As for the business services FDI sub-sample, all the explanatory variables are significant with the expected sign.

Last but not least, the sectoral disaggregation allows a better understanding of the relative unattractiveness of SE regions. In particular, the findings confirm the lack of FDI in services, and mainly in business services, while the picture is more scattered when FDI in manufacturing is considered. In particular, Spain and Portugal seem to be, *ceteris paribus*, as attractive as other EU regions; Greek regions, instead, are more attractive than other EU regions in terms of low-tech manufacturing firms, while Italy is less attractive than other EU regions both in low- and high-tech sectors and in business services sectors.

4.3 Missing FDI in Southern Europe?

On the basis of the statistical relationships established above, the predicted values for the dependent variable can be computed and compared with the actual FDI flows. This exercise allows the evaluation of the performance of Southern Europe in general and each country belonging to SE in particular, relative to a “target value” predicted by the model.

Table 9 summarises the findings of this analysis, using for each dependent variable the variable coefficients of the most significant specification. The results are given in terms of the ratio between the actual and predicted values of FDI flows. They show that the EU as a whole has attracted FDI according to its potential (i.e. has a ratio very close to one), as captured by the explanatory variables, indicating that the saturation point has been reached, with two exceptions, namely Extra EU FDI and FDI in business services. Actual inflows of extra-EU FDI are under the norm as predicted by the model also in Southern Europe, and, in particular in Greece, with the only exception of Portugal. Also, Southern EU has attracted less FDI flows than its potential in business services sectors, while the saturation point has been already reached in both FDI in services and in manufacturing.

(insert Table 9 about here)

The situation, however, is not homogenous among countries. Actual inflows of FDI in Italy are very close not only to the predicted ones, but also to the EU average target values. Despite that, Italy lags behind especially in services and business services in particular, and as far as extra EU FDI inflows are concerned. Spain is under its target values in high-tech manufacturing and business services FDI, while it has attracted FDI in manufacturing sectors above its target values, as predicted by the model, while Greece is under the norm predicted by the model in business services and in terms of extra EU FDI inflows. On the contrary, Portugal is above the target values in all the types of FDI inflows explored in this contribution. Overall these

results may reflect the impact of EU structural funds and cohesion policy. By creating more favourable conditions for investments in peripheral regions through funding training, infrastructure and R&D activities, they have offered a positive contribution in the attraction of foreign investments, counteracting agglomeration forces which lead to a concentration of economic activities in core regions (Basile et al., 2008).

5. Conclusions

This contribution investigated factors driving the distribution of FDI across EU regions and the relative (un)attractiveness of SE regions. In so doing, a distinction has been made between intra- and extra-EU FDI and manufacturing and services FDI in order to highlight firm and/or sectoral specificities in spatial patterns of FDI in the EU.

Without focusing on a single specification, a complex set of variables has been shown to determine FDI patterns in the EU. The results discussed above generally support the hypothesis that FDI has been driven by market considerations, even though the responsiveness of FDI to market variables differs across sectors, being stronger in the services ones. Labour costs affect negatively FDI in low-tech manufacturing sectors and intra-EU FDI, and positively FDI in business sectors, indicating that in the latter foreign firms are more sensitive to productivity issues rather than to cost saving ones. The quality of the local governance influence mainly intra-EU FDI flows and FDI in services sectors, while the possibility of exploiting both intra- and inter-sectoral agglomeration economies influence mainly intra- rather than extra-EU FDI. On a sectoral basis, FDI in low-tech manufacturing sectors exploit both intra-manufacturing and inter-sectoral agglomeration economies with indigenous business services providers, while high-tech manufacturing FDI are attracted by the opportunity to enjoy agglomeration externalities with local manufacturing firms only. As for FDI in services, both intra- and inter-sectoral agglomeration economies are important factors of attraction.

An interesting feature highlighted by the empirical analysis is the existence of different spatial patterns in the distribution of FDI across EU regions. Spatial spillovers do exist only for manufacturing and extra-EU FDI. This result may reflect the vertical organization characterising several manufacturing production processes as well as the importance of agglomeration economies among foreign firms for extra-EU multinationals, which consider the presence of other foreign firms in neighbouring regions as a signal of a business environment conducive for foreign investments. The lack of any spatial pattern in FDI in services, instead, can be explained by the intrinsic characteristics of services, which need the proximity between consumers and producers in order to be delivered. This implies that services providers follow the market rather than other potential local or foreign competitors and regional interdependencies are relegated to shocks between host regions.

