

## **ANNEX II**

### **WE KNOW ABOUT SPANISH MANUFACTURING ENTRIES, BUT WHAT ABOUT SERVICES?**

*We know about Spanish manufacturing entries, but what about services?*

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## ANNEX II

### WE KNOW ABOUT SPANISH MANUFACTURING ENTRIES, BUT WHAT ABOUT SERVICES?

#### 1. INTRODUCTION

New entries and exits are the engine for the market selection process. Whereas new entries represent increased competition, exits represent the unsuccessful trial of a learning process. New firms begin a learning process of their level of efficiency in the market (Jovanovic, 1982) but their survival is obstructed by barriers to entry. Evidence shows that while these barriers do not prevent entry they condition it. This means that firms enter the market in a continuous process of trial-and-error (Geroski, 1995). However, one should expect the barriers to entry to be highly heterogeneous and, in the manufacturing and service sectors, to be diverse (Audretsch et al., 2004).

Our aim, therefore, is to analyse the process of entry by comparing Spanish firms in the manufacturing and service sectors from the *Sistema de Análisis de Balances Ibéricos* (SABI) between 1994 and 2002. There is ample evidence for manufacturing firms but there are few studies, if any,

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of firms in the service sector. This underlines the relevance of our analysis.

Geroski's (1995) stylised facts illustrate the broad empirical evidence on firm entry and its relationship with industrial dynamics. One important aspect is the contradiction between the theoretical approach of industrial organization and the empirical evidence. As the evidence does not match the theory, some of the theoretical hypotheses must be failing.

The analysis of Spanish firm entry is a relatively new research field that has developed only over the last ten years. The reason for this late development compared to international research is a lack of data. Recent studies have attempted to fill this gap. Segarra et al. (2002), for example, showed that high entry and exit rates are more common between small firms than between large firms, i.e. small firms have a high turnover and large firms have a low turnover. As we have seen, however, most studies of Spanish firm demography have focused on the manufacturing sector and little is known about the service sector.

Our results can be summarised as follows. Firstly, the service sector differs significantly from the manufacturing sector. This difference is also clear if we analyse size during creation: new firms in the service industries have less heterogeneous size than those firms in the manufacturing industries. Also, the penetration rate, measured in terms of the percentage of sales new firms seize from incumbents, is small. Finally, the way new businesses start up is not homogenous between the manufacturing and service industries. When a new firm is created through the diversification of an existing firm, it will be considerably larger in a manufacturing industry than in a service industry.

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This study is structured as follows. In section 2 we summarise the literature on Geroski's (1995) stylised facts. In section 3 we review the Spanish literature on firm entry. In section 4 we present the data description of the Spanish data base SABI (*Sistema de Análisis de Balances Ibéricos*). In section 5 we present the empirical evidence of the manufacturing and service entrants. Finally, in section 6 we summarise our main findings and present our conclusions.

## **2. "WHAT DO WE KNOW ABOUT ENTRY?"**

Firm dynamics have been the focus of industrial organization. Geroski (1995), Sutton (1997) and Caves (1998) inferred stylized facts and stylized relationships about the basic elements of firm dynamics and industrial evolution. Firm entries and exits, in addition to the selection and learning process, can explain the evolution of an industry. Johnson and Parker (1994) solved the puzzle about the post-entry effect of firms on firm dynamics. New entrants can have a multiplier effect, but they can also have a competitive effect. The former implies that new entries encourage the entrance of other firms and the latter implies that new entrants will discourage the entrance of new firms because of increased competition in the market.

Whatever the relationship between entries, exits and future industrial dynamics, one characteristic is constant: entries and exits are highly correlated. This correlation has been extensively analysed by empirical studies. Geroski's (1995) stylised facts are the main findings in the literature.

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When Geroski (1995) analysed the stylised facts and the stylised results about firm entry, he linked the empirical evidence to the theory. While theory helps economists to simplify reality, it can also hide features that are crucial to characterising industrial dynamics. Geroski (1995) points out that the reality can have striking results that are not explained by rational arguments. His main contribution is the interconnection of different stylised fact obtained from empirical evidence.

