THE DEMAND OF BUSINESS SERVICES IN SPAIN

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ABSTRACT[1]

The growth in the outsourcing of services has become one of the most relevant features of the changes in manufacturing firms' behaviour. This paper provides empirical evidence about the extent and evolution of services outsourcing by Spanish manufacturing firms in 1990-1998. A general increase in outsourcing of services has been detected among firms in this period, although with strong differences across sectors and kind of services. Additionally, this paper studies the decision to outsource, devoting particular attention to the relationship between outsourcing and productivity. The results show the influence of variables such as firm size, ownership and location, among others.

Keywords: Business services, Outsourcing
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1. INTRODUCTION

One of the most often adduced reasons to explain the growth of service activities in developed countries is the increasing implementation of outsourcing strategies by firms. Outsourcing can be defined as the process of replacement of intra-firm services by services purchased outside. A well-known consequence of this process is the upper bias on the evolution of the weight of the service sector provided by the National Accounts. From the client perspective, outsourcing implies a deep reorganisation

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process in the firm behaviour, changing the relationships between industrial and service activities[2].

The firm's decision on outsourcing is usually referred as the "make or buy" dilemma. Two opposite forces affect this decision. On the one hand, imperfections in service markets would favour the "make" option. Those can be summarised (De Bandt, 1996) as:

i) The non-comparability of products and prices, reducing the market transparency.

ii) The usual environment is characterised by asymmetric information is, so firms have to deal with well-known adverse selection problems (introducing the reputation effect on the selection of service providers) and moral hazard (which could generate over-consume of services).

iii) The great relevance of reputation, which promotes a strategy of two levels of quality among service producers: high for important clients, and low for the rest.

iv) Measurement problems and lack of control or collaboration of the buyer with the service providers, making more difficult the arms-length contract as solution.

Given the relevance of transaction costs, we would expect that firms would "make" these activities. However, the possibility that specialised service providers have lower costs or better quality, together with the increasing technical complexity of some of these activities, favours the "buy" choice[3]. The increasing use of complex technologies, particularly in relationship with the new information society, makes them a key element in this decision. In that context, the high dynamism of the markets of

[2] Of course, service firms also externalise. However, in this paper we are only interested in outsourcing by manufacturing firms.

[3] In some cases, legal restrictions determine the way to get the activity. For example, auditing must be carried out by external agents.

service providers (high entry and exit rates) pushes the use of the most efficient technologies. There is also some evidence in favour of smaller labour in the services and it must be noticed that most of services are labour intensive. For example, Jacobson *et al*. (1993) observe a large decline in workers' earnings shifting from manufacturing to non-manufacturing activities.

Therefore, opposite forces operate in the decision on outsourcing. By one hand, transaction costs associated to asset specificity (which often have an intangible character) reduce the interest of the "buy" option. By other hand, sunk costs or higher variable costs linked to the "make" option act in favour of the "buy" option[4]. Very often, the solution to the decision "make or buy" is mixed: some services are externalised, while others are not. Of course, the relevance of the mixed solution also depends on the aggregation of the data available by the researcher.

The empirical literature on outsourcing has used the input-output techniques as the main tool of analysis. In this context, the main interest is measurement of the extent and evolution of linkages between service and industrial activity, given that the output of each one is an intermediate input of the other one. Using this technique, some recent studies have paid attention to the effects of outsourcing on firm's productivity (ten Raa and Wolff, 1996). Of course, this kind of analysis is at industry level (usually 2 digit in the NACE or ISIC classifications) Meanwhile, the empirical literature on the linkages between both activities using firm data is quite scarce. This kind of results is very relevant, given that a lot of forecasts about the linkages between services and industrial activities could only be properly tested at the firm level.

Additionally the empirical evidence is usually focused on the service provider side. Scarce evidence exists about the demand side. The need to analyse both sides is recognised by the European Commission, which recently has argued that "compared with former scattered and non-coordinated initiatives in this field, not only the supply of Business Services is treated but also the demand side in order to ensure that the interests of client industries are taken into account in a coherent supply/demand side approach,

[4] See Roodhooft and Warlop (1999) for an study about this question.

permitting the anticipation of future needs for services and the emergence of new types of Business Services"[5].

In this context, the main purpose of this work is to study some of the characteristics of the demand of Business Services by Spanish manufacturing firms in the nineties. Firstly, in Section II we present some information about the extent and evolution of services outsourcing by manufacturing firms in 1990-1998. Section III studies the decision to outsource, devoting particular attention to analyse the relationship between outsourcing and productivity. Section IV concludes and summarises the main results.