The capacity to attract FDI of Southern European regions is, *ceteris paribus*, below the EU average. The least attractive regions are those belonging to Greece and Portugal, while Spanish regions and, though to a

lesser extent, Italian ones are, generally speaking, perceived as as attractive as other EU regions. Despite that, some differences do exist both between intra- and extra EU FDI and across sectors. SE regions FDI shortfall is indeed particularly apparent for extra-EU and business services FDI, where actual FDI inflows are well below those that would have been predicted given the structural characteristics of SE regions. As for intra-EU FDI and FDI in manufacturing, FDI inflows in SE regions are on average very similar to the norm, and above the target value predicted by the model for Greek and Portuguese regions.

Important policy implications can be drawn from these results, mainly for those SE countries that seem to have already reached the saturation point: in order to attract a high and sustainable level of FDI regional locational advantages should be reinforced and improved through several structural reforms.

To this respect, the “tool kit” available to policy makers is quite wide. It includes a large set of regional policies able to improve the investment environment, national policies that enhance the credibility of policies as well as European initiatives that help to better integrate markets across the EU, thus making investments in these regions more attractive. An effective strategy for revitalizing foreign investments in SE regions should include a combination of such efforts. As a result, a virtuous and self-sustaining process of agglomeration among foreign firms should be ignited (Markusen, 1990), with positive effects on growth and development prospects of the whole area. At regional level, the high number of foreign direct investments recorded in some SE regions – i.e. those with an FDI penetration index above the country average – indicates that such a self-reinforcing effect might already exist and only needs to be extended to other Southern European regions. At sectoral level, this reasoning, if proven, might instead help to explain why, for example, the amount of FDI in high-tech manufacturing sectors is so low.

This basic empirical analysis leaves some questions open for further investigations. In particular, two policy issues are worth to take into consideration: the impact of EU Cohesion policy and the effects of the Barcelona declaration and other neighborhood policy instruments on regions’ capacity to attract FDI.

Structural and Cohesion funds have been implemented to help laggard regions to transform and modernize in order to be able to compete within the EU Single Market. Therefore, regions receiving structural and cohesion funds should be, at least in principle, more attractive than other regions, provided that they have effectively used the EU funds. It has been demonstrated that Structural funds have affected the location of industries in Europe (Midelfart-Knarvik and Overman, 2002) while the impact on FDI inflows is still unclear (Basile et al., 2008; Breuss et al., 2010; Hubert and Pain, 2002; Crozet et al., 2004), the main reason being the lack of detailed data either on the spatial distribution of FDI within Europe, or the amount of funds transferred to regions for different activities.

As for integration agreements, it is well known that preferential trade liberalization affects not only trade but FDI as well (Baltagi et al, 2008). One reason for the latter is the increasing importance of export platforms in multinational activity (Eckholm et al., 2007; Yeaple, 2003). If tariffs are reduced or fully eliminated in a subset of economies, it becomes cheaper for multinationals to deliver goods to consumers inside the liberalizing area from export platforms within this area. Hence, we would expect the Barcelona declaration to

make SE regions interesting locations for those multinationals, both European and non-European, willing to serve the Southern Mediterranean markets.

Further quantitative studies including these policy factors may provide essential clues for a better comprehension of the determinants of FDI in the southern peripheral European regions.

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Table 1. FDI in Southern Europe (number of foreign firms)

	All FDI	Intra EU FDI	Extra EU FDI
EU26	110573	37095	73478
Southern Europe	4189	702	3487
Greece	165	18	147
Italy	1819	327	1492
Portugal	217	6	211
Spain	1988	351	1637

Source: FDIRegio database

Table 2. FDI in Southern Europe by sector (percentages)

Sectors	All FDI	Intra EU FDI	Extra EU FDI
Primary	1.12	1.23	0.57
Manufacturing	33.52	33.18	35.19
Low Tech sectors	17.55	18.33	13.68
High Tech sectors	15.97	14.86	21.51
Services	60.13	59.94	61.11
Business services	23.11	22.25	27.35
Total	100.00	100.00	100.00

