Chapter 6
Patterns of Foreign Direct Investment in Southern European Periphery

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6.1 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 European Union (EU) boundaries, have made the 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 consistency of FDI stocks, whose amount has reached impressive figures in the last decades, is a proof of the EU attractiveness (Eurostat 2013).

Despite that, the distribution of FDI across the EU 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 second, does it depend on regional characteristics or on country characteristics?

One explanation for this fact is that SE regions 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 of SE regions to attract FDI 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

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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 levels 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 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 are 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 annual flows in order to minimize excessive fluctuations in the FDI variable and avoid single counting.[2] Moreover, the period ends in 2007 since this work aims to isolate the structural factors that affect regions' attractiveness rather than to understand 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 less FDI than other regions within specific Southern European countries.[3] However, a single country perspective does not allow for considering 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

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

[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 the analysis of factors driving FDI at regional level.

[3]Basile et al. (2005), Bronzini (2004), Mariotti and Piscitello (1995) analyzed the distribution of foreign firms across Italian regions, while Mota and Brandao (2001), Barbosa et al. (2004) and Guimarães 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 Rodrıguez and Pallas (2008), while Jordaan and Monastiriotis (2011) and Petrakou (2013) deals with the attractiveness of Greek regions.

only within but also across countries (Basile et al. 2009; Crozet et al. 2004; Pusterla and Resmini 2007).

This contribution is organized in five sections. The second 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.

6.2 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 promoting inflows of FDI into these regions.

The data presented in Table 6.1 shows that Southern Europe attracted very few foreign companies: only 33 per million of inhabitants.[4] This number is below the EU average (225 foreign firms per million of inhabitants) and very far from the average of Central and Eastern European regions, which have attracted a lot of foreign companies since the beginning of their transition towards market economy and the EU. If one considers extra-EU foreign firms only, SE regions are even more unattractive, with only 6 firms per million of inhabitants. Table 6.1 also indicates that Southern Europe is not a homogenous area and that the capacity to attract FDI varies considerably across countries. Spain is the best performer, with about 40 foreign firms per million of inhabitants, followed by Italy and Portugal. Greece ranks last, with only 15 foreign firms per million of inhabitants.

Table 6.1 FDI in Southern Europe (number of foreign firms per million of inhabitants)

	FDI	Intra EU	Extra EU
EU26	224.83	149.40	75.43
Eastern Europe	402.81	276.52	126.29
Southern Europe	33.72	28.07	5.65
Greece	14.83	13.21	1.62
Italy	30.94	25.38	5.56
Portugal	20.54	19.97	0.57
Spain	45.43	37.41	8.02

Source: FDIRegio database

[4]Numbers of newly created foreign firms have been normalized by population in order to eliminate the size effect, according to which larger countries are able to attract more firms than smaller ones. In so doing, figures showed in Table 6.1 are directly comparable.

Table 6.2 FDI in Southern Europe by sector (percentages)

	Southern Europe			All EU 26		
Sectors	All	Intra-EU	Extra-EU	All	Intra-EU	Extra EU
Primary	1.12	1.23	0.57	1.06	1.08	1.01
Manufacturing	33.52	33.18	35.19	18.63	20.69	14.56
Energy and construction	5.23	5.65	3.13	4.15	5.10	2.28
Services	60.13	0.60	0.61	76.16	73.13	82.15
Total	100.00	100.00	100.00	100.00	100.00	100.00