2. BUSINESS SERVICES IN THE SPANISH ECONOMY

2.1. THE SUPPLY SIDE

As it was stated in the introduction, the use of business services is the core of this paper. Business services are usually defined as the activities with a non-financial character, used as intermediate inputs by firms. Some activities that could be considered business services, such as telecommunication, rent, transport services, etc, are also excluded. Note that some of them do not raise the "make or buy" dilemma to their users, given that they require huge investments needed and outsourcing is the natural solution. However, even in this case, new technologies and changes in institutional rules (liberalisation) have made possible the "make" solution, i.e., telecommunications services which may be provided by the user.

[5] See European Commission (1999), p.17.

Table 1
Business Services in the Spanish Economy

	Business services	Total Services	Total economy
Employment			
Spain (Thousands)[1]	797.9	8194.8	13342.1
	(6.0%)	(61.4%)	
EU-15 1994[4]	(8.5%)		
Added value			
Spain 1995 (Pta. billions) [2]	4299.7	51772.6	75110.6
	(5.7%)	(68.9%)	
EU-15 1994[4]	(15.3%)		
Enterprises			
Spain 1998 (Thousands) [3]	325.1	1978.7	2474.7
	(13.1%)	(80.0%)	
EU-15 1995[4]	(15.0%)		
Growth rates (Spain):			
Employment (1994-1998) [1]	43.8%	17.8%	14.7%
Added Value (1990-1995) [2]	20.4%	11.7%	9.9%
Firms (1994-1998) [3]	24.1%	10.6%	7.5%

Note: In parenthesis percentages on the total

Sources:

[1] Spanish Labour Force Survey.

[2] Spanish National Accounts.

[3] Spanish Census of firms.

[4] European Commission (1999).

In terms of the European Activity Classification, "Business services" includes the divisions 72 to 74 of NACE-rev. 1, which is part of K section. The business services represented 5.7% of GDP (in 1997) and 6.0% of total employment (in 1998) in Spain (Table 1)[6]. Though both percentages are still lesser than European average[7], they have experienced a large growth through the last years. According to Spanish Active Labour Survey, in 1994-1998 the employment in these activities increased 43.8%, in comparison to 14.7% of growth of total employment, and even with 17.8% in overall service activities. The added value grew a 20.4% (in constant terms) in business services, while for the total economy this figure was 9.9%.

[6] Rubalcaba (1999) presents studies the weight of Business Services in Europe.

[7] See OECD: National Accounts 1984-1996.

The growth of these activities is even clearer when we pay attention to the number of firms. According to the Spanish Firm Census (DIRCE), the growth rate of firms in these activities was almost 25%, one of the most important ones. In 1998, 13.1% of Spanish firms were in this sector[8]. The high birth rate of firms indicates several key factors of this sector. Firstly, firms do not seem to face high barriers to entry, nor established by incumbents as a mean to prevent new competitors, nor by technical reasons (sunk-costs, minimum scale, etc.), nor external (availability of resources). Secondly, this high rate of births makes easier for this sector to be continuously updated. New firms, pushing the incumbents "to adapt or to die", allows to incorporate the latest technologies, ideas and managerial skills. Thirdly, the higher birth rate in business services than in manufacturing is another indicator that the Spanish economy (as the European one) presents an increasing tertiary character. Although the dominance of services in the Spanish economy is not new, these results confirm the development of service activities distinct to traditional ones (particularly tourist activities).

Finally, a common feature of business service is related to a high spatial concentration. In the case of Spain, Madrid is the clearest example: near 25% of Spanish service firms are located in Madrid, while the percentage of firms in the overall services does not reach 15%[9].

As it is known, this increasing role of services activities has been accompanied by the reinforcement of the linkages between service and industrial activities. Services and goods are often jointly consumed. For instance, the acquisition of any kind of machinery requires more and more technical support and training, consumption goods are usually bundled to quality controls, information provision, etc. At the same time, goods include more and more services, such as advertisement, design, R&D, administrative tasks, marketing, commercial channels, etc., which have an increasing weight on final price.

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[8] This result is similar to Keeble *et al*. (1991) for the British economy.

[9] See Merino and Rodríguez (1999). Cuadrado and Rubalcaba (2000) give an exhaustive analysis of this question.

