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Identification and Analysis of the Industrial Districts in Spain: A Quantitative Approach

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“Enlargement, Southern Europe and the Mediterranean”

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IDENTIFICATION AND ANALYSIS OF THE INDUSTRIAL DISTRICTS IN SPAIN: A QUANTITATIVE APPROACH

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Abstract:

The identification and analysis of the industrial districts in Spain using a quantitative approach is the aim of this research. In the first part, the industrial districts are identified applying the methodology developed by the Italian Statistics Institute (ISTAT). This identification is possible due to the availability of information about the local labour systems; these have been estimated with labour mobility data between municipalities and the industrial data used to analyse the location of the Spanish industry comes from the Industrial Register published by the Ministry of Industry, Tourism and Commerce. The analysis classifies the different industrial activities in 23 sectors. In the second part, the characteristics of the, previously identified, industrial districts are quantitatively analysed. Some of the characteristics that will be analysed are the relevance of the industrial districts for the Spanish industry (in a national, sectorial and regional level), the industrialization degree, the sectorial specialization level or the predominance of small and medium enterprises in the whole industry or by sectors. Finally, with the quantitative results, a typology of the industrial districts in Spain will be constructed, that could be used in a further analysis based in qualitative techniques.

Keywords: industry location, industrial districts, local productive systems, local labour systems, Spain.

1. Introduction

The crisis of fordism productive system during the 70's had a significative influence on economic theory. Neoclassical theory, defending the existence of scale economies based on big size of production units, had reached the position of intellectual predominance. However, the survival and success, in a context of economic crisis, of concentrations of small and medium enterprises in concrete geographical areas were highlighted by economist, mainly in Italy. Thus, the publication, in 1979, of the famous article "*Dal 'settore' industriale al 'distretto' industriale. Alcune considerazioni sull'unità di indagine dell'economia industriale*" (From industrial sector to industrial district. Some considerations about the unit of analysis of industrial economics) by Giacomo Becattini means the beginning of the analysis of industrial districts considered as a model of industrial organization and an alternative to the massive production model. So, the concept introduced by Alfred Marshall in his *Principles of Economics* (first published in 1890) is recovered due to Italian economists as Becattini. The contributions of Becattini were followed in the following two decades by other works of Italian economist as Bellandi (1986), Sforzi (1987), Dei Ottati (1996), Triglia (1993) or Brusco (1992). So, industrial district as a theoretical concept is upgraded and, as a real phenomenon, studied through analysis relied on external economies and agglomeration economies.

The development and diffusion of these works have configured a model of industrial district based on the existence of a manufacturing tradition linked very close with traditions and a cultural system. This model is constructed in order to analyse the special conditions required to identify an agglomeration of small-size enterprises as industrial district. However, it is important to stress that a concentration of small enterprises is not enough to identify it as industrial district (Sforzi and Lorenzini, 2002). In this sense, different methodologies, both quantitative and qualitative, have been constructed (for example, ISTAT (1996) in Italy or Ybarra (1991) in Spain) to identify industrial district in several countries as Italy or Spain.

The endogenous growth based on small and medium enterprises was the main hypothesis of the development model of the Third Italy or NEC model (North-East-Centre) by Fuà (1988). This model tried to explain the difference in growth between the Italian regions during the crisis of the 70's finding that the regions of the North, East

and Centre of Italy had a higher dynamism than the Southern regions. Empirical studies carried on Italy had identified industrial districts in areas with a high industrial development although there were other areas with also strong industrial development that didn't match with the marshallian definition of industrial district. This situation promoted the development of new classifications of industrial areas. The proposal of Garofoli (1986, 1991) is structured in three types of industrial areas of small and medium enterprises: areas of productive specialization, local productive systems and areas-systems. In areas of productive specialization, the enterprises share the same product or production phase, being this the only kind of relationship between them, in a direct competition environment. In the other side, local productive systems are considered a higher level because the increase in horizontal relationships between enterprises. Finally, areas-systems are the equivalent to industrial districts because links between enterprises are very intense in both directions, horizontal and vertical relationships.

