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Varna and Thessaloniki**

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**SMALL AND MEDIUM-SIZED FIRMS' COMPETITIVENESS AND TERRITORIAL  
CHARACTERISTICS/ASSETS:  
THE CASES OF BARI, VARNA, AND THESSALONIKI<sup>1</sup>**

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**Abstract**

*The paper investigates the importance of territorial characteristics/assets (i.e. agglomeration economies, urban infrastructure, factors of labor and cost, development policies, qualitative factors, inter alia) on small- and medium-sized firms' competitiveness. The analysis uses primary data from 374 small- and medium-sized firms located in Bari (Italy), Varna (Bulgaria) and Thessaloniki (Greece). These firms operate in the sectors of industry, commerce and services. Through the use of exploratory factor analysis and econometric analysis, the importance of particular factors for the competitiveness of firms has been analyzed, coming out in valuable conclusions not only for the firms and the areas considered but also for firms and areas with similar characteristics.*

**Key-Words:** *firms' competitiveness, territorial characteristics/assets, exploratory factor analysis, econometric analysis*

**JEL:** *O18, R5, R11*

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## 1. INTRODUCTION

There are two basic theories of strategic management, the Resource-Based View and the Industrial Organization Theory, which focus on the investigation of firms' competitiveness. The first one refers to the internal environment of firms and their abilities and resources to be competitive (Barney, 2001; Wernerfelt, 1984). The second one focuses on the external dynamics of firms' environment that affect their competitiveness (Porter, 2000) and their ability to design strategically and to be effective (McLarney, 2001; Mukherji and Hurtado, 2001). Among the forces of the external environment, (the combination of) territorial characteristics/assets (such as agglomeration economies, urban infrastructure, factors of labor and cost, development policies, qualitative factors) is of extreme importance (Deas and Giordano, 2001; Maskell and Malmberg, 1999). Several studies, most of them by using statistical, econometric and correlation analysis, measure firms' competitiveness at the international level. For instance, Bargegil and Modrego (2009) using sample of 2,357 firms in Spain, measure Impact of R&D organizations on medium-sized firms, Bayyurt and Duzu (2008) present a comparison of the relative efficiencies of manufacturing firms in China and Turkey, Kumar and Chadee (2002) evaluate the competitiveness of Asian manufacturing firms, while Parida (2008) using a sample of 1,471 ICT, conceptualize the dynamic capabilities, studied the influence of ICT in related small Swedish firms. Finally, Henderson and Cockburn (1994), through econometric and structural interviews, measure firms' productivity and the nature of competencies in pharmaceutical firms

By taking into consideration that the supply of a favorable business environment is crucial for both the attraction of new investments and the development of the existing ones, the paper, using the Exploratory Factor Analysis (EFA), focuses on the evaluation of the impact of territorial characteristics/assets on 374 small- and medium-sized firms (SMEs), located in Bari (Italy), Varna (Bulgaria) and Thessaloniki (Greece), operating in the sectors of industry, commerce and services. The impact of the factors identified from the application of the EFA on the overall firms' competitiveness is assessed econometrically (multiple regression analysis). The contribution of the paper is of twofold importance: a) the findings come from a primary research; b) the relationship between local business environment and competitiveness has not been studied enough in the areas under consideration.

The next section of the paper presents literature review and in particular the variables (factors) under consideration as well as the corresponding sources. The third section describes the research profile and the methodology. The fourth sector presents the results of the EFA for

firms under consideration, overall and separately for each sector. The fifth section presents the results of the econometric analysis as regards the determinants of firms' competitiveness, overall and separately for each sector. The last section of the paper offers the conclusions.

## **2. LITERATURE REVIEW: VARIABLES AND DATA SOURCES**

The majority of previous studies in the field (Herrin and Pernia, 1987; Head, Ries and Swenson, 1999; Shagqin, McCann and Oxley, 2009; Trofimenko, 2010, *inter alia*) use econometric analysis in order to identify the factors that affect the location decision of (foreign) firms. In addition, most of these studies use secondary data derived from official databases of international and European organisations, banks or national statistical services. The current study follows a methodological approach based on factor and reliability analysis but also econometric analysis, and by using primary data.

The selection of the variables (factors), which constitute criteria for firms' location in specific areas, was mainly based on the report of CEC (1993), and, also, on the empirical studies of Herrin and Pernia (1987) and Trofimenko (2010).

According to CEC report (CEC 1993), in particular, industrial firms pay more attention, comparing to the commercial/services ones, to the existence of agglomeration economies, to the geographical location, to the existence of supporting services, and to the low taxes in an area. In addition, factors associated to labor and to the existence of effective urban infrastructure (i.e. airports, ports, telecommunications) are considered important to their competitiveness. However, large commercial enterprises pay more attention to qualitative factors, to the workforce, and to economic factors that concern the size of the markets and their accessibility to customers and suppliers.

Herrin and Pernia (1987), on a basis of 34 criteria, which form 6 groups, and using primary data, on a 1 to 5 Likert scale, from 100 local and foreign firms in Philippines, found that closeness to major customers, easy road access, reliable electrical power, adequate telephone/telex services, availability of a suitable plot of land, availability of a suitable building, and adequate space for expansion are, more or less, equally important location factors for local and foreign firms.

Trofimenko (2010), using data from the World Bank's Study of Competitiveness, Technology and Firm Linkages, for 1,409 exporters and foreign-owned firms in China, examined 4 groups of location criteria. The empirical results indicated that exporters and foreign-owned firms are attracted by the size of the local market, the quality of

telecommunications, and the supply of skilled labor, while the quality of the transportation was not significant.

The aforementioned studies besides traditional economic factors, such as the size of local market, the production structure, and the labor cost, give great importance on other, non-conventional, factors, such as the quality of cultural and social infrastructure, the existence of investment support agencies as well as partnerships among local public authorities and private sector (Metaxas, 2011). This list of non-conventional factors can be enriched with input from other studies, such as D' Archy and Keogh (1999), Rogerson (1999), and Craglia *et al.* (1999), which use the variables of land use and values, quality of life, and international connections, respectively. These studies examine how firms that belong to different sectors, and located in particular areas, evaluate and exploit local and regional assets and policies in order to support their development and competitiveness.

On the basis of the discussion held previously, the literature identifies 7 groups of local/regional factors that affect firms' location decisions.

Group 1: Agglomeration Economies and Access to European Markets (Factors: proximity to customers/suppliers – market size – availability of supporting services - accessibility to national and European markets (North-West and South-East) - Presence of foreign enterprises).