Source: FDIRegio database

At the sectoral level, further heterogeneity emerges. Generally speaking, 60% of foreign affiliates in Southern Europe operate in the services sectors; another 34% in the manufacturing sectors and the remaining share in primary and energy and construction sectors (Table 6.2). This distribution only partially reflects patterns of FDI into the EU26. As indicated by the last three columns of Table 6.2, the share of FDI projects in the services sectors is now larger (about 76%), while that of FDI projects in manufacturing is smaller (below 20%). Two other interesting features are worth mentioning: First, the share of extra-EU FDI projects in service sectors reached 82%. Secondly, extra-EU FDI in manufacturing represents about 35% of total FDI projects in Southern Europe but only 14% in the EU26. As for intra-EU foreign firms, these shares amount to 33% and 21% respectively. Overall, these patterns suggest that SE regions are, on the one hand, more attractive for manufacturing rather than services FDI; on the other hand, extra- and intra-EU foreign investors may have different motivations for investing in the EU and mainly in Southern European regions. The lesser attractiveness of SE regions for foreign services providers may be due to their peripheral position within the EU, while the preference granted to them by foreign manufacturer may reflect cost-advantages, which are at the core of location decisions of vertically integrated foreign firms.[5]

By crossing the geographical and sectoral dimensions other interesting features emerge. Table 6.3 reports the Index of Specialization (SPI) of inward FDI in primary, manufacturing, services activities, and energy and construction. The SPI of FDI is given by:

[5]The theory of FDI usually distinguishes four types of FDI: (i) horizontal FDI, which occurs when a firm is interested in exploiting foreign markets; (ii) vertical FDI, which occurs when firms fragment different stages 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 to gain access to advanced technologies, skills and other production capabilities in foreign locations. See Barba Navaretti and Venables (2004) and Iammarino and McCann (2013) for a thorough discussion of these and other theoretical issues related to multinational enterprises.

Table 6.3 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
Services	0.90	1.03	0.64	0.82	0.79
Energy and construction	1.46	0.73	0.82	3.44	1.26
(Southern Europe only)					
Primary	1.34	1.08	0.69	0.41	–
Manufacturing	0.70	0.51	1.41	0.69	–
Services	1.14	1.31	0.81	1.03	–
Energy and construction	1.16	0.58	0.65	2.73	–

Source: Own calculation from FDIRegio database

$$SPI_{sc} = (FDI_{sc}/\Sigma_s FDI_{sc})/(\Sigma_c FDI_{sc}/\Sigma_s \Sigma_c FDI_{sc}) \quad (6.1)$$

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 6.3) and Southern Europe average (bottom panel of Table 6.3) 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 fewer foreign firms than the EU—or Southern Europe as whole—in each of the reported sectors. By definition, the average value of the index for a particular sector in the EU (Southern Europe) is 1; therefore, values greater (or lower) than 1 indicate that country *c* shows a concentration of FDI in sector *s* above (or below) the EU (or Southern Europe) average.

Table 6.3 confirms that Southern European countries attract relatively more FDI in production rather than in services activities. Only Spain and Greece show an SPI of inward FDI above the EU average in the primary sector, while Italy seems to be more attractive than other EU countries in manufacturing rather than in services, as indicated by the respective SPIs.

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 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 Fig. 6.1 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 simultaneously considering each region's capacity to attract FDI relative to both the EU and the respective country average, four different groups of regions can be identified:

[6]SPIs shown in Fig. 6.1, have been computed using the number of foreign firms per million of inhabitants in order to capture the size effect. Then, they have been normalized by the EU average and the corresponding national averages in order to make it easier to compare across regions both within and across countries. This implies that the SPI varies between –1 and +1. It assumes the value of zero when a region hosts the same number of foreign firms per million of inhabitants as the EU or the corresponding national average.