Sutton (1997) discussed the empirical and theoretical literature on Gibrat's Law and argued that most entries and exits have relatively little effect on the largest firms in the industry (which are likely to have achieved the optimal scale).

Caves (1998) summarised previous evidence on firm entry, exit and mobility. He established that entrants suffer from high rates of infant mortality, though small firms suffer more intensively. The main consequence of this is that net entry rates are small.

In the next section we present and comment Geroski's (1995) stylised facts in more detail.

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**Table 1. Stylised facts and results about firm entry**

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<b>Stylised Fact 1</b>	High entry, but low penetration rate
<b>Stylised Fact 2</b>	Larger "within" than "between" industry variation
<b>Stylised Fact 3</b>	Low net entries and penetration rates
<b>Stylised Fact 4</b>	Low survival rate and low average size
<b>Stylised Fact 5</b>	Entry by diversification less common but more successful
<b>Stylised Fact 6</b>	Different waves of entrants affect markets
<b>Stylised Fact 7</b>	Large-scale and very rapid post-entry penetration implies high cost of adjustment

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*Source: author's own from Geroski (1995).*

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Table 1 summarises Geroski's (1995) Stylised Facts. While Geroski also described Stylised Results, these referred to econometric relationships between different variables. The Stylised Facts, on the other hand, refer to observed evidence of firm entry. Here we focus on the stylised facts.

## 2.1. Stylised facts about entry

***Stylised fact 1.* Entry is common. Large numbers of firms enter most markets in most years, but entry rates are far higher than market penetration rates.**

Geroski's (1995) stylised fact 1 confirms the existence of a high entry rate but low penetration rate. This means that it is easy to start a new business but it is not easy to achieve enough share of the market. Consequently, new firms will not erode the market power of incumbents.

What is the explanation for this? Firstly, we could argue that new firms are blocked by incumbents. However, Geroski also states that incumbents react selectively to the new entrants (stylised result 6). Secondly, new firms are not efficient enough. This affects their ability to compete against the active firms. For example, incumbents may have better information about competitiveness, so they know which firms are real threats in the market.

Why do firms enter a market without having achieved a high level of efficiency? There are four explanations for this. Firstly, and as Geroski (1995) states, the size of most new firms is lower than the market average. Entrepreneurs may have enough ability, their techniques may be correct and there may be demand in the market but, if the firm does not take advantage of scale economies, they may struggle to achieve a

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high proportion of market share and even to survive. Secondly, this divergence between entry rates and penetration rates may be due to overestimated expectations (Audretsch, 1995b). In other words, entrepreneurs may overestimate their ability to achieve enough market share to be viable. Evidence suggests that people tend to overestimate their abilities relative to others<sup>1</sup>. Entrepreneurs may estimate profits in the industry on the basis of past profits or their future value. However, few firms are able to acquire a share of the market<sup>2</sup>. Thirdly, an entrepreneur's lack of ambition or unwillingness to take risk may cause a firm to be born undersized. A lack of ambition would damage the firm's viability in the long run<sup>3</sup>. Finally, some firms may be temporary alleviations to the problem of unemployment<sup>4</sup> without having a viable long-term project.

What, then, about services? Since the average size of service firms is smaller, they may remain active more easily. Also, thanks to lower fixed costs, they can enter and leave the market more easily, though this is obviously conditioned by the particular sectorial characteristics.

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<sup>1</sup> These over-optimistic estimates of ability can have profound consequences in many areas. For example, entrepreneurs may overestimate their own ability to pick stocks, take inappropriate risks in product development, overestimate their chances of winning in court and be too willing to take cases to trial, or take excessive risks in founding a firm (Odean, 1999; Simon and Houghton, 2003).

<sup>2</sup> In fact, Ilmakunnas and Topi (1999) showed that only rapid growth in demand creates opportunities for firms to enter irrespective of the size of the entry barriers.

<sup>3</sup> Storey (1994a) stated that that an entrepreneur's ambition is an explicative factor of firm growth. Schutjens and Wever (2000) stated that an entrepreneur's ambition is a key factor to success.