(Foreign) Firms' agglomeration can accentuate the competition locally, having great impact on the competitiveness of the existing firms, while supports effectively the creation of new ones (Crozet, Mayer and Mucchielli, 2004; Nachum and Keeble, 2003; Graham, 2007). Furthermore, easy access to markets is defined as primary factor, since the new markets, at regional and national level, are places where the new products have to be promoted to the new potential consumers, directly and effectively, increasing the demand levels of these products (Doeringer, Klock and Terkla, 2004; Trofimenko, 2010). In addition, accessibility to European markets, constitutes a significant factor of economic activities' spatial re-segmentation in South Europe, and particularly in the Balkan Peninsula, (Papadaskalopoulos, Christofakis and Karaganis, 2005), providing the ability for the exploitation of opportunities in the new European and internationalised environment (Johansson and Elg, 2002).

Group 2: Regional characteristics / Policies (Factors: government attitude towards business - investments incentives - local taxes).

The role of local authorities is important since they contribute to the creation of a dynamic entrepreneurial environment, supporting the competitiveness of the existing firms but also the attractiveness of new ones (Fuller, Bennett and Ramsden, 2003; Belso-Martínez, 2009).

Furthermore, local taxes as well as a well-balanced national tax system play a crucial role in attracting foreign investments (Budryte, 2005).

Group 3: Labor (Factors: labor availability - labor quality and specialization - labor morality/ ethics - good management relationships at local level).

Firms' competitiveness is closely related to the availability and the specialization of local workforce (Keune, 2001; Trofimenko, 2010). The management of labor relationships is related directly with the existence of employees' satisfaction that derives from this work. There are a number of studies stressing the fact that the provision or the absence of motives influences the behavior of employees and, consequently, the firms' efficiency (Herzberg, Mausner and Snyderman, 1959; Locke, 1976; Parsons and Broadbridge, 2006).

Group 4: Urban Infrastructure (Factors: road/highway, train, seaport and air connections – telecommunications)

The existence of efficient transport and communication plays a crucial role on firms' competitiveness as well as on cities' development since it is strongly related with the direct distribution of goods, the easy access to markets, the decrease of transport cost and, finally, the price of the goods (Vickerman, 1996; Wheeler and Mody, 1992; EC 2003).

Group 5: Cost (Factors: cost of labor - cost of land use)

A number of studies support the importance of transport cost and land use cost on firms' decision making process for establishment (Harrington and Warf, 1995; Zhu 2000). In new economic geography models, in particular, firms seek to create new establishments in areas with lower costs (land, labor and transport) and market shares in the emergent states economically and geographically well-positioned (Disdier and Mayer, 2004; Vazquez-Rozas, 2009).

Group 6: Research – Development - Education (Factors: availability and quality of universities, research institutes and training programs)

The availability and the quality of universities and research institutes constitute a significant factor of firms' competitiveness, especially those related to technology and innovation (Doutriaux, 2003; Doutriaux and Barker, 1995). In addition, education and continuing training programs, contribute to business creativity, especially for SMEs, to the increase of their productivity and the development of innovative actions (Keune, 2001; Twomey, 2002).

Group 7: Quality of life – environment (Factors: urban aesthetic - attractiveness of physical environment)

International practice mentions cases of cities that improved their images, through the adaptation of regeneration and re-imagination policies, in order to attract investments and

specialized human resources and to award their competitive advantages, based on their particularities as competitive destinations (Hall, 1998; Hope and Klemm, 2001). Of course, there is, also, the natural environment, which constitutes one of the basic factors in firms' competitiveness (CEC 1993).

Table 1, summarizing the analysis above, presents all the variables used in the current study, taking into consideration the corresponding data sources and corresponding previous studies.

Table 1: The variables used in the current study

<b>Sources (Studies and Reports)</b>	<b>Variables (factors)</b>	<b>Method and Analysis</b>
CEC (1993) Europe (Industrial, Commercial, Services and R&D sectors)	Size of local market, Proximity to customers/suppliers, Accessibility to other national markets, Presence of foreign business, Availability of support services, Availability of strong investment incentives, Low local taxes, Government attitude towards business, Good management relationships locally, Labour morality/ethics, Labour quality and specialisation, Labour availability	Empirical research– Likert scale
Trofimenko (2010) China (1,409 export firms)	Size of local market, Availability of strong investment incentives, Sufficient train connections, Quality of local higher education, Quality of local training/continuing education, Quality of research institutes, Availability of universities or technological institutes	Econometric Analysis
Shangqin et al. (2009) New Zealand (75 local firms)	Size of local market	Empirical research, descriptive and econometric analyses
Herrin and Pernia (1987) Philippines (100 firms)	Proximity to customers/suppliers, Availability of support services, Labour availability, Sufficient air connections, Sufficient road/highway connection	Empirical research– Likert scale
Stephen Redding and Antony Venables (2004), USA counties	Accessibility to other national markets, Proximity to customers/suppliers	Econometric analysis
Papadaskalopoulos et al. (2005) Southeastern Europe	Access to European markets and networks	Statistical and econometric analyses
Johansson and Elg (2002) Sweden	Access to European markets and networks	Conceptual model
Head et. al. (1999) USA (foreign firms)	Presence of foreign business, Availability of support services	Econometric Analysis
Head and Mayer (2004), Western Europe (Japanese firms)	Proximity to customers/suppliers, market potential	Empirical research, econometric analysis
Davies (2001) South Africa	Availability of support services	Case-studies



Fuller et al. (2003) UK cities	Government attitude towards business	Empirical research, descriptive analysis, case studies
Desai, Foley and Hines, (2004) USA (multinational firms)	Low local taxes	Secondary data and econometric analysis
Devereux and Griffith, (2002), USA, UK, France and Germany	Low local taxes	Secondary data and econometric analysis
Galindo-Rueda and Haskel (2005) England (Annual Business Inquiry and Employer Skills Survey)	Labour quality and specialisation	Descriptive statistics and econometric analysis
Henderson (1986) Brazil	Labour quality and specialisation	Secondary data and econometric analysis
D'Arcy and Keogh (1999) UK cities	Low Cost of land	Econometric analysis
Glaeser, Kolko and Saiz (2001), USA cities	Urban aesthetic	Econometric analysis and case-study (Manhattan)
Marlet and van Woekerns (2005), Dutch cities	Urban aesthetic	Statistics and factor analysis