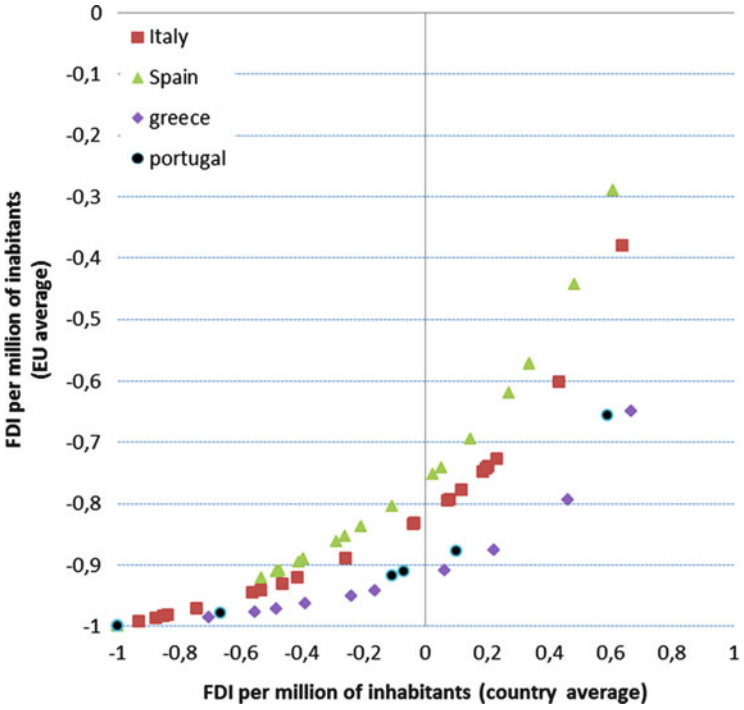

Fig. 6.1 The relative attractiveness of SE regions. Source: Own calculation from FDIRegio database

1. Regions performing better than the respective national mean and the EU mean. Southern 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 underperform compared with the EU mean. 38 out of 60 SE regions are included in this group.

It is clear that all SE regions are less competitive than other EU regions, since none of them performs better than the EU average. Despite that, some regions have attracted a number of foreign firms per million of inhabitants above their respective national averages. These regions are those hosting the capital cities or the most important industrial centres in their own countries. Once again, a clear distinction emerges between Spain and Italy, which are closer to the EU average than Greece

Table 6.4 Drivers of FDI in the EU regions

Variables	Description	Source
Demand side variables		
GDP growth rate	% change in real regional value added (2002–2004)	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 (2004)	Eurostat (GDP) DGRegio (bilateral distances)
Supply side variables		
Labour cost	Annual labour cost (average): salaries and wages (excluding apprentices and trainees) (2004)	Eurostat
Quality of governance	EU regional quality of governance index (2009). It ranges from zero (low quality) to 100 (high quality)	Charron et al. (2010)
Labour productivity	Value added per employee (2004)	Eurostat
Agglomeration variables		
Manufacturing size	Share of regional value added generated by manufacturing sectors	Eurostat
High skills	Corporate manager (ISCO-88/12) and professionals and scientists (ISCO-88/2) employment share on total regional employment (2004)	DGRegio
Agglomerated regions	Dummy variable, taking value of 1 for the agglomerated regions (city with >300,000 inhabitants and population density of about 150–300 inhabitant per km^2) and zero otherwise	Espon
Capital city	Dummy variable equals to one if the region includes the national capital and zero otherwise	

and Portugal. The next section is devoted to explain factors underlining these potential cross-geographical and cross-sectoral differences.

6.3 The Attractiveness of Regions: Methodology

Table 6.4 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; Guimarães et al. 2000) 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 2004). Since it is likely that a foreign firm considers 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 Navaretti 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; Figueiredo et al. 2002; Holl 2004a, b; 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 need for a workforce that is not only cheap but also skilled has also been discussed in several studies. Therefore, this research also includes labour productivity, measured by gross value added per employees, among the explanatory variables. FDI inflows are expected to be large in regions where labour costs are low and labour productivity is high. 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.

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 relate 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, 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 positively value a location that allows them to reap the benefits of 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, two variables have been added: (i) the size of the manufacturing sector in total value added as a proxy for

localization externalities; (ii) the share of corporate managers and professionals and scientists in total regional employment as a proxy for urbanization economies. Furthermore, two dummy variables have been included to control for urbanization. The first takes the value of 1 if the region hosts a city with more than 300,000 inhabitants and shows a population density of about 150–300 inhabitant per squared kilometre and zero otherwise. The second dummy, instead, takes the value of 1 only if the region hosts the national capital.

All these explanatory variables refer to 2004. This reflects, on the one hand, 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. Table 6.8 in the Statistical Annex reports descriptive statistics of exogenous and endogenous variables for the whole sample and for SE regions.