This proposal has lead to the use of the term “local productive system”, referring, in a wide sense, to a geographical area where a strong industrial network composed by small and medium enterprises (mainly, smalls) exists. In this area, the relationships between enterprises are focused to search for common profits in terms of production considering enterprises located in the area are specialized in the same industrial sector. Therefore, in a local productive system, territory plays a cohesion role promoting productive and social relationships and mobility of productive resources.

In short, the concept of local productive systems is operative to analyse territorial systems of small industrial enterprises. The use of this concept has allowed an increasing in the number of empirical works stressing in delimitate the importance of industrial concentrations in different territories and, so, making easier to identify local productive systems or industrial districts. The identification of these areas offers the possibility of applying public policies in order to support and promote these productive networks in fields as training, easier access to external financial resources, R&D activities or transfers of new technologies.

2. Methodology for the identification of local productive systems

An attempt to identify the geographical area in which is concentrated the population of small enterprises and workers is required as a first step in order to analyse local productive systems. In this sense, it is necessary to stress that the territory of a local productive system can be more extensive than a local administrative division; so, its extension can include several municipalities (considering the lowest administrative division in Spain). Therefore, the use of local productive system represents, better than administrative units, an analysis unit about the real economy because is defined by the relationships between enterprises and the local community in a restricted area.

Several empirical works focused in the identification of local productive systems (Sforzi, 1992; ISTAT, 1996; Lainé, 2000) have been developed using not administrative divisions but local labour systems¹. Local labour system is defined as a geographical area with a certain concentration of labour demand; where most of the labour population live and work and where the economic activity is relatively homogeneous. This spatial unit is, geographically, more significative than traditional administrative divisions and, so, more useful to identify territorial systems of small enterprises with a special productive and territorial organization.

In this work, the approach to identify local productive systems in Spain will be based in a methodology applied in Italy. Both countries (Spain and Italy) share a similar administrative division of their territories and a similar industrial structure. The methodology, applied in the *Rapporto annuale. La situazione del Paese nel 1995* (ISTAT, 1996, 261-268), use local labour systems as territorial unit of analysis and data from the 1991 Census (ISTAT, 1997).

In this methodology, four criteria are proposed to identify local manufacturing systems of small and medium enterprises.

¹ This methodology applied to identify local labour systems is based on the diary movement between workplace and place of residence. Using this information, areas with a relevant labour demand concentration, where most of the population live and where, inside this area, enterprises search for workers are identified (Smart, 1974; Coombes and Openshaw, 1981).

- 1) Identification of local manufacturing systems. This identification is based on those local systems where the concentration in the territory of manufacturing labour than the national average is higher.

$$LQ_m = \left(\frac{A_{ma} / A_{ta}}{A_{mi} / A_{ti}} \right) > 1,000$$

A_{ma} : employed in manufacturing industry m in local manufacturing system a

A_{ta} : total employment of economic activity t in local manufacturing system a

A_{mi} : employed in manufacturing industry m in local manufacturing systems i

A_{ti} : total employment of economic activity t in local manufacturing systems i

- 2) Identification of local manufacturing systems of small and medium enterprises. The requirement to identify this sort of systems is that the territorial concentration of manufacturing employment in small and medium enterprises (defined as percentage of employment in small and medium enterprises of total local employment in the industry) has to be higher than national average.

$$LQ_{250,m} = \left(\frac{A_{250,ma} / A_{ma}}{A_{250,mi} / A_{mi}} \right) > 1,000$$

$A_{250,ma}$: employment in local units with, at maximum, 250 employees of manufacturing industry m in local manufacturing system a

A_{ma} : employment in total local units of manufacturing industry m in local manufacturing system a

$A_{250,mi}$: employment in local units with, at maximum, 250 employees of manufacturing industry m in local manufacturing systems i

A_{mi} : employment in all local units of manufacturing industry m in total local manufacturing systems i

- 3) Identification of the main industry in each local manufacturing system of small and medium enterprises. The main industry will be specified through the maximum value of the concentration quotient (percentage of employment in the local manufacturing system in relation with national average)

$$LQ_p = \max \left(\frac{A_{sa} / A_{ma}}{A_{si} / A_{mi}} \right)$$

A_{sa} : employment in manufacturing activity s in local manufacturing system of small and medium enterprises a

A_{ma} : employment in manufacturing industry m in local manufacturing system of small and medium enterprises a