Source: Authors' elaboration

### **3. RESEARCH PROFILE AND METHODOLOGY**

The paper examines which groups of factors have major importance on firms' competitiveness, comparing industrial to commercial firms and to services firms. The studied areas were chosen by taking into account some common characteristics. Specifically: a) they belong to the Objective 1 regions of EU; b) because of their geographical position, they are very important ports in their countries; c) they are located far away from the EU decision and economic centers. Research has been done with the collection of primary data by using questionnaires. Out of 450 questionnaires (170 were sent to industrial firms, 140 were sent to commercial firms and 140 were sent to services), 374 (134, 112, and 128 respectively) were completed, 83% percentage. More specifically: a) Research in Bari and Varna took place from May, 2004 to June, 2006, and research in Thessaloniki took place 2 years later, from April 2007 to June 2008. The method of programming was preferred, instead of random interviewing, in order to sustain the chance of clarifying ambiguous questions, and to avoid "quick" and "non-skeptical" answers; b) A Likert scale from 1 to 10 (Vlasis Stathakopoulos, 2005) was used; c) The vast majority of firms (90%) had more than 30 employees; d) The vast majority of the firms responded was local (90%), something that means that the appreciation of firms is extremely important, since they are aware of the territorial environment (weaknesses and strengths) as well as of the development policies applied by the local authorities, for the benefit of the cities and the firms; e) interviews were made with high level managers and, also, business-owners; f) the selection of firms was based on data from the Commercial and Industrial Chambers of Bari, Varna and Thessaloniki. The main variable for the selection of firms was the number of employees ( $> 30$ ).

### **4. THE RESULTS OF THE EXPLORATORY FACTOR ANALYSIS FOR THE FIRMS UNDER CONSIDERATION**

EFA is a widely utilized statistical and multivariable technique in social sciences (Costello and Osborne, 2005; Chimboza and Mutandwa, 2007). EFA is employed in order to explain variability among a number ( $p$ ) of observable random variables ( $X_1, X_2, \dots, X_p$ ) in terms of a smaller number ( $k \leq p$ ) of unobservable random variables ( $\Phi_1, \Phi_2, \dots, \Phi_k$ ), called "factors" (Pison *et al.*, 2003; Wendy Cunningham and William Maloney, 1999) or "hyper-variables" (Rogerson, 2001), maintaining the maximum level of useful information. The principal component analysis (PCA) is used to apply the EFA. PCA is a tool that allows identifying underlying variables "factors" that explain the pattern of correlations within the pre-selected set of observed variables, and most of the variance observed in the initial set of variables. The

different combinations of the variables are expressed through eigenvalues (i.e. the extraction sums of square loadings). The first eigenvalue is associated with the first factor on which the variance is maximal. The second eigenvalue is associated with the second factor that maximizes the remaining variability (i.e. the variance not explained by the first factor), and so on ... The eigenvalues are chosen to be higher than 1.000 because otherwise the variance of their errors is, almost, non-interpretable.

Tables 2, 3, 4, and 5 present the total variance explained, comparing to the original variables, for all firms under consideration and, separately, for the firms of each sector. For all firms under consideration, the first 8 hyper-variables extracted under the PCA method present eigenvalues higher than 1.000 and explain the 71.580% of the variance of the original variables. For the industrial, commercial and services firms, in particular, the first 7, 7, and 9 hyper-variables, respectively, extracted under the PCA method, present eigenvalues higher than 1.000 and explain the 70.760%, the 73.691%, and the 69.621%, respectively, of the variance of the original variables. In all cases, these proportions can be considered to be quite satisfactory.

Table 2: Total variance explained, under the PCA method, for all firms under consideration (n=374)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	Variance	Cumulative	Total	Variance	Cumulative	Total	Variance	Cumulative
		%			%			%	
1	7.277	26.952	26.952	7.277	26.952	26.952	3.516	13.021	13.021
2	3.072	11.377	38.329	3.072	11.377	38.329	2.933	10.862	23.883
3	2.325	8.610	46.938	2.325	8.610	46.938	2.677	9.916	33.800
4	1.744	6.458	53.396	1.744	6.458	53.396	2.208	8.177	41.977
5	1.460	5.407	58.803	1.460	5.407	58.803	2.200	8.149	50.126
6	1.240	4.591	63.394	1.240	4.591	63.394	2.166	8.022	58.148
7	1.183	4.380	67.774	1.183	4.380	67.774	2.149	7.958	66.106
<b>8</b>	<b>1.028</b>	<b>3.806</b>	<b>71.580</b>	<b>1.028</b>	<b>3.806</b>	<b>71.580</b>	<b>1.478</b>	<b>5.474</b>	<b>71.580</b>

Source: Authors' elaboration

Table 3: Total variance explained, under the PCA method, for the industrial firms under consideration (n=134)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	Variance	Cumulative	Total	Variance	Cumulative	Total	Variance	Cumulative
		%			%			%	
1	6.832	25.304	25.304	6.832	25.304	25.304	3.848	14.251	14.251
2	4.411	16.338	41.642	4.411	16.338	41.642	2.950	10.925	25.176
3	2.079	7.700	49.342	2.079	7.700	49.342	2.810	10.407	35.583
4	1.807	6.694	56.036	1.807	6.694	56.036	2.732	10.119	45.702
5	1.650	6.110	62.146	1.650	6.110	62.146	2.625	9.722	55.424
6	1.285	4.759	66.904	1.285	4.759	66.904	2.156	7.987	63.411
<b>7</b>	<b>1.041</b>	<b>3.856</b>	<b>70.760</b>	<b>1.041</b>	<b>3.856</b>	<b>70.760</b>	<b>1.984</b>	<b>7.349</b>	<b>70.760</b>

Source: Authors' elaboration

Table 4: Total variance explained, under the PCA method, for the commercial firms under consideration (n=112)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
	1	9.123	33.790	33.790	9.123	33.790	33.790	4.171	15.450
2	3.243	12.011	45.801	3.243	12.011	45.801	4.164	15.422	30.871
3	2.140	7.925	53.726	2.140	7.925	53.726	2.966	10.985	41.856
4	1.649	6.107	59.833	1.649	6.107	59.833	2.535	9.389	51.246
5	1.541	5.708	65.541	1.541	5.708	65.541	2.188	8.102	59.348
6	1.182	4.378	69.919	1.182	4.378	69.919	2.090	7.742	67.091
7	<b>1.018</b>	<b>3.771</b>	<b>73.691</b>	<b>1.018</b>	<b>3.771</b>	<b>73.691</b>	<b>1.782</b>	<b>6.600</b>	<b>73.691</b>