<sup>4</sup> Audretsch et al. (2001) identified a double relationship between unemployment and entrepreneurship: "Schumpeter" and "refugee" effects. The "Schumpeter" effect reduces unemployment and a "refugee" effect stimulates entrepreneurship. Also, Storey (1991) reported the presence of a "pull" and a "push" hypothesis. The "pull" effect implies that a high growth in GDP improves anticipated profitability and increases the number of entrants. The "push" effect implies that, in times of crisis, the number of workers in the economy will increase and the potential entrant's opportunity cost of starting a new business will decrease.

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***Stylised fact 2.*** Although there is a very large cross-section variation in entry, differences in entry between industries do not persist for very long. In fact most of the total variation in entry across industries and over time is “within” industry variation rather than “between” industry variation.

Industries are made up of potential firms that are willing to enter the market and achieve a high level of efficiency. However, the desire to enter varies across time. During some periods, waves of firms burst into the market to achieve market share but, during others, entry rates diminish considerably.

This fluctuating behaviour of entry rates within an industry cannot be explained by different levels of structural variables since barriers to entry, profits and market concentration are stable over time (Geroski, 1995).

Why, then, does entry vary “within” an industry? An explanation can be found in the external reasons to enter the industry. Economic cycles can influence the evolution of firm entry in the long run. Following Audretsch et al. (2001), in a “Schumpeter” model, firms enter the market to take opportunity of positive expectations on the economy. In a “refugee” model, however, the number of entrants increases if there is a decline in the economy. Whatever the model in an industry, the economic situation can affect the number of firm entries.

However, a variety of structural and technological changes can determine different waves of firms. The product life cycle theory recognises that when a product appears in the market there are different periods (Abernathy and Utterback, 1975; Utterback and Abernathy,

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1975; Utterback, 1979). Firms can enter more or less intensely depending on the expectations in the market. Moreover, firms entering in the market can respond to technological changes: firms entering at the beginning focus on the technology process and firms entering at the end introduce product innovations.

We should expect economic expectations and life product cycles to be different between industries, especially if we compare manufacturing and services. Is the product life cycle longer in the manufacturing than in the service sector? Can this difference affect entry performance?

***Stylised fact 3. Entry and exit rates are highly positively correlated, and net entry rates and penetration are modest fractions of gross entry rates and penetration.***

High levels of turnover imply high levels of market turbulence. This empirical evidence would be reflected by two observations. First, the low capacity of new entrants to remain active in the market may be the result of their difficulty in achieving a high level of competitiveness and a bigger size. Second, the number of active firms in the market is stable in the long run. This means that if in one sector the number of new firms entering is approximately the same as the number of firms exiting, the number of incumbents will remain equal.

The next question is whether the exiting firms are those that entered recently or whether they are obsolete firms that have been expelled from the market. The answer to this question is stylised fact 4.

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***Stylised fact 4.*** The survival rate of most entrants is low, and even successful entrants may take more than a decade to achieve a size comparable to the average incumbent.

This stylised fact states that firms recently entering the market are the first to exit it. Firm survival likelihood is therefore higher for older firms than for new entrants. The fact that most new firms entering the market are smaller than the average implies that firms will take a long time to achieve an efficient scale of production. Success may be rapid, but efficiency may take longer.

This stylised fact is metaphorically similar to Audretsch's (1995b) conical revolving door, which represents market turbulence. Because of the conical shape of the door, the speed in the lower part of the door is higher than at the top. This speed reflects the speed at which firms exit the market. Consequently, a large number of firms would enter the market, but their low likelihood of survival implies that few of them would remain in the market for a long period of time<sup>5</sup>.

The crucial point is the low market erosion. The high number of entrants would not be able to erode the incumbents' market share. Moreover, the surviving firms would not achieve the average size needed to compete with the active firms in the market in the short run and this would increase the obstacles to competing in the market.

***Stylised fact 5.*** *De novo* entry is more common but less successful than entry by diversification.

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<sup>5</sup> In fact, each metaphor corresponds to a different entrepreneurial model. In a model where young firms substitute

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There are two main reasons for the greater success of new entrants by diversification. Firstly, new firms not supported by a parent company encounter greater difficulties than those that enjoy the financial help and benefit from the know-how of the original company. Market knowledge and previous experience transmitted to a subsidiary can enhance its chances of survival. Secondly, a company that diversifies its portfolio can neutralize losses caused by risky investments.