Source: FDIRegio database

Table 3. Index of FDI penetration in Southern Europe

	Spain	Greece	Italy	Portugal	SE
Primary	1.43	1.15	0.73	0.44	1.06
Manufacturing	1.27	0.91	2.53	1.24	1.80
Low Tech sectors	1.15	0.66	1.72	1.04	1.37
High Tech sectors	1.52	1.45	4.30	1.66	2.73
Services	0.90	1.03	0.64	0.82	0.79
Business services	0.72	0.86	0.46	0.61	0.61
<i>(Southern Europe only)</i>					
Primary	1.34	1.08	0.69	0.41	
Manufacturing	0.70	0.51	1.41	0.69	
Low Tech sectors	0.84	0.48	1.25	0.76	
High Tech sectors	0.56	0.53	1.57	0.61	
Services	1.14	1.31	0.81	1.03	
Business services	1.19	1.42	0.76	1.00	

Source: Own calculation from FDIRegio database

Table 4. Drivers of FDI in the EU regions

Variables	Description	Source
<i>Demand side variables:</i>		
GDP growth rate	% change in real regional value added	Eurostat
Market accessibility	Weighted average of GDP of all European regions j other than i . The weights are the reciprocal of the bilateral distances between the respective capitals.	Eurostat (GDP) DGRegio (bilateral distances)
<i>Supply side variables:</i>		
Labour Cost	Annual labour cost (average): salaries and wages (excluding apprentices and trainees).	Eurostat
High skilled labour force	Corporate manager (ISCO-88/12) and professionals and scientists (ISCO-88/2) employment share on total regional employment	DGRegio
qog	EU regional quality of governance index	Charron et al., 2010
<i>Agglomeration variables:</i>		
Low-tech sectors	Share of regional value added generated by sectors with low technological intensity on total value added generated by the region.	Eurostat
High-tech sectors	Share of regional value added generated by sectors with high technological intensity on total value added generated by the region.	Eurostat
Business Services	Share of regional value added generated by business services sectors on total value added generated by the region.	Eurostat

Table 5. Determinants of FDI in SE regions: basic model

	OLS						Spatial lag						Spatial error		
	(1)			(2)			(3)			(4)			(5)		
	Coeff.	Std. Err.	Sig.	Coeff.	Std. Err.	Sig.	Coeff.	Std. Err.	Sig.	Coeff.	Std. Err.	Sig.	Coeff.	Std. Err.	Sig.
Market accessibility	0.27	0.056	***	0.28	0.056	***	0.29	0.055	***	0.23	0.056	***	0.28	0.058	***
GDP growth rate	0.13	0.019	***	0.13	0.019	***	0.13	0.017	***	0.09	0.018	***	0.10	0.019	***
Labour cost	-0.22	0.056	***	-0.14	0.064	**	-0.13	0.062	**	-0.15	0.057	***	-0.13	0.061	**
Low-Tech man. Sectors	12.47	2.688	***	11.65	2.58	***	10.79	2.746	***	10.7	2.65	***	10.33	2.670	***
High-Tech manuf. Sectors	-4.32	3.013		-6.76	3.084	**	-8.17	3.013	***	-5.30	2.82	*	-8.40	3.009	***
high skilled labour force	10.12	1.953	***	9.12	1.799	***	8.62	1.549	***	6.68	1.436	***	8.72	1.544	***
Business services	4.68	1.359	***	3.77	1.396	***	3.16	1.396	**	4.39	1.364	**	3.11	1.396	**
quality of governance	0.51	0.089	***	0.38	0.104	***	0.36	0.109	***	0.26	0.105	**	0.35	0.112	***
SER	-	-		-0.52	0.205	**	-	-		-	-		-	-	
Italy	-	-		-	-		-0.45	0.274		-0.41	0.255		-0.54	0.288	*
Spain	-	-		-	-		-0.15	0.201		0.03	0.208		-0.23	0.227	
Greece	-	-		-	-		-1.09	0.363	***	-0.71	0.369	**	-1.03	0.414	**
Portugal	-	-		-	-		-1.13	0.473	**	-1.05	0.478	**	-1.27	0.506	**
constant	1.064	0.687		0.92	0.674		1.19	0.665	*	-1.32	0.866		1.16	0.753	
rho/lamba	-	-		-	-		-	-		0.72	0.179	***	-0.52	0.205	**
R-squared/Variance ratio		0.67			0.68			0.70			0.72			0.68	
Log likelihood											-292.31			-293.47	
AIC test		-			-			-			614.63			616.93	
BIC		-			-			-			667.57			669.87	
n. of obs.		252			252			252			252			252	