Source: Authors' elaboration

Table 5: Total variance explained, under the PCA method, for the services firms under consideration (n=128)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
	1	4.485	16.610	16.610	4.485	16.610	16.610	2.783	10.306
2	3.251	12.041	28.651	3.251	12.041	28.651	2.586	9.579	19.885
3	2.488	9.215	37.866	2.488	9.215	37.866	2.365	8.759	28.644
4	2.120	7.851	45.717	2.120	7.851	45.717	2.283	8.455	37.098
5	1.530	5.667	51.384	1.530	5.667	51.384	2.231	8.262	45.360
6	1.474	5.459	56.842	1.474	5.459	56.842	2.043	7.567	52.927
7	1.315	4.872	61.714	1.315	4.872	61.714	1.637	6.063	58.990
8	1.118	4.140	65.854	1.118	4.140	65.854	1.567	5.803	64.793
9	<b>1.017</b>	<b>3.767</b>	<b>69.621</b>	<b>1.017</b>	<b>3.767</b>	<b>69.621</b>	<b>1.303</b>	<b>4.828</b>	<b>69.621</b>

Source: Authors' elaboration

Indeed, in all cases, the compression of the dimensions is significant, while the loss of information is rather limited. In addition, the Kaiser-Meyer-Olkin (KMO) and the Bartlett tests (tests that evaluate whether the set of the initial variables is a coherent one) show that the degree of synergy among the initial variables exhibits high, and statistically significant, values. Table 6 presents the results of KMO and Bartlett tests for all firms under consideration and, separately, for the firms of each sector considered.

Table 6: KMO test and Bartlett test figures, for all firms under consideration, and, separately for the firms of each sector considered

		All firms	IND	COMM	SERV
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,840	,766	,825	,696
Bartlett's Test of Sphericity	Approx. Chi-Square	5069,579	2061,348	2053,824	1315,127
	df	351	351	351	351
	Sig.	,000	,000	,000	,000

Source: Authors' elaboration

Tables 7, 8, 9 and 10 present the communalities of each variable (i.e. the proportion of each variable's variance that is explained by the selected principal components) for all firms under consideration and, separately, for the firms of each sector considered. It should be mentioned at this point that for the interpretation of the (non-rotated) factors the Varimax rotation method is used (Kaizer, 1958; Abdi, 2003). Varimax is the most commonly used rotation method (orthogonal rotation), which maximizes the variance of the columns of the factor matrix without modifying the relative locations (coordinates) of the initial variables, and the total variance explained by the principal components (Forina *et al.*, 1988).

Loadings of initial variables which are included in the new hyper-variables are  $> 0.65$ , and mainly between 0.70 and 0.80, showing that these loadings can be considered very high in the total of loadings of the initial values (Chang *et al.*, 2003). Furthermore, almost all the hyper-variables created exhibit excellent reliability. The reliability test used is the Cronbach's  $\alpha$ , which determines the internal consistency or average correlation of factors in a survey instrument to gauge its reliability (Nunnally, 1967; Rust and Cooil, 1994; Jelenc, 2007; Bertan and Altintas, 2011). Internal consistency ranges between 0.0 and 1.0. A commonly-accepted rule of thumb is that a Cronbach's  $\alpha$  of 0.6-0.7 indicates acceptable reliability, and of 0.8 or higher indicates good reliability. George and Mallery (2003:231) provide the following rules of thumb: lower than 0.5: unacceptable; between 0.5 and 0.6: poor; between 0.6 and 0.7: questionable; acceptable; between 0.7 and 0.8: acceptable; good; between 0.8 and 0.9: good; and finally, higher than 0.9: excellent. In our cases, for the majority of the hyper-variables, Cronbach's  $\alpha$  takes excellent values, ranging for all firms from 0.758 to 0.989, for industrial firms from 0.896 to 0.950, for commercial from 0.835 to 0.932 and, finally, for services from 0.523 to 0.963. This fact indicates hyper-variables' positive contribution to the model and very good reliability.

Table 7: Rotated component matrix and creation of hyper-variables for all firms

	Component							
	1	2	3	4	5	6	7	8
Access to Northern and Western European market	<b>.780</b>	.121	.293	-.164	.034	.113	-.067	.019
Presense of foreign business	<b>.740</b>	.172	.135	.093	.011	.186	-.054	.154
Accessibility to other national markets	<b>.727</b>	.119	-.111	.178	-.300	.025	.215	.220
Access to Southern and Eastern European market	<b>.681</b>	.053	.267	-.080	.079	.256	.125	-.074
Proximity to customers/suppliers	<b>.634</b>	.047	-.013	.283	-.164	-.118	.229	.286
Size of local market	<b>.561</b>	-.010	-.120	.493	.079	-.046	.279	.031
Availability of support services	<b>.553</b>	-.013	.289	.279	.140	.126	.237	-.226
Good management relationships at local level	.143	<b>.822</b>	.145	.164	-.067	.047	-.073	-.039
Labour quality and specialisation	.114	<b>.757</b>	.128	.154	.285	.106	.082	.089
Labour availability	.093	<b>.744</b>	.110	.045	-.051	.195	.187	.078
Labour morality/ethics	.001	<b>.741</b>	.246	.204	-.221	.195	.069	-.011
Quality of local training/continuing education	.098	.193	<b>.812</b>	.127	.015	.020	.269	.053
Quality of local higher education	.107	.133	<b>.780</b>	.157	-.034	-.044	.244	.173
Quality of research institutes	.236	.283	<b>.749</b>	.131	.058	.099	-.053	.060
Availability of strong investment incentives	.083	.238	.201	<b>.759</b>	-.051	.200	-.050	-.037
Government attitude towards business	.027	.222	.146	<b>.737</b>	-.099	.306	-.010	-.041
Availability of universities or technological institutes	.221	.242	.202	.490	-.007	.298	-.045	.343
Sufficient air connections	-.025	-.038	.013	-.004	<b>.919</b>	-.117	.066	.066
Sufficient seaport connections	-.033	-.010	.012	-.099	<b>.903</b>	-.038	.034	.189
Cost of labour is low	.125	.097	-.027	.190	.032	<b>.801</b>	.141	.035
Cost of land is low	.159	.237	-.004	.163	-.176	<b>.800</b>	-.020	-.024
Low local taxes	.139	.319	.189	.378	-.098	.563	-.093	.117
Sufficient road/highway/connections	.120	.161	.105	-.041	-.138	.097	<b>.804</b>	.131
Telecommunications	.136	.057	.118	.058	.111	-.175	<b>.708</b>	.207
Sufficient train connections	.093	-.030	.235	-.044	.189	.197	<b>.702</b>	-.190
Attractiveness of physical environment	.092	-.022	.117	-.013	.355	.052	.115	<b>.790</b>
Urban aesthetic	.243	.141	.469	.005	.044	.025	.121	<b>.564</b>
<b>Cronbach's <math>\alpha</math></b>	0.915	0.948	0.935	0.925	0.989	0.934	0.893	0.758