A spin-off or new plant of a large company is therefore less likely to fail. Services, however, may have a greater capacity to adapt to the market, so being a *de novo* entry may not be significant.

***Stylised fact 6.* Entry rates vary over time, coming in waves which often peak early in the life of many markets. Different waves tend to contain different types of entrant.**

The number of entrants and their characteristics are highly correlated with the product life cycle. The product life cycle considers that, in each phase, the kind of technology used in the production is different. Because of different technological shakeouts, active firms may not be able to adapt their traditional techniques. In every technological shakeout, a burst of new firms will enter the market with new technologies that are very different from previous ones (Abernathy and Utterback, 1975; Utterback and Abernathy, 1975; Utterback, 1979). Consequently, firms entering at the first few stages of the product life cycle will be very different from those entering at the final stages<sup>6</sup>.

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<sup>6</sup> These technological waves are a reference to the technological entrepreneurship regime and routine regime (Audretsch, 1991). In the early stages, there is a highly innovative entrepreneur regime and in the later stages there is a routine regime.

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With the appearance of a new market, and after a period of exploration by the first new entrants, there will be a huge increase in the number of entrants. In the first few stages, massive producers appear in the market and fill the gap with standardised products. Later, more specialised firms appear, diversifying the product and attempting to satisfy small niches and enhance the quality of the product with new models.

***Stylised fact 7. Costs of adjustment seem to penalize large-scale initial entry and very rapid post-entry penetration rates.***

Entry is difficult, but it is more difficult if you are large. Large firms may have the size needed to compete but they do not know their level of efficiency (Jovanovic, 198) until they enter the market. Consequently, a company that is born large has to invest larger amounts of money than one that is born small. If this company overestimates its level of efficiency, the cost of adjustment will also be larger. Conversely, small firms can be more flexible and can adapt to changes both in demand and in production.

Finally, a rapid penetration rate with a price strategy will diminish a company's future viability. A price strategy such as the reduction of price will, for example, reduce a company's price-cost margin as well as its profits, which are needed for re-investment, increase the size of its plant and change its production process.

## **2.2. Preliminary conclusions**

As Geroski (1995) pointed out, the results from the empirical literature and industrial theories are conflicting. Theories can provide reasonable arguments to explain reality, but reality surpasses theory since this

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theory cannot reflect perfectly the empirical evidence (Audretsch et al., 2004). Consequently, there is an unexplained gap between theory and empirical evidence.

However, there are gaps not only in the theory but also in the empirical evidence. For example, what is the effect of regional and urban differences on the process of firm entry? A large number of studies have analysed the effect of territorial variables on firm entry but there is no compilation of empirical evidence to unify all the results.

Finally, and more specifically for our purpose, services have been completely ignored. In a knowledge-based economy, where service industries are becoming increasingly important in the economic structure, services cannot be ignored. Our aim is to fill this gap.

### **3. SPANISH EMPIRICAL EVIDENCE**

Having analysed Geroski's (1995) stylised facts, in the next section we present recent Spanish empirical literature on firm entry. Spanish researchers have only recently begun to analyse Firm Demography. This is mainly due to the lack of longitudinal industrial data.

The first studies to analyse the aggregate behaviour of industries were conducted by Fariñas et al. (1992), who analysed the turbulence of Spanish firms and their job creation between 1980 and 1998<sup>7</sup>. The main conclusion of their study is that small firms have a high job generation capacity<sup>8</sup>.

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<sup>7</sup> Those authors analysed the *Encuesta Industrial* database.

<sup>8</sup> Which is highly important since it is a period characterised by the industrial modernization.



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Clearly, new entrants are attracted to an industry because they hope to reap profits from a higher than expected level of efficiency. This firm entry pressure causes entering firms to modify industrial efficiency. Callejón and Segarra (1999) analysed the effect of firm entry and its impact on efficiency by considering the existence of creative destruction, i.e. whether a high market turnover has a positive effect on incumbents by encouraging them to increase their capacity to grow. Their study contributed to the literature through their regional approach to the analysis of efficiency levels.