A_{si} : employment in manufacturing activity s in local manufacturing systems of small and medium enterprises i

A_{mi} : employment in manufacturing industry m in local manufacturing systems of small and medium enterprises i

- 4) Identification (as industrial district) of local manufacturing systems of small and medium enterprises with its main industry composed by small and medium enterprises. In order to fulfil this requirement, the employment in small and medium enterprises of the main industry (in percentage) has to be higher than 50% of total employment of this industry.

$$I_p = (A_{250,pa} / A_{pa}) > 0,50$$

$A_{250,pa}$: employment in small and medium enterprises (under 250 employees) in the main manufacturing industry p in the local manufacturing system of small and medium enterprises a

A_{pa} : employment in the main manufacturing industry p in the local manufacturing system of small and medium enterprises a

Therefore, it is possible, with these four criteria, to identify territorial areas with a significative weight in the manufacturing sector and, also, to identify industrial districts if the level of small and medium enterprises is high in relation with the total number of enterprises.

In the application of this methodology to identify local productive systems in Spain, local labour systems will be the unit of analysis, using data from the study “Local labour systems and marshallian industrial districts in Spain” (published in Spanish) by Boix and Galleto (2005). Industrial data is obtained from the 2000 Industrial Register of the former Ministry of Science and Technology (now, Ministry of Industry, Tourism and Commerce). A database, with individual data for each industrial establishment, has been constructed in order to generate secondary variables about the number of establishments and industrial employment. The sectorial classification, defining 23 industrial activities, from Industry Department of the Valencian Government will be used in this work.

However, a modification has been done in the second index proposed by the methodology because introduces an excessive restriction if we consider the Spanish industry. In particular, most of the local labour systems identified by Boix and Galleto don't have registered any establishment with more than 250 workers. Big enterprises

are, usually, located in traditional industrial areas; so, local productive systems with few big establishments can not fulfil this requirement. To solve this difficulty, local manufacturing systems with a level of employment in establishments, with less than 250 workers, higher than 50% of total industrial employment will be considered as local manufacturing systems of small and medium enterprises.

3. Empirical analysis: identification of local productive systems in Spain

The results obtained after applying the methodology above described are shown in this section. As it can be seen in Table 1, 229 local productive systems (LPS) have been identified in Spain². All these LPS have a significative industrial development and concentrate almost 50% of total industrial employment in Spain, that is, 1.4 million of people employed in industrial activities.

It can also be observed for each industrial sector those local productive systems that have fulfilled the four criteria and, so, are identified as industrial districts. Thus, 33 local productive systems or industrial districts have been identified for clothing industry; 22 industrial districts for wood manufacturing and the same number for manufacture of food products. Following these sectors, footwear, textiles and construction materials have been identified as main industrial activity in 20 industrial districts in each of them. Next, it is shown the employment level of the enterprises belonging to the industrial sector that constitutes the main activity of the industrial districts; the total national employment of each sector and the industrial employment of all industrial districts identified in each sector (so, considering all the industrial activities not only the main industrial activity). These variables are shown in order to stress the significative specialization in some of the identified industrial districts.

If we consider the percentage of employment in the main activity of the industrial districts in relation with the total national employment for the same sector, it can be seen how districts specialized in footwear manufacturing concentrate 75.5% of the total national employment of this sector; other sectors with a high degree of employment concentration are textiles and toys manufacturing which concentrate 39.1% and 38,2%

² A further step identifying local productive systems would be to join those systems that are very close in terms of administrative limits and specialized in the same industrial activity.

of the total national employment for each sector. Sectorial specialization is not the only variable that can be obtained. The specialization inside the same industrial district can be observed weighting the employment level of the establishments of the main industrial activity in relation with the total industrial employment of the industrial districts. So then, it can be stressed the high productive specialization in the industrial districts of the following sectors: footwear, food products, wooden furniture, glass and ceramics and textiles. In industrial districts where footwear manufacturing is the main industrial activity, the employment level in this activity represents 66.5% of the total industrial employment in these areas; 53.3% in manufactures of food products; 40.7% in both wooden furniture and glass and ceramics and, finally, 40.1% in textiles manufacturing.