Source: Authors' elaboration

Table 9: Rotated component matrix and creation of hyper-variables for the industrial firms

	Component						
	1	2	3	4	5	6	7
Sufficient seaport connections	<b>.822</b>	-.076	-.002	.176	.037	.037	.067
Sufficient train connections	<b>.795</b>	.131	-.145	.192	.187	.033	.144
Sufficient air connections	<b>.756</b>	-.110	.050	.234	.060	.058	-.115
Telecommunications	<b>.704</b>	.095	.005	.097	.080	.320	-.147
Sufficient road/highway/connections	<b>.683</b>	.306	-.170	-.078	.148	.225	.204
Attractiveness of physical environment	.493	-.262	.175	.085	.206	.290	-.077
Labour morality/ethics	-.067	<b>.805</b>	.277	-.001	.241	-.005	.176
Labour quality and specialisation	.198	<b>.772</b>	.050	.006	.220	.170	.129
Labour availability	.089	<b>.763</b>	.167	-.010	.259	-.046	.246
Good management relationships at local level	-.162	<b>.702</b>	.276	.111	-.049	-.133	-.186
Government attitude towards business	-.143	.155	<b>.823</b>	.003	.096	.057	.119
Availability of strong investment incentives	-.019	.171	<b>.776</b>	-.120	.232	.128	-.058
Low local taxes	-.217	.267	<b>.637</b>	.221	.177	-.053	.249
Urban aesthetic	.354	-.019	.449	.275	.125	.102	-.274
Access to Northern and Western European market	.028	-.015	-.152	<b>.770</b>	.296	.117	-.071
Access to Southern and Eastern European market	.316	.061	.042	<b>.751</b>	.032	.038	.248
Presense of foreign business	.223	.028	.127	<b>.731</b>	.126	.264	.028
Availability of support services	.264	-.010	.080	.445	.216	.316	.271
Quality of local higher education	.229	.216	.095	.082	<b>.843</b>	.109	.088
Quality of local training/continuing education	.227	.261	.157	.150	<b>.805</b>	.038	.133
Availability of universities or technological institutes	.243	.108	.000	.028	<b>.766</b>	.023	.138
Quality of research institutes	-.013	.306	.316	.311	<b>.663</b>	-.156	.018
Size of local market	.178	.067	.064	.188	-.019	<b>.782</b>	.217
Proximity to customers/ suppliers	.196	-.114	.077	.113	.143	<b>.770</b>	-.074
Accessibility to other national markets	.132	.110	-.037	.532	-.235	<b>.624</b>	.048
Cost of labour is low	.098	.083	.089	.031	.129	.133	<b>.828</b>
Cost of land is low	-.111	.191	.234	.155	-.030	-.013	<b>.808</b>
<b>Cronbach's <math>\alpha</math></b>	0.944	0.950	0.936	0.926	0.943	0.896	0.930

Source: Authors' elaboration

Table 10: Rotated component matrix and creation of hyper-variables for the commercial firms

	Component						
	1	2	3	4	5	6	7
Access to Southern and Eastern European market	<b>.792</b>	.186	.022	.083	-.084	.111	.208
Access to Northern and Western European market	<b>.737</b>	.087	-.089	-.111	.123	.239	.304
Presense of foreign business	<b>.699</b>	.099	.162	-.207	.216	.110	.098
Availability of support services	<b>.683</b>	.344	.191	-.041	-.069	.131	.096
Accessibility to other national markets	<b>.661</b>	.133	.247	-.464	.284	-.023	-.062
Proximity to customers/ suppliers	<b>.659</b>	.109	.324	-.269	.275	-.067	-.115
Size of local market	<b>.626</b>	.136	.462	-.199	.112	-.012	-.160
Quality of local higher education	.127	<b>.875</b>	.104	-.148	.047	.030	.024
Quality of local training/continuing education	.244	<b>.813</b>	.071	-.026	.241	.012	.038
Quality of research institutes	.347	<b>.756</b>	.038	.131	.167	.163	-.035
Labour morality/ethics	.034	<b>.662</b>	.244	-.127	.132	.257	.301
Good management relationships at local level	.212	<b>.643</b>	.166	-.034	.099	.247	.411
Urban aesthetic	.157	.528	.186	.054	.381	-.114	.143
Attractiveness of physical environment	-.324	.467	.296	.433	.193	-.046	.135
Government attitude towards business	.134	.175	<b>.844</b>	-.013	.080	.115	.125
Availability of strong investment incentives	.107	.286	<b>.717</b>	-.163	-.034	.263	.104
Low local taxes	.197	-.083	<b>.648</b>	-.019	.138	.395	.284
Availability of universities or technological institutes	.381	.217	.584	-.190	-.043	.000	.247
Sufficient seaport connections	-.144	-.043	-.107	<b>.939</b>	-.045	-.047	-.040
Sufficient air connections	-.183	-.038	-.121	<b>.924</b>	-.113	-.025	-.050
Sufficient train connections	.110	.171	-.019	-.048	<b>.804</b>	.351	.073
Sufficient road/highway/connections	.167	.231	.068	-.155	<b>.727</b>	.115	.261
Telecommunications	.046	.461	.065	-.021	<b>.599</b>	-.100	.087
Cost of land is low	.190	.196	.098	-.104	.129	<b>.844</b>	.135
Cost of labour is low	.089	.037	.342	.041	.101	<b>.838</b>	-.011
Labour availability	.230	.110	.169	-.163	.173	.115	<b>.734</b>
Labour quality and specialisation	.030	.285	.334	.179	.222	-.001	<b>.688</b>
<b>Cronbach's <math>\alpha</math></b>	0.949	0.952	0.924	0.936	0.911	0.931	0.835

Source: Authors' elaboration

Table 11: Rotated component matrix and creation of hyper-variables for the services firms under