***, **, * mean significance at 1, 5 and 10%, respectively.

Table 6. Determinants of FDI in SE regions: Intra-EU vs. Extra-EU FDI

	Intra-EU FDI						Extra-EU FDI					
	Spatial lag			Spatial error			Spatial lag			Spatial error		
	Coeff.	Std. Err.	Sig.	Coeff.	Std. Err.	Sig.	Coeff.	Std. Err.	Sig.	Coeff.	Std. Err.	Sig.
Market accessibility	0.23	0.057	***	0.28	0.059	***	0.19	0.072	***	0.25	0.08	***
GDP growth rate	0.08	0.019	***	0.09	0.20	***	0.11	0.018	***	0.12	0.021	***
Labour cost	-0.16	0.060	***	-0.14	0.064	**	-0.03	0.054		0.001	0.054	
Low-Tech man. Sectors	11.01	2.699	***	10.67	2.695	***	2.76	2.205		2.26	2.279	
High-Tech man. Sectors	-7.33	2.916	**	10.49	3.128	***	6.08	2.571	**	3.44	2.853	
high skilled labour force	6.15	1.477	***	8.13	1.576	***	8.05	1.236	***	10.27	1.423	***
Business services	3.88	1.469	***	2.66	1.486	*	4.31	2.084	**	2.8	2.176	
quality of governance	0.24	0.109	**	0.32	0.115	***	0.14	0.095		0.25	0.104	**
Italy	-0.44	0.268	*	-0.57	0.299	*	-0.17	0.205		-0.32	0.241	
Spain	0.02	0.213		-0.22	0.233		0.00	0.207		-0.33	0.237	
Greece	-0.68	0.367	*	-0.96	0.407	**	-0.30	0.276		-0.74	0.346	**
Portugal	-1.01	0.468	**	-1.19	0.496	**	-0.49	0.296	*	-0.74	0.345	**
constant	-0.98	0.912		1.31	0.817		-3.29	0.56	***	-1.52	0.769	**
rho/lambda	0.72	0.192	***	0.87	0.12	***	0.89	0.093	***	0.93	0.069	***
Variance ratio		0.66			0.63			0.78			0.64	
Log likelihood		-302.15			-301.59			-256.69			-267.34	
AIC test		634.3			633.18			543.88			564.69	
BIC test		687.2			686.12			596.32			617.63	
n. of obs.		252			252			252			252	

***, **, * mean significance at 1, 5 and 10%, respectively.

Table 7. Determinants of FDI in SE regions: Manufacturing FDI

	Manufacturing FDI						Low-tech manufacturing FDI						High-Tech manufacturing FDI					
	Spatial lag			Spatial error			Spatial lag			Spatial error			Spatial lag			Spatial error		
	Coeff.	Std. Err.	Sig.	Coeff.	Std. Err.	Sig.	Coeff.	Std. Err.	Sig.	Coeff.	Std. Err.	Sig.	Coeff.	Std. Err.	Sig.	Coeff.	Std. Err.	Sig.
Market accessibility	0.13	0.052	**	0.17	0.06	***	0.24	0.058	***	0.27	0.064	***	0.34	0.064	***	0.38	0.066	***
GDP growth rate	0.06	0.016	***	0.07	0.018	***	0.05	0.025	**	0.06	0.028	**	0.04	0.026		0.04	0.028	
Labour cost	-0.13	0.056	**	-0.12	0.061	**	-0.19	0.089	**	-0.19	0.093	**	0.09	0.073		0.11	0.073	
Low-Tech man. Sectors	8.72	2.382	***	8.5	2.39	***	13.04	2.88	***	12.99	2.895	***	9.62	3.352	***	9.19	3.366	***
High-Tech manuf. Sectors	-3.84	2.318	*	-5.68	2.61	**	1.63	4.49		0.43	4.74		12.98	3.481	***	11.73	3.492	***
high skilled labour force	4.54	1.275	***	5.85	1.43	***	0.84	1.707		1.9	1.825		3.08	1.677	**	4.05	1.802	**
Business services	0.94	1.395		-0.01	1.5		6.69	1.925	***	5.82	2.017	***	3.51	1.83	*	2.69	1.871	
quality of governance	0.16	0.096	*	0.22	0.107	**	0.09	0.141		0.11	0.15		0.09	0.127		0.15	0.132	
Italy	-0.14	0.227		-0.25	0.263		-1.06	0.32	***	-1.25	0.357	***	-0.68	0.314	**	-0.80	0.348	**
Spain	-0.19	0.191		-0.45	0.222	**	-0.14	0.261		-0.01	0.297		-0.28	0.28		-0.47	0.308	
Greece	-1.079	0.281	***	-1.42	0.338	***	1.6	0.343	***	1.58	0.374	***	0.38	0.372		0.17	0.403	
Portugal	-1.04	0.362	***	-1.30	0.377	***	0.17	0.256		-0.25	0.304		0.1	0.235		-0.001	0.256	
constant	-0.59	0.607		0.92	0.674		-01.23	0.954		-1.32	0.866		-3.39	0.94	***	-1.70	0.796	**
rho/lamba	0.91	0.079	***	0.9	0.09	***	0.79	0.183	***	0.95	0.993		0.63	0.243	***	0.74	0.246	***
R-squared/Variance ratio		0.63			0.52			0.44			0.4			0.52			0.49	
Log likelihood		-257.64			-265.09			-317.03			-327.80			-315.03			-315.50	
AIC test		545.27			560.19			682.76			685.60			660.05			661.01	
BIC		598.21			613.13			685.60			738.30			712.39			713.34	
n. of obs.		252			252			248			248			242			242	