Finally, in the industrial districts, the dimension of enterprises of the specialized sectors is small as the last columns show. In most of the analysed industrial districts, the total employment of the main industry is concentrated in small and medium enterprises. In concrete, the average percentage of employment in small and medium enterprises for all industrial sectors is more than 85%.

The analysis of industrial establishments located inside the industrial districts shows, also, the significative importance of these districts in relation with national sectors. So, we can stress, as seen in Table 2, how 73.4% of the total establishments of footwear sector are concentrated in the 20 industrial districts, identified in this study. Industrial districts specialized in textiles concentrate 40% of the total establishments of this sector in Spain. A high productive specialization is, also, observed in other industrial sectors, aside from footwear and textiles sector, as food industry, wood, wooden furniture or natural stone. In the industrial districts, identified for these sectors, the establishments of the main industry represent a high percentage of the total industrial establishments of these areas.

In short, the analysis of the industrial districts in Spain shows the importance of several industrial sectors because of their high geographical concentration. In some sectors, industrial districts concentrate a high percentage of the total employment of these sectors. Strong sectorial specialization of the main industry of the industrial district is also observed as a main characteristic of these areas.

The identification of industrial districts allows the analysis of their distribution along the Spanish regions (Table 3). Thus, the Comunidad Valenciana is placed in first position with 45 industrial districts, followed by Castilla-La Mancha with 44 industrial districts. Apart of these two regions, 31 and 29 industrial districts have been identified in Andalucía and Cataluña, respectively.

A regional analysis of the employment level of the main industry in the industrial districts shows how the Comunidad Valenciana, again, is in the first position. This region concentrates 29.5% of the total employment in main industries of the Spanish industrial districts. Following this region, appear Cataluña, Murcia, País Vasco and Castilla-La Mancha.

In the other side, if we consider the percentage of employment in main industry in industrial districts in relation with the total industrial employment in the same industrial districts, the results offer a vision about the importance of these main industries in the analysed industrial districts. In this case, in Cataluña 81% of its industrial employment is concentrated in industrial districts. In the Comunidad Valenciana, this percentage is 76.7% and more than 75% for Murcia and País Vasco.

It has to be highlighted a high specialization of industrial districts located in concrete regions. In these regions, the weight of employment of the main industry in industrial districts is high in relation with their total industrial employment.

Considering number of establishments as variable, the results lead to the same conclusions in terms of concentration and specialization. The Comunidad Valenciana concentrates 33.11% of total industrial establishments of main industries in the identified districts. Next, Cataluña and Murcia are in second and third place in relation with the location of industrial establishments of main industries (Table 4).

As well as in the case of employment, the analysis of number of establishments (Table 4) in the industrial districts shows how the Comunidad Valenciana and Cataluña are in the firsts positions. In both regions, the percentage of establishments located in their respective industrial districts is higher than 72% of the total industrial establishments. In

short, it can be observed how, in several Spanish regions, industrial districts have a significative weight in the whole industry of their territories because of the concentration of both employment and establishments.

In conclusion, the results of this analysis show concentrations of small and medium enterprises that are characterized by a high specialization not only in just one industrial sector but also by a high internal specialization. Besides these two characteristics, these concentrations or industrial districts have an important weight at national level in their industrial specialization or main industry. So, in several industrial sectors, a high percentage of their respective national employment is concentrated in industrial districts. Sectorial analysis of employment and number of establishments has shown how several industrial districts concentrate in their territories a high percentage of both variables. To sum up, footwear and textiles are the sectors with the highest percentages in both variables. The importance of the industrial districts specialized in these sectors is described in a more detailed analysis.

Regarding the footwear sector, as we have mentioned above, the application of the methodology has allowed identifying 20 industrial districts (Figure 1). 75.5% of total employment in this sector in Spain is concentrated in these districts. A deeper analysis shows how the most important districts are located in two local labour systems with centre in Elche and Elda, respectively. In the case of the local labour system with centre in Elche (Table 5), 24.529 people are working in the footwear sector representing 24.9% of the whole Spanish footwear sector and 33% of the total employment in footwear establishments in the 20 industrial districts identified for this sector (see Table 1). Also, the importance of this district can be observed through the value of location quotient (21.77) showing the weight of this area in the Spanish footwear sector. Finally, to focus on the size of the establishments because of all workers are located in small and medium enterprises. The second footwear district is the local labour system with centre in Elda. This district concentrates 17.7% of the national employment in this sector and 23.5% considering the 20 industrial districts identified for this sector. The location quotient is also high (26.12) and there is a predominance of small and medium enterprises absorbing 100% of total employment in this area. Apart of these two local labour systems identified as industrial districts for the footwear sector, there are also other important and significative districts as those with centre in Villena, Almansa e

Inca. In these cases, the employment in this sector is high as well as the location quotient value.