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 or 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. Furthermore, a change in any of the exogenous variables at any location will be transmitted to all other locations. This implies that changes in the location advantages in one region will affect FDI inflows not only in that location but also in neighbouring locations. The spatial error model, instead, accounts for the presence of spatially correlated omitted variables; that is, it tells us whether and to what extent a shock to FDI in a location spills over neighbouring locations.

Many factors 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

[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.

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 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.

6.4 Results

6.4.1 Full Sample and European Vs. Non-European Sub-samples

In Table 6.5 we first assess the role of regional characteristics in attracting FDI in EU regions (column 1).[8] All coefficients have the expected sign, although they are not always statistically significant. In particular, the positive coefficients associated to market accessibility and growth prospect suggest that foreign firms concentrate where demand is high and dynamic, while the negative coefficient of the labour cost variable indicates that high wages discourage FDI. Costs advantages seem to be more important than productivity, which is not significant at the conventional levels. Agglomeration economies, instead, matter as indicated by the positive and significant coefficients of the manufacturing size and high skill variable, while urbanization is not among the drivers of FDI inflows. As expected, the quality of the local governance is also an important determinant of location.

[8]The dependent variable is the number of newly created foreign firms per million of inhabitants established in each EU26 NUTS2 region during the period from 2005 to 2007.

Table 6.5 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	0.071	***	0.25	0.070	***	0.25	0.069	***	0.17	0.065	***	0.22	0.072	***
GDP growth rate	0.13	0.020	***	0.13	0.019	***	0.13	0.017	***	0.09	0.018	***	0.11	0.019	***
Labour cost	−0.22	0.075	***	-0.18	0.071	*	−0.16	0.069	**	−0.18	0.061	***	−0.16	0.066	**
Labour productivity	0.15	0.169		0.38	0.174	**	0.38	0.190	**	0.39	0.173	**	0.38	0.188	**
Manufacturing size	9.95	2.727	***	9.95	2.600	***	9.44	2.594	***	8.81	2.522	***	8.93	2.496	***
High skills	11.88	1.727	***	9.95	1.556	***	9.79	1.489	***	7.29	1.362	***	9.43	1.505	***
Agglomerated regions	0.18	0.153		0.19	0.154		0.16	0.153		0.20	0.141		0.18	0.147	
Capital city	0.08	0.251		0.08	0.249		0.09	0.250		0.43	0.256	*	0.15	0.263	
Quality of governance	0.47	0.095	***	0.23	0.122	**	0.17	0.147		0.09	0.131		0.17	0.143	
SER	–	–		−0.68	0.213	***	–	–	–	–	–	–	–	–	
Italy	–	–		–	–		−0.72	0.343	**	−0.64	0.308	**	−0.78	0.343	**
Spain	–	–		–	–		−0.28	0.191		−0.17	0.186		−0.36	0.209	*
Greece	–	–		–	–		−0.94	0.442	**	−1.04	0.336	***	−1.30	0.398	***
Portugal	–	–		–	–		−1.36	0.359	***	−1.01	0.430	**	−1.12	0.472	**
Constant	0.44	1.401		−1.68	1.525		−1.84	1.719		−4.34	1.582	***	−1.76	1.693	
rho/lamba	–	–		–	–		–	–		0.82	0.142	***	0.87	0.122	***
R-squared/Variance ratio		0.66			0.68			0.69			0.71			0.65	
Log likelihood											−292.46			−295.53	
AIC test		–			–			–			616.92			623.05	
BIC		–			–			–			673.38			679.53	
n. of obs.		252			252			252			252			252	

***, **, * indicate significance at 1, 5 and 10%, respectively

After having defined the factors driving FDI inflows at the regional level, the capacity of SE regions to attract fewer or more foreign firms than other EU regions with similar observable characteristics has been investigated (column 2 of Table 6.5). 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*, fewer foreign firms than other EU regions with similar structural characteristics. It is interesting to note that, in this case, the coefficient of the labour productivity variable turns out to be significant. Alternatively, a dummy for each Southern European country has been considered (column 3). The findings indicate that only Spanish regions seem to be as attractive as other EU regions with similar characteristics, as indicated by the estimated coefficient, which is negative but not significant. Therefore, one can conclude that country specific effects affect the attractiveness of SE regions. It is worth noting that when country-specific fixed effects are included in the regression equation, the quality of governance becomes insignificant. This result depends on the fact that SE regions show the lowest quality of governance of the EU (see Table 6.8 in the Statistical Annex).