Aranguren (1999) analysed firm entry in the Autonomous Community of the Basque Country (CAPV) between 1985 and 1993. The results of this study revealed several characteristics specific to the industrial structure of that region: small firms are created in technologically intensive sectors with a low minimum efficient scale.

More recently, Segarra et al. (2002) analysed the entry, exit and survival process of Spanish manufacturing firms between 1994 and 2000. Their contribution is a wide analysis that introduced locational determinants, product and process innovation, interaction between entries and exits and an analysis of firm survival<sup>9</sup>.

Finally, Arauzo and Manjón (2004) and Costa et al. (2004) analysed the firm entry process in terms of locational factors. The first of these studies analysed the firm entry process for the Autonomous Community of Catalonia between 1987 and 1996 and showed that firms choose their location by taking into account the area around a municipality. The second of these studies analysed the process for Spanish manufacturers

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<sup>9</sup> Segarra and Callejón (2002) analysed the survival of Spanish manufactures between 1994 and 1998.

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between 1980 and 1994 and showed that firms choose a location in accordance with the technological level and life cycle of the industries.

To sum up, the last few decades have seen a proliferation of Spanish studies on firm demography. Those studies have focused on the manufacturing industries, while the service sector has largely been ignored. Our aim is to fill this gap in the literature.

#### **4. DATA DESCRIPTION**

In this section we present the data for our analyses. The SABI database provides information from Spanish and Portuguese firms that present their accounts to the business register. It contains information about more than 550,000 Spanish firms and 50,000 Portuguese firms since 1994. It covers more than 95% of Spanish firms that present their accounts to the business register.

Our sample contains 139,922 Spanish firms, of which 68,281 firms are in the manufacturing sector and 71,641 firms are in the service sector, covering the period 1994 and 2002. All firms have a common feature, which is that they survived until 2002. However, some firms entered the market before the first period of observation (1994), while others have entered the market since then.

To overcome problems in estimation caused by missing data, we include firms in our sample up to the date at which information is missing on any variables used in the analysis. In this way we have constructed an

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unbalanced data panel without missing data<sup>10</sup>. Also, to take full advantage of the panel nature of the data (and to allow us to define firm growth), we include only firms with observations in at least two consecutive years.

## 5. WHAT DO WE KNOW ABOUT SPANISH ENTRANTS?

This section shows empirical evidence to test the stylised facts analysed by Geroski (1995) in the Spanish case. Are new firms born smaller than active ones? And, more importantly, are there any differences between firms in the manufacturing sector and those in the service sector?

Most of the stylised facts and literature related to firm demography has analysed manufacturing and services remain on the dark side of the economy. Our aim is to highlight differences between these two sectors<sup>11</sup>.

Having discussed the empirical evidence compiled in the literature, we will now compare the behaviours of the manufacturing and service sectors. Table 2 shows the means and standard deviations for these sectors.

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**Table 2. Mean and standard deviation of the number of workers**

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	<b>Mean</b>	<b>Standard deviation</b>
Manufacturing	29.86	219.36
Services	24.42	377.66

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*Source: author's own from SABI database.*

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<sup>10</sup> We have omitted firms after the first instance of missing data because we find evidence that missing data is randomly distributed across firms. Applying the alternative of (potentially incorrect) imputations could result in serious measurement errors.

<sup>11</sup> Database restrictions mean that we will not be able to test all of Geroski's (1995) stylised facts.

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First, we can see that the mean size in the service sector is different from the mean size in the manufacturing sector. This means that firms in the service sector will remain smaller than those in the manufacturing sector.

Secondly, the standard deviation is larger in the service sector than in the manufacturing sector. This indicates a higher heterogeneity in the service sector i.e. large firms coexist with small firms<sup>12</sup>.

Having analysed several properties of the data base, we decided to estimate a test mean. Table 3 shows the difference in means between manufacturing and services.