Regarding the textiles sector (Table 6), there are identified 20 industrial districts concentrating 39.1% of the total employment at national level. In this sector, local labour system with centre in Sabadell appears as the most important area. This industrial district concentrates 14.7% of the Spanish textiles sector and 37.7% of the employment of the 20 textiles districts. Other industrial districts specialized in textiles are those with centre in Ontinyent, Manresa, Vic and Alcoy. In these areas, there is a high concentration of textiles employment as well as the value of the location quotient is significant.

In conclusion, the industrial districts identified for both footwear and textiles sector share the characteristic of the important weight in their respective sectors at national level in terms of employment and number of establishments. This way, it can be proof how certain productive sectors have a high geographical concentration showing, also, a high internal specialization. Also, these areas are characterized by the predominance of small and medium enterprises, being this one of the main characteristics that describes an industrial district. The application of the methodology explained in the second section has allowed the verification about the high concentration of employment and establishments in industrial districts and, also, how these districts are highly specialized in the analysed industrial sectors. Finally, the analysis shows the importance of the industrial districts in the whole Spanish manufacturing industry.

4. Conclusions

Local productive systems and industrial districts still being analysed by researchers and policy-makers since the last two decades. During this time, several works have been developed in order to approach to a territorial identification of these systems. Most of the studies about the identification of local productive systems are based in quantitative and qualitative methodologies and studies trying to combine both methodologies. In this work, the identification of industrial districts in Spain has been done applying the methodology used by ISTAT for the Italian case. This methodology has allowed the identification of territorial areas where the industrial sectors are centred.

The application of this methodology has allowed identifying 229 industrial districts that concentrate 48% of the industrial employment of Spain. For sectors it is the industry of textiles that has bigger number of identified districts, followed by wooden furniture and food industry. However, if it is considered the relevance of the specialization industry in the industrial identified districts, through the percentage that supposes the employment in this sector regarding the total of the occupation from the sector at national level, the most outstanding sectors are different. In this case, it highlights the great importance of the districts specialized in footwear; those concentrate 75,5% of the national total of this industry. The districts specialized in textiles that concentrate 39,1% of the total sectorial employment in Spain also stand out.

Also, a productive high specialization is observed in some of these districts like it is the case of those that have as main industry the footwear, the textiles industry, the food industry, the wood manufacturing and wooden furniture or the industry of the natural stone. In the industrial districts identified in these sectors, as much the employment as the industrial establishments of the specialization sector suppose a high percentage of the total industry in these areas.

Lastly, these areas are characterized by small and medium enterprises presence, being this small dimension one of the characteristics characteristic of the industrial districts. Anyway, what is verified is how a very high percentage of the establishments and of the employment of these industrial sectors it is located in the industrial identified districts, underlining the importance of the figure of the industrial districts in the context of the Spanish industry.

In the application of the methodology developed by the ISTAT, specialization has been selected as a variable in order to identify industrial districts in the Spanish territory. Also, the footwear and textiles sectors have been analysed because their high weight in employment and number of establishments not only in their respective sectors but also in the industrial districts identified for each sector. However, it is important to stress the fact that networks of establishments identified through statistical criteria can not automatically described as industrial districts in the sense of concentrations of enterprises characterized by the existence of local relationships based on coordination

and cooperation (in aspects as production, innovation or market distribution). So, identifying industrial districts only through quantitative methodologies can not be enough because the concept of industrial district, as Marshall defined in his works, requires qualitative information in order to increase the comprehension about industrial districts and local productive systems.