The results presented up to now may not be accurate because of the presence of spatial effects. Spatial diagnostics (see Table 6.9 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 6.5, respectively. On the basis of the tests reported in the bottom of the table—i.e., the R^2, the log-likelihood and the AIC and BIC tests—spatial lag specification seems to be the most appropriate. As far as the standard FDI determinants are concerned, the results are robust to the inclusion of the spatial effects and are in line with the underlying theory. Moreover, the capital city dummy also displays some significance, indicating that regions hosting national capitals collect more foreign firms than other regions.

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 from 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 6.6 shows the results of the spatial models only since these specifications are to be preferred over the OLS estimations (see spatial diagnostics in Table 6.9 in the Statistical Annex).

[9] As explained in the previous section, spatial patterns of FDI reflect the motivations at the base of the decision to undertake foreign investments. Researchers do not observe these motivations.

Table 6.6 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	0.16	0.065	**	0.21	0.071	***	0.18	0.072	**	0.25	0.082	***
GDP growth rate	0.08	0.018	***	0.09	0.20	***	0.09	0.019	***	0.11	0.021	***
Labour cost	−0.20	0.065	***	−0.18	0.069	**	−0.03	0.058		−0.004	0.057	
Labour productivity	0.46	0.176	***	0.44	0.189	**	0.08	0.178		0.07	0.195	
Manufacturing size	9.49	2.547	***	9.56	2.519	***	0.82	1.979		1.05	2.022	
High skills	6.57	1.409	***	8.59	1.538	***	8.75	1.312	***	10.20	1.535	***
Agglomerated regions	0.18	0.145		0.17	0.149		0.25	0.120	**	0.20	0.130	
Capital city	0.48	0.252	*	0.21	0.260		0.20	0.236		−0.08	0.250	
Quality of governance	0.05	0.096		0.12	0.144		0.15	0.118		0.23	0.130	*
Italy	−0.71	0.323	**	−0.85	0.357	*	−0.23	0.243		−0.39	0.281	
Spain	−0.15	0.189		−0.32	0.215		−0.27	0.189		−0.51	0.217	**
Greece	−0.97	0.329	***	−1.19	0.391	***	−0.67	0.259	**	−0.99	0.331	***
Portugal	−0.91	0.417	**	−1.01	0.458	**	−0.71	0.268	***	−0.81	0.321	**
Constant	−0.98	0.912		−2.21	1.718		−2.83	1.529	*	−1.52	0.769	**
rho/lambda	0.72	0.192	***	0.87	0.119	***	0.87	0.105	***	0.93	0.078	***
Variance ratio		0.66			0.60			0.78			0.64	
Log likelihood		−301.24			−303.59			−260.61			−268.37	
AIC test		634.47			639.19			553.22			568.73	
BIC test		639.19			695.67			568.73			625.20	
n. of obs.		252			252			252			252	

***, **, * indicate significance at 1, 5 and 10%, respectively

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 smaller set of location advantages, compared to intra-EU FDI. In particular, extra-EU FDI is sensitive to demand side variables, as well as to urbanization effects. Moreover, non-EU foreign investors perceive only Portuguese and Greek regions as less attractive than other EU regions, all other things being equal.

Overall the estimation results in Tables 6.5 and 6.6 allow us 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. Italian regions are perceived as less attractive than other EU regions only by intra-EU foreign investors;
- The bad quality of the institutions seems to be the most relevant factor at the base of the relative unattractiveness of SE regions.
- 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 specific skills and an environment conducive for business;
- Intra-EU foreign firms follow a more complex pattern, being in search of a combination of relatively low production costs, good market access, and agglomeration economies.