<b>Table 3. Test mean of sizes between manufacturing and services.</b>			
	<b>Ha: difference &lt; 0</b>	<b>Ha: difference =0</b>	<b>Ha: difference &gt; 0</b>
Probability	1.000	0.0000	0.0000
<i>H0 = mean(manufactures) – mean(services)</i>			
<i>Source: author's own.</i>			

As we can see, the test mean shows that the difference between firms' size in the manufacturing sector is smaller than in the service sector. This reinforces the argument about the heterogeneity of service firms: in the service sector, large and small firms coexist.

However, will this difference also be true between incumbents and new firms, or new entrants behave differently? As Geroski (1995) stated, new firms sustain high entry rates but their penetration rate is low.

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<sup>12</sup> Obviously, within each service and manufacturing industry, there are different economic activities that are heterogeneous. However, we will focus not on the internal differences but on the main differences.

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Table 4 shows the ratio between new entrants and incumbents with respect to two variables: firm size, measured in terms of the number of employees, and sales for different percentiles in the data base. Specifically, we specify the following ratios:

$$Size = \frac{\text{New entrants measured in employees}}{\text{Active firms measured in employees}}$$

$$Penetration\ rate = \frac{\text{New entrants measured in sales}}{\text{Active firms measured in sales}}$$

*Size* is the ratio of the size of new firms to the size of active firms, measured in terms of employees. The *Penetration* rate, on the other hand, shows the capacity of new entrants to affect demand.

We will compare the size ratio and penetration rate of manufacturing and service industries in 1994 and 2002. These are the initial and final years of our data base and will enable us to compare their evolution.

**Table 4. Ratio of firm sizes and penetration rates for manufacturing and services (1994-2002).**

Percentile	<i>Manufacturing</i>				<i>Services</i>			
	<u>1994</u>		<u>2002</u>		<u>1994</u>		<u>2002</u>	
	Size	Penetr. rate	Size	Penetr. rate	Size	Penetr. rate	Size	Penetr. rate
<b>25</b>	0.33	0.22	0.75	0.69	0.50	0.20	0.67	0.71
<b>50</b>	0.33	0.22	0.67	0.63	0.33	0.18	0.67	0.65
<b>75</b>	0.30	0.19	0.60	0.52	0.27	0.19	0.69	0.56
<b>80</b>	0.31	0.19	0.60	0.49	0.26	0.19	0.69	0.53
<b>85</b>	0.29	0.17	0.56	0.46	0.26	0.17	0.62	0.51
<b>90</b>	0.28	0.18	0.57	0.46	0.23	0.18	0.62	0.48
<b>95</b>	0.22	0.14	0.50	0.39	0.22	0.22	0.62	0.45
<b>96</b>	0.20	0.14	0.47	0.46	0.23	0.21	0.65	0.45
<b>97</b>	0.18	0.12	0.47	0.39	0.21	0.19	0.66	0.47
<b>98</b>	0.12	0.12	0.49	0.44	0.23	0.24	0.61	0.50
<b>99</b>	0.16	0.11	0.52	0.55	0.53	0.16	0.60	0.52
<b>100</b>	0.01	0.01	1.00	1.00	0.01	0.00	1.00	0.21

*Source: author's own.*

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Table 4 shows that firm size is larger than the penetration rate for all percentiles for both years and both types of industry. For firms in the manufacturing sector, the size of the first quartile is 0.33, which means that the size of new entrants is 33% of the size of active firms. The penetration rate for these firms is 22%. If we compare these measurements for both types of industry and both years, we can conclude that in general the first of Geroski's (1995) stylised facts is satisfied.

Also, firm size and penetration rate increased between 1994 and 2002,, which means that surviving firms in our database increased in size. Finally, if we compare the manufacturing and service sectors, we can see that in 1994 the size of new entrants in the service sector was rather similar to that of active firms (at least for the first quartile and the last percentile).

**Table 5. Mean and “between” and “within” standard deviation for manufacturing and services.**

	<b>Mean</b>	<b>Standard Deviation</b>
<b>Overall</b>	27.26	305.42
<b>Between</b>		255.88
<b>Within</b>		118.55
<b>Manufacturing</b>	29.86	219.36
<b>Between</b>		167.31
<b>Within</b>		121.46
<b>Services</b>	24.42	377.66
<b>Between</b>		317.46
<b>Within</b>		115.28

*Source: author's own.*

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To sum up, new entrants are smaller than active firms and their penetration rate is lower. However, this difference is larger for firms in the manufacturing sector than for firms in the service sector.