Bibliography:

- Becattini, G. (1979): "Dal 'settore' industriale al 'distretto' industriale. Alcune considerazioni sull'unità di indagine dell'economia industriale", *Rivista di Economia e Politica Industriale*, nº 1.
- Bellandi, M. (1986): "El distrito industrial en Alfred Marshall", *Estudios Territoriales*, nº 20, 31-44.
- Boix, R. and Galletto V. (2005): Identificación de Sistemas Locales de Trabajo y Distritos Industriales en España, Dirección General de Política para la PYME, Secretaría General de Industria, Ministerio de Industria, Turismo y Comercio (mimeo).
- Brusco, S. (1992): "El concepto de distrito industrial: su génesis", in Pyke, F., Becattini, G. and Sengenberger, W.: *Los distritos industriales y las pequeñas empresas I. Distritos industriales y cooperación interempresarial en Italia*, Ministerio de Trabajo y Seguridad Social, Madrid, 25-37.
- Dei Ottati, G. (1996): "Economic changes in the district of Prato in the 1980s: Towards a more conscious and organised industrial district", *European Planning Studies*, No.4.
- Coombes, M.G. and Openshaw, S.O. (1981): "The Use and Definition of Travel-to-Work Areas in Great Britain: Some Comments", *Regional Studies*, núm. 16, pp.141-149.
- Fuà, G. (1988): *Small-scale industry in rural areas: the Italian Experience*, en *The Balance between Industry and Agriculture in Economic Development*. Ed. K.J. Arrow, Macmillan, London.
- Garofoli, G. (1986): "Modelos locales de desarrollo", en *Estudios Territoriales*, nº 22, pp. 158 a 168.
- Garofoli, G. (1991): "Local networks, innovation and policy in italian industrial districts", en Bergman, E.M., Maier, G. y Tödling, F. (eds.), pp. 119-140.
- ISTAT (1996): *Rapporto annuale. La situazione del Paese nel 1995*, ISTAT, Roma.

- ISTAT (1997): I sistemi locali del lavoro, Roma, Istituto Poligrafico e Zecca dello Stato
- Marshall, A. (1920): Principles of Economics, ed, Macmillan, London (first edition published in 1890).
- Lainé, F. (2000): Agglomérations spécialisées d'établissements et systèmes localisés de production: une approche statistique. INSEE, Direction de la Diffusion et de l'Action Régionale, Département de l'Action Régionale, Division "Etudes Territoriales", Paris.
- Sforzi, F. (1987): "L'identificazione spaziale", in Becattini, G. (ed.): Mercato e forze locali. Il distretto industriale, Bologna, Il Mulino, 143-167.
- Sforzi, F. (1992): "Importancia cuantitativa de los distritos industriales marshallianos en la economía italiana" en Pyke, F., Becattini, G. y Sengenberger, W.: Los distritos industriales y las pequeñas empresas I. Distritos industriales y cooperación interempresarial en Italia, Ministerio de Trabajo y Seguridad Social, Madrid, pp.111-145.
- Sforzi, F. and Lorenzini, M. (2002): I distretti Industriali en L'esperienza italiana dei distretti industriali, IPI – Istituto per la Promozione Industriale, Ministero delle Attività Produttive, Roma
- Smart, M.W. (1974): "Labour Market Areas: Uses and Definitions", Progress in Planning, núm. 2, pp.239-353.
- Triglia, C. (1993): "Distritos industriales italianos: ni mito ni interludio"; in Pyke, F. and Sengenberger, W.: Los distritos industriales y las pequeñas empresas III. Distritos industriales y regeneración económica local, Ministerio de Trabajo y Seguridad Social, Madrid, 63-80.
- Ybarra, J.A. (1991): "Determinación cuantitativa de distritos industriales: la experiencia del País Valenciano", Estudios Territoriales, nº 37, 53-67.

Table 1. Industrial districts and employment level by sector.