6.4.2 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 between the manufacturing and services sectors. Table 6.7 shows the results.

The findings confirm the existence of spatial patterns of FDI. In particular, the spatial lag specification seems appropriate to explain patterns of location of both manufacturing and services foreign firms (see Table 6.9 in the Statistical Annex), although for different reasons. Manufacturing firms are usually vertically integrated and significant flows of intermediates may occur among them. Location choices are not independent because of the need to minimize transportation costs. On the opposite side, the spatial distribution of foreign services suppliers is conditioned by proximity to clients given the non-tradability of several services. Therefore, they locate close to the richest markets, which, however, are spatially concentrated.

Table 6.7 Determinants of FDI in SE regions: Services vs. manufacturing FDI

	Services						Manufacturing		
	Spatial lag			Spatial error			Spatial lag		
	Coeff.	Std. Err.	Sig.	Coeff.	Std. err.	Sig.	Coeff.	Std. err.	Sig.
Market accessibility	0.22	0.068	***	0.27	0.074	***	0.07	0.057	
GDP growth rate	0.10	0.019	***	0.12	0.019	***	0.07	0.016	***
Labour cost	−0.14	0.062	**	−0.11	0.066	*	−0.20	0.062	***
Labour productivity	0.39	0.181	**	0.39	0.192	**	0.43	0.164	****
Manufacturing size	6.77	2.653	**	6.86	2.605	***	9.19	2.221	***
High skills	8.28	1.423	***	10.55	1.543	***	4.89	1.189	***
Agglomerated regions	0.25	0.143	*	0.22	0.147		0.13	0.131	
Capital city	0.58	0.281	**	0.29	0.280		−0.09	0.194	
Quality of governance	0.13	0.129		0.20	0.137		−0.19	0.126	
Italy	−0.86	0.322	***	−1.02	0.351	***	−0.47	0.285	
Spain	−0.181	0.215		−0.34	0.241		−0.29	0.180	*
Greece	−0.77	0.352	**	−0.99	0.415	**	−1.28	0.268	***
Portugal	−0.82	0.381	**	−0.87	0.418	**	−0.90	0.354	**
Constant	−0.26	0.743		−3.01	1.709	*	−6.24	2.301	***
rho/lamba	0.71	0.181	***	0.86	0.138	***	0.91	0.078	***
R-squared/Variance ratio		0.73			0.68			0.64	
Log likelihood		−307.93		−309.03			−254.74		
AIC test		647.86			650.06			541.47	
BIC		704.33			705.52			597.94	
n. of obs.		252			252			252	

***, **, * indicate significance at 1, 5 and 10%, respectively

More importantly, 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 urbanization, which is, as expected, able to attract FDI in services but not in manufacturing. Moreover, manufacturing FDI responds more to supply side rather than to demand side location advantages, while the opposite occurs in the sub-sample of FDI in services.

The sectoral disaggregation confirms the relative unattractiveness of SE regions, with one not surprising exception. Italian regions are not less attractive than other EU regions in the sub-sample of manufacturing FDI. This result is consistent with the empirical evidence shown in Sect. 6.2.

6.5 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 was 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 between manufacturing and services foreign firms. Labour costs negatively affect FDI in all sectors, although they are not relevant for extra-EU foreign investors. The degree of urbanization exerts effects on inflows of FDI in the services sectors, while agglomeration economies are relevant for any kind of FDI.

Another interesting feature highlighted by the empirical analysis is the existence of spatial patterns in the distribution of FDI across EU regions, an issue not always considered in the analysis of the determinants of FDI. Spatial spillovers do exist and reflect the vertical organization characterising manufacturing production processes as well as the importance of agglomeration economies among foreign services providers, who consider the presence of other foreign suppliers in neighbouring regions as a signal of a business environment conducive for foreign investments. Moreover, it is important to bear in mind that spatial patterns of FDI in services are also affected 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; therefore, they cluster in core rather than peripheral regions.