Table 5 shows the mean size measured in terms of employees and the standard deviation (both “between” and “within” industries). Earlier, Table 2 showed the differences between the mean and standard deviation of firm size measured in terms of number of employees.

**Table 6. New firms entering the market without diversifying. Observations, mean and standard Deviation**

	<u>Year of observation</u>								
	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
<b>1994</b>	911	2492	4126	4019	4649	5325	6842	7249	8577
	8.39	12.01	11.99	14.27	14.15	14.36	13.56	13.45	12.64
	(28.14)	(59.89)	(51.98)	(66.55)	(63.09)	(67.68)	(67.68)	(66.55)	(62.00)
<b>1995</b>	-	1413	3588	3916	4780	5642	7119	7575	8632
		13.59	10.84	12.19	12.38	12.93	11.95	11.50	10.81
		(246.92)	(153.65)	(147.45)	(132.12)	(125.09)	(100.54)	(100.54)	(93.78)
<b>1996</b>	-	-	1699	3050	4305	5132	6478	6821	7475
			7.59	10.63	11.27	11.46	11.53	11.42	11.10
			(29.36)	(39.38)	(34.02)	(35.87)	(42.71)	(35.26)	(33.70)
<b>1997</b>	-	-	-	1767	4032	5350	6782	7242	7460
				9.02	10.51	11.12	11.40	11.86	11.64
				(42.58)	(35.76)	(33.14)	(32.96)	(38.33)	(34.40)
<b>1998</b>	-	-	-	-	2306	5056	7183	8040	7607
					30.76	22.46	19.71	17.63	17.13
					(1064.46)	(723.44)	(550.59)	(460.60)	(469.98)
<b>1999</b>	-	-	-	-	-	2771	6329	7895	6910
						8.82	12.40	12.57	13.51
						(39.45)	(67.34)	(61.82)	(60.52)
<b>2000</b>	-	-	-	-	-	-	3101	6559	5838
							9.96	10.70	12.55
							(72.71)	(56.59)	(64.18)
<b>2001</b>	-	-	-	-	-	-	-	2723	2723
								8.71	10.93
								(60.25)	(61.92)

*Source: author's own.*

With regard to standard deviation, the differences “within” the manufacturing sector and the differences “within” the service sector are quite similar, though the latter are slightly smaller.

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However, when we compare the “between” standard deviation there is a considerable difference. The “between” standard deviation is lower for the manufacturing sector than for the service sector, which confirms the idea that there is greater heterogeneity between firms in the service sector than between firms in the manufacturing sector.

We can conclude, therefore, that the differences between industries are higher than differences within industries and that Geroski’s (1995) stylised fact 2 is true. However, this characteristic is much more intense for the service sector.

**Table 7. New firms entering the market by diversification. Observations, mean and standard deviation**

	<u>Year of observation</u>							
	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
<b>1994</b>	-	2 3887.5 (5046.62)	1 12460 (-)	2 7715.5 (7028.55)	5 3476.4 (7028.55)	6 2982.8 (6420.3)	9 2061.4 (5250.3)	10 1901.2 (4987.6)
<b>1995</b>	1 101 (-)	1 112 (-)	2 218 (154.15)	2 272 (111.72)	3 321.33 (73.76)	2 192.5 (267.99)	4 203 (250.70)	4 316.25 (252.10)
<b>1996</b>	-	1 1060 (-)	1 1043 (-)	5 404.4 (359.02)	5 406.80 (355.31)	11 281.27 (257.13)	12 552.25 (542.72)	8 619.38 (639.80)
<b>1997</b>	-	-	2 1362 (1499.07)	5 1305.2 (869.64)	9 1125.11 (1002.45)	10 1799 (1974.04)	12 1831.5 (2472.66)	11 2073.27 (2718.24)
<b>1998</b>	-	-	-	5 1129 (1614.52)	8 1759.75 (1834.24)	14 1351.93 (1608.57)	14 1345.43 (1932.85)	12 1320.08 (1944.91)
<b>1999</b>	-	-	-	-	4 1220 (1672.48)	11 1398.91 (1161.15)	16 1442.5 (1518.51)	12 1274.75 (1882.47)
<b>2000</b>	-	-	-	-	-	5 3377.4 (3498.93)	12 3023.58 (4941.18)	11 3273.18 (5753.32)
<b>2001</b>	-	-	-	-	-	-	3 154.33 (151.00)	3 176.33 (115.14)