	Industrial Districts	Employment in the main industry of districts (a)	Total sectorial employment in Spain (b)	Industrial employment of districts (c)	Employment in SME's of the main industry (d)	% of main industry on national total of sector (a)/(b)	% of main industry on total industry (a)/(c)	% of employment in SME's on the main industry (d)/a)
Footwear	20	74379	98525	111927	73799	75,5%	66,5%	99,2%
Textiles	20	71646	183148	178766	60926	39,1%	40,1%	85,0%
Food industry	22	52309	414594	98086	37985	12,6%	53,3%	72,6%
Clothing	33	21668	165176	56697	20793	13,1%	38,2%	96,0%
Graphic arts and publishing	1	20056	114917	283127	18026	17,5%	7,1%	89,9%
Glass and ceramics	9	17486	86774	42972	16281	20,2%	40,7%	93,1%
Wooden furniture	22	17192	151500	42217	16204	11,3%	40,7%	94,3%
Machinery and mechanical equipm.	4	12172	232453	35725	8085	5,2%	34,1%	66,4%
Mach. and electrical-electronic material	1	11376	154341	114603	6113	7,4%	9,9%	53,7%
Construction materials	20	10780	129411	63652	10453	8,3%	16,9%	97,0%
Chemical industry	3	8688	138326	45215	6145	6,3%	19,2%	70,7%
Paper	9	5962	52297	31653	5066	11,4%	18,8%	85,0%
Wood	11	5935	144851	20185	5935	4,1%	29,4%	100,0%
Leather	12	4846	24134	25517	4846	20,1%	19,0%	100,0%
Jewellery	3	4799	20210	163783	4799	23,7%	2,9%	100,0%
Toys	7	4759	12467	44231	4064	38,2%	10,8%	85,4%
Natural stone	10	4184	35643	14428	4184	11,7%	29,0%	100,0%
Beverages and tobacco	15	2660	61305	20178	2660	4,3%	13,2%	100,0%
Manufacturing of metal products	2	1546	360139	6335	941	0,4%	24,4%	60,9%
Rubber and plastic	2	657	130831	2041	657	0,5%	32,2%	100,0%
Other manufacturing industries	3	632	18972	18593	632	3,3%	3,4%	100,0%
TOTAL	229	353732	2730014	1419931	308594	13,0%	24,9%	87,2%

Source: Industrial Register (2000) and authors elaboration.

Table 2. Industrial districts and number of establishments by sector.

	Industrial Districts	Establishments in the main industry of districts (a)	Total sectorial establishments in Spain (b)	Industrial establishments of districts (c)	% of main industry on national total sector (a)/(b)	% of main industry on total industry (a)/(c)
Footwear	20	5400	7355	11316	73,4%	47,7%
Textiles	20	4688	11725	16310	40,0%	28,7%
Food industry	22	3011	67498	9588	4,5%	31,4%
Graphic arts and publishing	1	1503	13328	20468	11,3%	7,3%
Wooden furniture	22	1483	21984	5371	6,7%	27,6%
Clothing	33	1150	11078	7273	10,4%	15,8%
Wood	11	822	37646	2620	2,2%	31,4%
Glass and ceramics	9	627	5846	4424	10,7%	14,2%
Construction materials	20	591	11773	6214	5,0%	9,5%
Jewellery	3	569	3876	18132	14,7%	3,1%
Leather	12	549	2590	3608	21,2%	15,2%
Machinery and mechanical equipment	4	452	22055	2375	2,0%	19,0%
Natural stone	10	435	5324	1903	8,2%	22,9%
Machinery and electrical-electronic material	1	399	8620	8538	4,6%	4,7%
Toys	7	256	990	3258	25,9%	7,9%
Beverages and tobacco	15	232	4404	2995	5,3%	7,7%
Chemical industry	3	217	7532	2934	2,9%	7,4%
Paper	9	114	2268	2903	5,0%	3,9%
Manufacturing of metal products	2	101	55442	607	0,2%	16,6%
Other manufacturing industries	3	26	2888	1552	0,9%	1,7%
Rubber and plastic	2	17	10784	220	0,2%	7,7%
TOTAL	229	22642	315006	132609	7,2%	17,1%

Source: Industrial Register (2000) and authors elaboration.

Table 3. Industrial districts and employment by regions.