	Component								
	1	2	3	4	5	6	7	8	9
Labour availability	<b>.824</b>	.077	.113	-.078	.077	-.168	.118	.036	.121
Labour quality and specialisation	<b>.789</b>	-.018	.093	.007	-.032	.189	.069	-.018	.110
Availability of strong investment incentives	.534	-.062	.164	.140	.210	-.031	.170	-.509	-.034
Sufficient air connections	.075	<b>.869</b>	-.012	-.143	.070	-.139	-.030	.024	-.071
Sufficient seaport connections	-.085	<b>.869</b>	.015	-.057	.007	.032	-.022	-.072	-.067
Telecommunications	-.077	<b>.854</b>	-.065	.084	-.097	-.134	-.021	.082	-.013
Availability of universities or technological institutes	.198	-.091	<b>.785</b>	.149	.229	.042	.142	.138	-.069
Quality of research institutes	.188	-.115	<b>.739</b>	.008	.008	.214	-.035	-.103	.061
Quality of local higher education	-.081	.118	<b>.729</b>	-.072	.295	-.264	.098	.076	.016
Quality of local training/continuing education	.041	-.043	<b>.711</b>	-.088	.239	.016	.198	.319	-.084
Urban aesthetic	.187	-.035	.417	.174	-.024	.227	-.302	.101	.088
Accessibility to other national markets	-.108	.029	.065	<b>.789</b>	.240	.046	-.143	-.016	.049
Size of local market	-.029	-.077	-.093	<b>.705</b>	.094	.057	.157	-.140	.133
Proximity to customers/ suppliers	.165	-.120	.014	<b>.688</b>	.057	-.223	-.215	.183	-.058
Availability of support services	.320	.170	.091	.381	.306	.252	.037	.234	-.288
Presence of foreign business	.201	-.061	.071	.114	<b>.770</b>	.111	-.243	-.042	.005
Access to Northern and Western European market	.094	.029	.092	.091	<b>.721</b>	-.015	.046	.038	.044
Access to Southern and Eastern European market	-.160	-.008	.230	.336	<b>.646</b>	-.016	.153	-.030	.039
Labour morality/ethics	.023	-.176	.141	-.186	-.196	<b>.761</b>	.057	-.087	.184
Good management relationships at local level	-.027	-.003	.128	.171	-.010	<b>.711</b>	-.122	.101	.022
Cost of labour is low	.385	-.033	.024	-.066	-.026	.062	<b>.713</b>	.170	.073
Cost of land is low	.455	-.237	-.079	-.198	.031	.218	<b>.596</b>	-.184	.026
Attractiveness of physical environment	.035	.222	.366	.164	-.373	.207	.470	-.223	-.091
Sufficient road/highway/connections	-.091	.077	.234	.328	-.095	-.264	.003	<b>.668</b>	.091
Sufficient train connections	-.030	-.063	.031	-.196	.204	.288	.072	<b>.656</b>	.025
Government attitude towards business	.133	-.208	.007	.075	.126	.292	.197	-.168	<b>.651</b>
Low local taxes	.131	-.228	-.092	-.051	.170	.212	.321	-.013	<b>.632</b>
<b>Cronbach's <math>\alpha</math></b>	0.925	0.960	0.930	0.907	0.912	0.873	0.914	0.523	0.963

Source: Authors' elaboration

Table 11, presents the hyper-variables (factors) created for all firms under consideration and, separately, for the firms of each sector considered.

Table 11: The hyper-variables (factors) created for all firms under consideration and, separately, for the firms of each sector considered.

	All firms		Industrial/Manufacturing firms		Commercial/Distributional firms		Services firms	
	Hyper-variables	Groups	Hyper-variables	Groups	Hyper-variables	Groups	Hyper-variables	Groups
1	AGGLAC	Agglomeration factors and access to markets	INFRA	Urban infrastructure (all factors)	AGGLAC	Agglomeration factors and access to markets	LAB-A	Labor factors (availability and specialization)
2	LAB	Labor factors	LAB	Labor factors	REDOU - LAB	R/D – Education – Training and good management -ethics	INFRA-B	Urban infrastructure (highway, railway network & telecommunications)
3	REDOU	R/D – Education - Training	REPOL	Regional policies	REPOL	Regional policies	REDOU	R/D – Education - Training
4	REPOL	Regional policies	AGGLAC-A	Agglomeration factors and access to European markets	INFRA-A	Urban Infrastructure (air and seaport connections)	AGGLAC-A	Agglomeration factors and access to European markets
5	INFRA-A	Urban Infrastructure (air and seaport connections)	REDOU	R/D – Education - Training	INFRA-B	Urban infrastructure (highway, railway network & telecommunications)	AGGLAC-B	Agglomeration factors and access to national markets
6	COST	Cost factors	AGGLAC-B	Agglomeration factors and access to national markets	COST	Cost factors	LAB-B	Labor factors (management, morality and ethics)
7	INFRA-B	Urban infrastructure (highway, railway network and telecommunications)	COST	Cost factors	LAB	Labor factors (availability and specialization)	COST	Cost factors
8	QULEN	Qualitative factors (environment, aesthetic)	-	-	-	-	INFRA-A	Urban Infrastructure (air and seaport connections)
9	-	-	-	-	-	-	REPOL	Regional policies

\* L.A = Loadings Average \*\* Exclude loadings < 0.500

Source: Authors' elaboration



Taking into consideration all firms (n=374), the first hyper-variable AGGLAC, is a combination of the initial variables of the group 'Agglomeration economies and access to markets' and positioned high. Looking at the corresponding rankings of each sector, it is evident that this can be attributed mainly to commercial firms. The significance of these factors is shown by the high percentage of participation of the hyper-variable (29.95%) in the total variance as depicted in Table 2. The second hyper-variable LAB is a combination of the initial values of the quality, the availability and the character of labor and employees. Variables that compose this hyper-variable have high loadings averages scores (from 0.741 to 0.822), showing the high correlation among these variables and their loadings, while present high percentage (11.97%) in the total variance. These factors are significant for almost all firms. In particular, for services LAB represents strongly the necessity for specialised workforce, while for commercial the interest for good labour management relationships at local level. This means that firms tend to invest and exploit human resources locally, contributing through this way on local development. So, a first estimation is that both groups of hyper-variables are important for all firms since they participate high enough (41.92%) in the total variance.

Significant enough are, also, the hyper-variables REDOU and REPOL, for almost all firms. In particular REDOU is of high significance for commercial and services firms, and REPOL is of high significance for industrial and commercial firms. Especially concerning REPOL, this finding is in harmony with the findings of previous studies (i.e. Deas and Giordano 2001; Maskell and Malmberg, 1999), showing that in the last couple of decades firms are interested in finding the appropriate local business climate, which, besides traditional/economic policies, includes "non-traditional" policies that facilitate development.