*Source: author’s own.*

Finally, we compared entry by diversification and entry by firms that do not depend on any other firm. For entry by diversification we considered firms belonging to a parent company. Table 6 shows the mean firm size



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and classifies firms entering in a specific year from 1994 to 2001 and their post-entry evolution from 1995 to 2002.

In general, the number of observations increases with time. Obviously, this is because they satisfy the requirements for belonging to the database over time. More importantly, we observe that entries by diversification (Table 7) are larger than other entries<sup>13</sup> but are less common.

Our database shows that entry by diversification is less common. However, we cannot extrapolate whether this type of entry is more successful because we have no information about their survival.

**Table 8. Percentage of service firms and their relative size.**

	Percentage of service firms over all entrants		Service size/Manufacturing size	
	<u>Novo entry</u>	<u>Diversification</u>	<u>Novo entry</u>	<u>Diversification</u>
<b>1994</b>	47.32	49.78	87.73	4.81
<b>1995</b>	44.02	38.89	64.02	87.82
<b>1996</b>	50.72	64.58	65.58	51.18
<b>1997</b>	51.09	55.92	72.10	132.64
<b>1998</b>	52.86	58.12	237.58	66.84
<b>1999</b>	43.73	58.62	80.57	59.02
<b>2000</b>	54.61	75.91	62.21	1511.07
<b>2001</b>	51.93	33.33	55.86	41.72

*Source: author's own.*

Table 8 summarises the above information in terms of ratios: (i) the percentage of service entrants with respect to all entrants between 1994 and 2002, and (ii) the ratio of firm size in the service sector to firm size in the manufacturing sector<sup>14</sup>.

<sup>13</sup> In addition to standard deviation, which is also larger.

<sup>14</sup> These ratios are therefore as follows:

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Table 8 highlights two important points. Firstly, the percentage of entrants in the service sector is higher than in the manufacturing sector, both for *novo* entries and for entries by diversification. The only exceptions are 1994 and 1995, and 1999 for *novo* entries and 1994, 1995 and 2001 for entries by diversification. Secondly, with regard to firm size, we can see that firms in the service sector are larger than those in the manufacturing sector, though the values for firms entering by diversification are more volatile.

## 6. SUMMARY AND CONCLUSIONS

The aim of this analysis is to compare the entry behaviour of firms in the manufacturing sector with that of firms in the service sector. Geroski (1995) established several stylised facts but these refer mainly to manufacturing. Our contribution is to analyse Spanish service industries and compare them with manufacturing industries between 1994 and 2002. Spanish literature has traditionally focused on the manufacturing sector but, in a more knowledge-intensive society based on service industries, studies must widen their perspective.

Our results show that firms in the service industries are generally smaller than firms in the manufacturing industries but their size is more variable. As Audretsch et al. (2004) stated, services are not simply a

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$$\text{Percentage of service firms in "t"} = \frac{\text{Firms belonging to services in "t"}}{\text{Firms entering the market in "t"}} \times 100$$

$$\text{Service size / manufactures size} = \frac{\text{Firm size of manufactures}}{\text{Firm size of services}}$$

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mirror of manufactures. This greater variability can also be seen in the way they enter the market: service firms are smaller than manufacturing firms but they can be much larger if we focus on entry by diversification. This means that firms entering the market by diversification can become much bigger than *novο* entrants.

Firm entry generates employment and economic activity, introduces innovation and puts pressure on inefficient firms. Firm entry studies are important because they can enable policy makers to influence the creation of firms and increase the competitiveness of an industry. To design effective policies, policy makers need information. This study should provide information about the characteristics of firms and how they behave in each type of industry.