***, **, * mean significance at 1, 5 and 10%, respectively.

Table 8. Determinants of FDI in SE regions: Services FDI

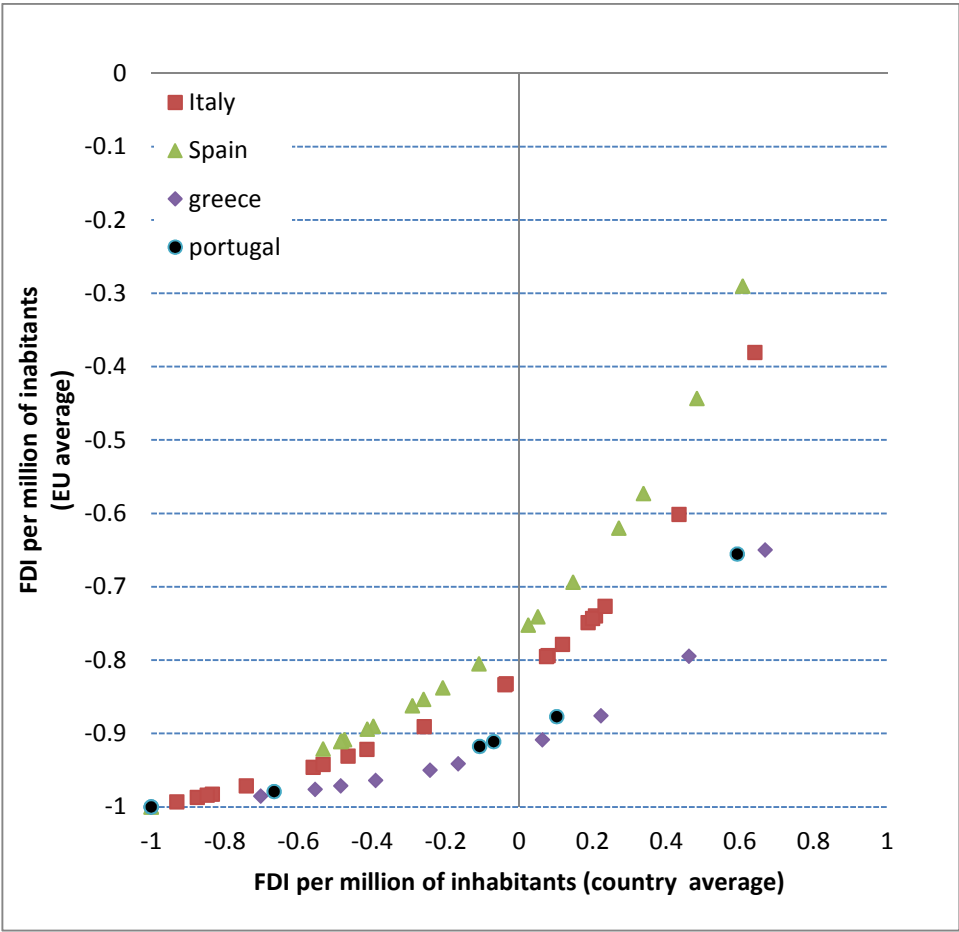
	Services FDI			Business services FDI		
	Spatial error			OLS		
	Coeff.	Std. Err.	Sig.	Coeff.	Std. Err.	Sig.
Market accessibility	0.33	0.058	***	0.49	0.06	***
GDP growth rate	0.12	0.019	***	0.08	0.023	***
Labour cost	-0.10	0.06		0.21	0.091	**
Low-Tech man. Sectors	9.3	2.711	***	6.27	3.071	**
High-Tech manuf. Sectors	-9.74	3.469	***	7.55	4.223	*
high skilled labour force	9.46	1.542	***	5.34	1.674	***
Business services	4.71	1.407	***	8.51	1.748	***
quality of governance	0.39	0.109	***	0.4	0.128	***
Italy	-0.79	0.297	***	-1.89	0.313	***
Spain	-0.164	0.251		-0.52	0.254	**
Greece	-0.64	0.425		1.08	0.434	**
Portugal	-1.00	0.464	**	-0.29	0.276	
constant	-0.26	0.743		-4.14	0.926	***
rho/lamba	0.85	0.144	***	-	-	
R-squared/Variance ratio		0.71			0.76	
Log likelihood		-304.78				
AIC test		641.62				
BIC		639.56				
n. of obs.		252			252	