Also, factors that concern infrastructure, which are included in the hyper-variables INFRA, INFRA-A and INFRA-B, seems to be very important for industrial firms and less important for commercial and services. Industrial firms appreciate that all urban infrastructure (land, sea and air connections) are crucial for their competitiveness, giving particular attention to the existence of harbors and airports, something that it does not count for the services firms.

Less significant are the groups of hyper-variables COST and QULEN. These two hyper-variables represent cost factors and qualitative factors such as, natural environment and urban aesthetic. The hyper-variable COST seems to be not important for all firms. This finding contrasts the view that all factors that concern labor cost or land use are very important for the development of firms (Harrington and Warf 1995; Zhu 2000). In addition, COST factors are less significant than the others, because the labor supply of low cost is likely to be associated with the lack of expertise, which is a very important factor for both sectors, while the existence of land with low cost, is likely to attract non competitive enterprises, affecting even further the local factors, such as the quality of supporting services, or the creation of an unattractive entrepreneurial local environment for foreign business establishment. Finally, QULEN receives the last position of firms' estimation in general, accentuating the importance

of traditional economic factors, comparing to the non-traditional ones, for firms development. This finding agrees totally with the empirical studies so far (i.e. Trofimenko 2010; Shangqin *et al.* 2009).

Summing up, the hyper-variables AGGLAC, LAB and REDOU are thought to be the most important for the development of all firms, whereas the hyper-variables INFRA, INFRA-A and INFRA-B are of limited interest for either the industrial or the commercial firms. The hyper-variables COST and QULEN receive less attention.

Before concluding this section, we should stress that our study suffers from a number of limitations. The first one is related to the relatively small and specialised sample size since the aim of the study is to present a trend of the industrial, commercial and services firms' appreciation for the territorial environment where they activated. Of course, it is difficult to come up on general conclusions for the wider area of Southern Europe. In addition, EFA awards only the significance of some particular factors for firms' competitiveness, without to present how these factors affect firms' development. Finally, the selection of the studied firms based only on the number of employees, without take other variables into consideration such as, the age of firms or annual sales turnover and of course this fact may affect not the quality of conclusions but their wider generalization. Thus, in order to be more specific and to reach into more representative, for the wider area, conclusions, we expand our analysis compiling an econometric model. Though the econometric analysis we are going to examine whether our assumptions, derived for the EFA, are satisfied. Table 12 presents these hypothesis as well as the expected relations/signs.

Table 12: Hypotheses of the study

	<b>Hypotheses</b>	<b>Expected relation</b>
H1	Agglomeration economies factors and access to European and national markets are important for small- and medium-sized firms' development.	(+)
H2	The existence of effective investment incentives and the attitude of local government towards firms is possible to contribute positive to small and medium-sized firms competitiveness	(+)
H3	The combination of labor force quality and specialization together with the existence of peaceful labor relations/conditions is able to affect positively the development of firms	(+)
H4	Air and seaport connections and infrastructure are important for firms' development, especially for industrial and commercial firms	(+)
H5	Land infrastructure, highways, railways and communications are important for firms' development, especially for industrial and commercial firms	(+)
H6	Cost factors have less significance for small- and medium-sized firms' development in all production sectors	(-)
H7	Qualitative factors are less important for small- and medium-sized firms' development in all production sectors	(-)

Source: Authors' elaboration

## **5. THE DETERMINANTS OF OVERALL APPRECIATION FOR FIRMS' COMPETITIVENESS: AN ECONOMETRIC INVESTIGATION**

The effect of the factors identified from the application of the EFA on the overall appreciation for firms' development, is estimated through econometric investigation (regression analysis). In particular, the factor scores of the EFA are the independent variables and the overall appreciation for firms' competitiveness is the dependent variable. We construct four econometric models, one for all firms under consideration and one, separately, for the firms of each sector considered. The general

form of the model is:  $Y_f = \sum_{\lambda=1}^n (a_{\lambda} X_{\lambda,f}) + \varepsilon_f$ , where  $Y_f$  is the dependent variable (i.e. overall appreciation of firms' development),  $X_{\lambda}$  is a set of independent variables (i.e. the variables derived from the EFA),  $a_{\lambda}$  is the set of the coefficients of the independent variables,  $f$  denotes firms, and  $\varepsilon$  is the disturbance term, which follows the normal probability distribution with zero mean and constant variance (i.e.  $\varepsilon_f \sim N(0, \sigma^2)$ ). Tables 13, 14, 15 and 16 present the results of the econometric analysis for all firms under consideration and, separately, for the firms of each sector considered.

Table 13: The results of the econometric analysis, for all firms under consideration

Coefficients <sup>a</sup>					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	6.223	.013		497.518	.000
AGGLAC (all factors)	.426	.013	.505	34.042	.000
LAB	.314	.013	.372	25.092	.000
REDOU	.401	.013	.475	31.993	.000
REPOL	.252	.013	.298	20.097	.000
INFRA-A	.074	.013	.087	5.889	.000
COST	.224	.013	.265	17.865	.000
INFRA-B	.250	.013	.297	20.000	.000
QULEN	.179	.013	.212	14.277	.000
a. Dependent Variable: OVERALL APPRECIATION FOR FIRMS COMPETITIVENESS					
R <sup>2</sup> adj. = 0.918					
F = 521.701   0.000					

Source: Authors' elaboration

Table 14: The results of the econometric analysis for the industrial firms

Coefficients <sup>a</sup>					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	6.009	.013		470.277	.000
INFRA (all factors)	.395	.013	.423	30.809	.000
LAB	.334	.013	.358	26.078	.000
REPOL	.338	.013	.362	26.342	.000
AGGLAC-A	.391	.013	.419	30.502	.000
REDOU	.405	.013	.434	31.610	.000
AGGLAC-B	.323	.013	.346	25.200	.000
COST	.220	.013	.235	17.150	.000
a. Dependent Variable: OVERALL APPRECIATION FOR FIRMS COMPETITIVENESS					
R <sup>2</sup> adj. = 0.975					
F = 740.263   0.000					

Source: Authors' elaboration

Table 15: The results of the econometric analysis for the commercial firms

Coefficients <sup>a</sup>					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	6.045	.010		595.671	.000
AGGLAC (all factors)	.459	.010	.525	45.016	.000
REDOU - LAB	.455	.010	.520	44.625	.000
REPOL	.367	.010	.420	36.028	.000
INFRA-B	.296	.010	.338	29.017	.000
COST	.236	.010	.269	23.117	.000
LAB	.243	.010	.277	23.805	.000
a. Dependent Variable: OVERALL APPRECIATION FOR FIRMS COMPETITIVENESS					
R <sup>2</sup> adj. = 0.985					
F = 1,037.263   0.000					