The capacity of Southern European regions to attract FDI is, *ceteris paribus*, below the EU average. The least attractive regions are those belonging to Greece and Portugal, while Spanish regions are, generally speaking, perceived as attractive as other EU regions. As for Italian regions, their perceived unattractiveness seems to be limited to services FDI and intra-EU foreign investors.

This simple analysis suggests some preliminary conclusions about the causes of SE regions' FDI shortfall: the quality of local governance is not only very poor in these regions, but it seems also to reflect that of national institutions. This consideration is suggested by the behaviour of the quality of governance variable and country-specific dummies. The former, in fact, turns out to be insignificant when the latter are included in the regression equations.

Some policy implications can be drawn from these preliminary results, mainly for SE countries: in order to attract a high and sustainable level of FDI, the quality of local and national institutions should be reinforced and improved.

This basic empirical analysis leaves some questions open for further investigations. It particular, two policy issues are worth taking into consideration: the impact of the EU Cohesion policy and the effects of the Barcelona declaration and other neighbourhood 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 (Ekholm and Forslid 2001; 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.

Statistical Annex

Table 6.8 Descriptive statistics

Variable	Obs.	Mean	Std. dev.	Min	Max
SE regions					
Market accessibility	57	2.7753	0.9670	1.2724	5.3234
GDP growth rate	57	2.0579	2.0092	−2.9000	8.1000
Labour cost	57	10.2549	0.2686	9.6289	10.6435
Labour productivity	57	10.4829	0.2977	9.7271	10.9821
Manufacturing size	57	0.0594	0.0302	0.0041	0.1386
High skills	57	0.1256	0.0311	0.0404	0.1999
Agglomerated regions	57	0.2807	0.4533	0.0000	1.0000
National capital	57	0.0702	0.2577	0.0000	1.0000
Quality of governance	57	−0.5554	0.7513	−2.5350	0.6346
All FDI	57	2.5022	1.2580	0.0000	4.8349
Extra-EU FDI	57	0.9565	0.9064	0.0000	3.3576
Intra-EU FDI	57	2.3887	1.2158	0.0000	4.5861
FDI in services sectors	57	1.9026	1.2548	0.0000	4.6564
FDI in manufacturing sectors	57	1.8315	1.0606	0.0000	3.8017
All sample					
Market accessibility	252	3.1049	1.3036	0.0000	8.4500
GDP growth rate	252	3.5607	2.8104	−2.9000	13.3186
Labour cost	252	10.1073	1.2003	5.5928	11.0751
Labour productivity	252	10.4661	0.6707	7.7962	11.8484
Manufacturing size	252	0.0599	0.0228	0.0041	0.1386
High skills	252	0.1676	0.0503	0.0404	0.3444
Agglomerated regions	252	0.2619	0.4405	0.0000	1.0000
National capital	252	0.0913	0.2886	0.0000	1.0000
Quality of governance	252	0.2893	0.9260	−2.5350	1.6949
All FDI	252	3.9475	1.4479	0.0000	8.5462
Extra-EU FDI	252	2.3460	1.4810	0.0000	7.9732
Intra-EU FDI	252	3.7240	1.3870	0.0000	7.7169
FDI in services sectors	252	3.4349	1.5790	0.0000	8.4618
FDI in manufacturing sectors	252	2.9810	1.1452	0.0000	6.0339

Table 6.9 Spatial diagnostics: all specifications

	Spatial error				Spatial lag			
	LM		Robust LM		LM		Robust LM	
	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.
All FDI	14.16	***	3.17	*	18.75	***	7.76	***
Extra-EU FDI	22.22	***	5.01	**	40.64	***	23.43	***
Intra-EU FDI	15.87	***	3.63	*	18.03	***	5.79	**
FDI in Manufacturing industries	15.76	***	0.10		39.01	***	23.35	***
FDI in Services sectors	11.85	***	4.06	**	11.90	***	4.11	**

***, **, * indicate significance at 1, 5 and 10%, respectively

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