***, **, * mean significance at 1, 5 and 10%, respectively.

Table 9. Actual vs. Predicted FDI in the EU.

FDI	EU	SE	Greece	Italy	Portugal	Spain	Specification
All	1.01	1.03	1.05	1.00	1.12	1.02	SAR
Extra EU	0.94	0.87	0.54	0.94	1.12	0.93	SAR
Intra EU	1.05	1.09	1.11	1.05	1.21	1.07	SEM
Manufacturing	1.08	1.16	1.18	1.07	1.46	1.11	SAR
Low-Tech sectors	1.02	1.03	1.03	1.01	1.04	1.04	SAR
High Tech sectors	1.01	0.99	1.03	0.99	1.02	0.96	SAR
Services	1.28	2.16	5.97	0.98	1.18	1.03	SEM
Business services	0.95	0.82	0.07	0.46	1.12	0.92	OLS

Figure 1. The relative attractiveness of SE regions



Source: Own calculation from FDIRegio database.

Statistical Annex

Table A1. Sectoral disaggregation of FDI

description	Nace Rev. 1 code
<i>Primary sectors:</i>	
Agriculture, hunting and forestry; fishing	AB
<i>Manufacturing sectors:</i>	
	C
Manufacture of food products, beverages and tobacco (Low Tech)	DA
Manufacture of textiles, clothing and leather (Low Tech)	DB-DC
Manufacture of wood and wooden furniture (Low Tech)	DD
Manufacture of paper, publishing, and printing (Low Tech)	DE
Manufacture of coke, refined petroleum products and nuclear fuel; manufacture of chemicals, chemical products and manmade fibres (High Tech)	DF-DG
Manufacture of rubber and plastic	DH
Manufacture of non-metal products	DI
Manufacture of metal and metal based products	DJ
Manufacture of machinery and equipment	DK
Manufacture of electrical and electronics, precision instruments (High Tech)	DL
Manufacture of automobile and other transport equipment	DM
Other manufacturing n.e.c. (Low Tech)	DN
<i>Services sectors:</i>	
Wholesale and retail trade	G
Hotels and restaurants	H
Transport, storage and communication (Business services)	I
Financial intermediation (Business services)	J
Real estate, renting and business activities (business services)	K
Public administration and defence, compulsory social security	L
Education	M
Health and social work	N
Other personal services	OP

Table A2. Spatial diagnostics: all specifications

	Spatial error				Spatial lag			
	LM		Robust LM		LM		Robust LM	
	coeff.	sig.	coeff.	sig.	coeff.	sig.	coeff.	sig.
All FDI	13.49	***	4.84	**	13.21	***	4.56	**
Extra-EU FDI	28.26	***	6.29	**	55.70	***	33.73	***
Intra-EU FDI	16.36	***	7.77	***	10.17	***	1.57	
Manuf. FDI	18.36	***	0.41		41.08	***	23.13	***
Low-Tech FDI	6.47	**	0.00		11.59	***	5.12	**
High-tech FDI	4.01	**	0.41		5.33	**	1.73	
Services FDI	10.74	***	5.81	**	6.37	**	1.44	
BS FDI	0.84		0.42		0.58		0.16	

***, **, * mean significance at 1, 5 and 10%, respectively.