Source: Authors' elaboration

Table 16: The results of the econometric analysis for the services firms

Coefficients <sup>a</sup>					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	6.349	.010		619.370	.000
LAB-A	.279	.010	.511	27.069	.000
INFRA-B	.074	.010	.136	7.200	.000
REDOU	.257	.010	.471	24.984	.000
AGGLAC-A	.196	.010	.359	19.058	.000
AGGLAC-B	.227	.010	.417	22.096	.000
LAB-B	.147	.010	.269	14.245	.000
COST	.124	.010	.228	12.065	.000
INFRA-A	.034	.010	.063	3.315	.001
REPOL	.088	.010	.161	8.535	.000
a. Dependent Variable: OVERALL APPRECIATION FOR FIRMS COMPETITIVENESS					
R <sup>2</sup> adj. = 0.955					
F = 299.167   0.000					

Source: Authors' elaboration

The models are estimated using the Ordinary Least Squares (OLS) method, providing for heteroskedasticity-consistent standard errors (White, 1980). The overall explanatory power of all models is extremely satisfactory. The adjusted R<sup>2</sup> figures are extremely high (for cross-section models) and all independent variables have a statistically significant impact on overall appreciation for firms' development. Furthermore, all independent variable have the expected signs verifying the hypothesis set in the previous section.

According to Table 11, the signs for COST and QULEN variables are negative, as it was expected, since these variables are not of high priority for small- and medium-sized firms, regardless of sector. COST variable, in particular, has the smallest impact on industrial and commercial firms, and also has rather low impact on services firms. QULEN variable has, also, a rather low impact on the firms considered (i.e. all firms). Based on the results of the model (i.e. unstandardized beta coefficients) a number of observations can be made.

The econometric model that concerns all firms under consideration indicates that the most important determinants of overall appreciation for small- and medium-sized firms' competitiveness and development are AGGLAC, REDOU and LAB. These variables concern the factors related to the economies of agglomeration, the access to domestic and foreign (i.e. European) markets and the research, education and long-life learning. The variables with the least impact are QULEN, which refers to qualitative factors, and INFRA-A, which concerns sea and air infrastructure. These findings are similar to the findings of the EFA (and also to the findings of previous studies), verifying that the impact of the aforementioned factors on the development of the small- and medium-sized firms of Southern Europe.

Regarding the *industrial* firms under consideration, the econometric model indicates that the most important development determinants are REDOU, INFRA and AGGLAC-A. These variables concern factors related with research, education and long-life learning, infrastructure of all kinds, and agglomeration economies. These findings seem to be reasonable and accentuate the important impact that these factors have on industrial firms. Again, these findings are in harmony both with the EFA findings and with the findings of previous studies (Crozet *et al.* 2004; Devereux and Griffith, 1998;

Nachum and Keeble, 2003). Concerning the EFA, of course, factors such as REPOL (policies' issues) and LAB (labor issues) are also of high importance. In contrast, and according to the EFA, less important factors are COST (cost) and AGGLAC-B (access to European and national networks).

Regarding the *commercial* firms under consideration, the econometric model indicates that the most important development determinants are AGGLAC, REDOU-LAB and REPOL. Also in this case, factors such as economies of agglomeration and market access are extremely important. Furthermore, factors such research and training, good working conditions and labor ethics are important. Policies of development are, also, important. Less important are factors such as specialization and availability of workforce. Again, these findings are in pure harmony with the corresponding findings of the EFA.

Finally, regarding *services*, the econometric model indicates that the most important determinants for firms' competitiveness are LAB-A, concerning the existence of specialized workforce, REDOU and AGGLAC-B, concerning access to markets. Less important are COST and INFRA factors. Again, there is harmony with the EFA findings. The only difference is that according to the EFA factors related with land infrastructure (INFRA-B) are also important. Both the econometric analysis and the EFA suggest that research (existence of universities and innovation centers), education and training, existence of specialized workforce are the most important factors. This verifies the findings of previous studies (CEC 1993; Doutriaux 2003; Doutriaux and Barker, 1995).

Overall, the findings of the econometric analysis suggest that there are three variables that constitute important determinants for the competitiveness of small- and medium-sized firms, regardless of the sector. These variables are AGGLAC, REDOU and LAB. This finding leads us to conclude that factors referring to agglomeration economies, access to markets, education, training and research, specialized workforce and good working climate are the most important determinants for firms' development. In other words, small- and medium-sized firms in Southern Europe are affected from the aforementioned factors and, thus, they should try to fully benefit from their exploitation. This finding is consistent with previous studies in the issue and highlights the framework for the operation of small- and medium-sized firms in the area of Southern Europe. Of course, these findings could be even stronger if we had studied a greater sample of cities and firms.

## 6. CONCLUSIONS

The objective of the paper was to investigate the importance of territorial characteristics/assets (i.e. agglomeration economies, urban infrastructure, factors of labor and cost, development policies, qualitative factors, *inter alia*) on small- and medium-sized firms' competitiveness. Thus, the analysis used primary data from 374 small- and medium-sized firms located in Bari (Italy), Varna (Bulgaria) and Thessaloniki (Greece), and operated in the sectors of industry, commerce and services.

Because of the large number of variables available, initially the EFA was used in order to limit the number of variables, creating hyper-variables. The EFA has accentuated the important role AGGLAC, REDOU and LAB hyper-variables. These hyper-variables refer to agglomeration economies, access to

markets, education, training and research, specialized workforce and good working climate are the most important determinants for firms' development.

The assessment of the impact of the hyper-variables derived from the EFA on the overall appreciation for firms' competitiveness was made possible through the use of econometric analysis (i.e. regression analysis). Four econometric models were constructed, one for all firms under consideration and one, separately, for the firms of each sector considered. The findings of the econometric models verified, almost completely, the findings of the EFA. Indeed, factors referring to agglomeration economies, access to markets, education, training and research, specialized workforce and good working climate are the most important determinants for firms' development.

The contribution of the paper is of twofold importance: a) the findings come from a primary research; b) the relationship between local business environment and competitiveness has not been studied enough in the areas under consideration. Of course, the findings of the paper could be even stronger if we had studied a greater sample of cities and firms. This is, definitely, a task for future research. In any case, however, the findings of the paper offer valuable insight to policy-making as regards the development of small- and medium-sized firms located in the area of Southern Europe.

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