	Industrial Districts	Employment in the main industry of districts (a)	Industrial employment of districts (b)	Total industrial employment (c)	% of main industry on total industry in districts (a)/(b)	% of industrial employment of districts on industrial regional employment (b)/(c)
COM. VALENCIANA	45	104536	346584	452066	30,2%	76,7%
CATALUÑA	29	84852	503714	622196	16,8%	81,0%
MURCIA	9	43665	89201	117287	49,0%	76,1%
PAÍS VASCO	9	30914	220375	290392	14,0%	75,9%
CASTILLA-LA MANCHA	44	25301	72950	123286	34,7%	59,2%
ANDALUCÍA	31	21518	51800	313919	41,5%	16,5%
CASTILLA Y LEÓN	13	8693	30913	170916	28,1%	18,1%
ARAGÓN	20	8489	27230	132509	31,2%	20,5%
LA RIOJA	6	7395	14029	33767	52,7%	41,5%
BALEARES	5	5963	13776	50792	43,3%	27,1%
NAVARRA	10	5365	16815	69733	31,9%	24,1%
ASTURIAS	1	1585	19362	49613	8,2%	39,0%
MADRID	1	1580	3592	320938	44,0%	1,1%
CANTABRIA	1	1367	1705	33437	80,2%	5,1%
EXTREMADURA	3	1319	1934	38114	68,2%	5,1%
GALICIA	2	1190	5951	146269	20,0%	4,1%
TOTAL	229	353732	1419931	2965234	24,9%	47,9%

Source: Industrial Register (2000) and authors elaboration.

Table 4. Industrial districts and number of establishments by regions.

	Industrial Districts	Establishments in the main industry (a)	Total number of industrial establishments in districts (b)	Total number of industrial establishments by region (c)	% of main industry on total industry in districts (a)/(b)	% of industrial establishments in districts on total industrial establishments in the region (b)/(c)
COM. VALENCIANA	45	7497	37387	50932	20,1%	73,4%
CATALUÑA	29	4980	39237	53934	12,7%	72,8%
MURCIA	9	2486	8720	13103	28,5%	66,5%
ANDALUCÍA	31	1835	6246	40532	29,4%	15,4%
CASTILLA-LA MANCHA	44	1801	10110	18085	17,8%	55,9%
PAÍS VASCO	9	1116	15622	20739	7,1%	75,3%
CASTILLA Y LEÓN	13	904	4172	22927	21,7%	18,2%
ARAGÓN	20	477	3355	15710	14,2%	21,4%
LA RIOJA	6	393	1213	3090	32,4%	39,3%
BALEARES	5	390	2054	9995	19,0%	20,6%
NAVARRA	10	262	1427	4700	18,4%	30,4%
EXTREMADURA	3	124	299	7630	41,5%	3,9%
ASTURIAS	1	119	1660	6112	7,2%	27,2%
CANTABRIA	1	111	205	3550	54,1%	5,8%
GALICIA	2	85	578	18745	14,7%	3,1%
MADRID	1	62	324	28222	19,1%	1,1%
TOTAL	229	22642	132609	318006	17,1%	41,7%

Source: Industrial Register (2000) and authors elaboration.

Table 5. Main industrial districts of footwear industry.

Industrial District (centre)	Location Quotient (LQ)	Employment in the main industry (a)	Employment in SME's in the main industry (b)	% of employment in SME's in the main industry (b)/(a)
Elche/Elx	21,77	24529	24529	100,0%
Elda	26,12	17488	17488	100,0%
Almansa	23,52	5143	4822	93,8%
Villena	22,38	4301	4301	100,0%
Inca	18,75	4108	3849	93,7%
Arnedo	21,48	2995	2995	100,0%
Fuensalida	18,31	2398	2398	100,0%
Monóvar/Monóver	22,28	2124	2124	100,0%
Crevillent	8,4	1966	1966	100,0%
Illueca	27,79	1906	1906	100,0%

Source: Industrial Register (2000) and authors elaboration.

Table 6. Main industrial districts of textiles industry.

Industrial District (centre)	Location Quotient (LQ)	Employment in the main industry (a)	Employment in SME's in the main industry (b)	% of employment in SME's in the main industry (b)/(a)
Sabadell	5,86	26992	22545	83,5%
Ontinyent	11,96	6351	5853	92,2%
Manresa	5,17	5400	5400	100,0%
Vic	6,68	5089	2901	57,0%
Alcoy/Alcoi	9,06	4687	4687	100,0%
Girona	3,39	3449	2119	61,4%
Olot	5,5	3362	3362	100,0%
Berga	11,04	2851	1570	55,1%
Ripoll	6,63	2305	2045	88,7%
Cieza	7,25	1995	1595	79,9%

Source: Industrial Register (2000) and authors elaboration.

Figure 1. Industrial districts of footwear industry in Spain.