Consequently, there is an increasing mixture between the manufacturing and service characteristics in firm's activities[10]. This process started for the post-service maintenance and other imprescindible connected activities. But as manufacturing firms accumulated more knowledge in some services that were internally used, they started to exploit this capability, offering these activities to the market. We can find many examples of this kind, since machinery producers that also develop engineering consultancy for external agents, to the use of the marketing channels to sell goods from other firms, etc. In fact, manufacturing firm diversification along the eighties and nineties has widened its scope towards service activities. That process is also related to the promotion of internal markets among firm divisions in order to stimulate efficiency at each firm level, which makes possible for each of these sections to compete in external markets too (see OECD (2000)).

Among Spanish manufacturers the sale of services to external agents is not an uncommon phenomenon. As it can be seen in Table 2, over 40% of small and medium firms did it in 1998, reaching this level to 60% among large firms. For these firms the weight of these activities should not be neglected, given that it supposes around 16% of the total sales.

[10] About that question, see The Economist, June 20th 1998.

Table 2
Service activities of Spanish manufacturing firms

	% of manufacturing firms providing services		% of sales due to services in these firms	
	Small - medium firms	Large firms	Small - medium firms	Large firms
1.- Basic metal products	50.0	23.8	17.1	10.2
2.- Nonmetal mineral products	49.3	63.9	13.2	12.2
3.- Chemicals	56.0	90.4	23.5	22.0
4.- Fabricated metal products	40.9	55.9	14.0	11.1
5.- Industrial & agricultural equipment	62.0	66.7	14.5	19.9
6.- Office mach., data proc., precision. instr. and similar	54.5	33.3	14.8	35.0
7.- Electric materials and accessories	38.5	54.0	19.6	22.5
8.- Vehicles and accessories	61.5	51.0	12.6	11.8
9.- Other transportation materials	55.6	71.4	22.1	18.9
10.- Meat related products	52.9	45.5	15.0	24.6
11.- Food and tobacco	51.7	68.2	14.9	15.6
12.- Drinks	38.5	69.2	34.8	11.0
13.- Textiles and clothing	23.4	43.6	13.5	12.1
14.- Leather. fur and footwear	12.5	100.0	9.6	16.0
15.- Timber and furniture	39.3	71.4	17.9	3.2
16.- Paperprinting and publishing	24.2	53.3	10.8	11.3
17.- Plastic and rubber products	41.8	59.1	14.4	12.9
18.- Miscellaneous	43.8	85.7	19.6	19.3
TOTAL INDUSTRY	41.2	60.2	15.7	16.2

SOURCE: Own elaboration on Survey on Business Strategies

2.2. THE DEMAND SIDE

The usual analyses of business services are focused on the providers of these activities. Forward we study the importance of business services in the Spanish economy from the demand side, that is to say, the users of these activities. We carry on this analysis using the panel of firms included in the *Encuesta Sobre Estrategias Empresariales*, ESEE (Survey on Business Strategies). This survey contains annual data for more than 1,500 firms located in Spain across manufacturing industries. Every four years (1990, 1994, and 1998) the questionnaire covers a wide range of topics, among them, the services that these firms use. The considered services are: Legal advising, Economic & financial consulting, Tax-related consulting, Administrative

activities, Recruitment services, Training staff, Software development, Software installation, Courier services, Renting of machinery, Vigilance & security, Cleaning, Packaging and labelling activities.

As it can be seen, a large and varied set of functions are covered[11]; some of them requiring highly skilled staff (such as legal, economic & financial advising or development of software), while others do not (cleaning, vigilance & security). Consequently, the capability to generate added value will be very different across services, allowing us to test the most common hypotheses on outsourcing. The database indicates, for every firm, whether or not it uses these services. For those firms that use them, a specific question concerns whether the service is provided in-house, or if the firm contracts out this function to other firms, fully or partially.

As it can be seen in Figure 1, the most frequently used services among firms with 200 or less employees (more than 90% use them) are tax-related advising, administrative activities and cleaning, which can be considered as supportive activities, given that they are basic in almost any economic activity. On the other hand, a very high percentage of firms with more than 200 employees uses all the functions considered, with the exception of renting of machinery.

Concerning to the use of these activities in relationship with the firms' size, a general overview of Figure 1 shows that there are clear differences in some of the activities considered. This relationship seems to present a threshold over the size of 50 employees. The smallest firms use quite fewer Business services (especially services such as auditing or vigilance & security) than firms with more than 50 employees. However, although it has not been reported in Figure 1, along the nineties firms with less than 200 employees have increased the services they use. The most striking case is, probably, the use of couriers.

[11] The list covers almost all Business Services according to NACE Rev. 1 classification. The exception is Courier services, which is included in communication services (division 64). However, we have preferred to keep it to enrich the analysis.

Figure 1:
Percentage of firms using each service (year1994)

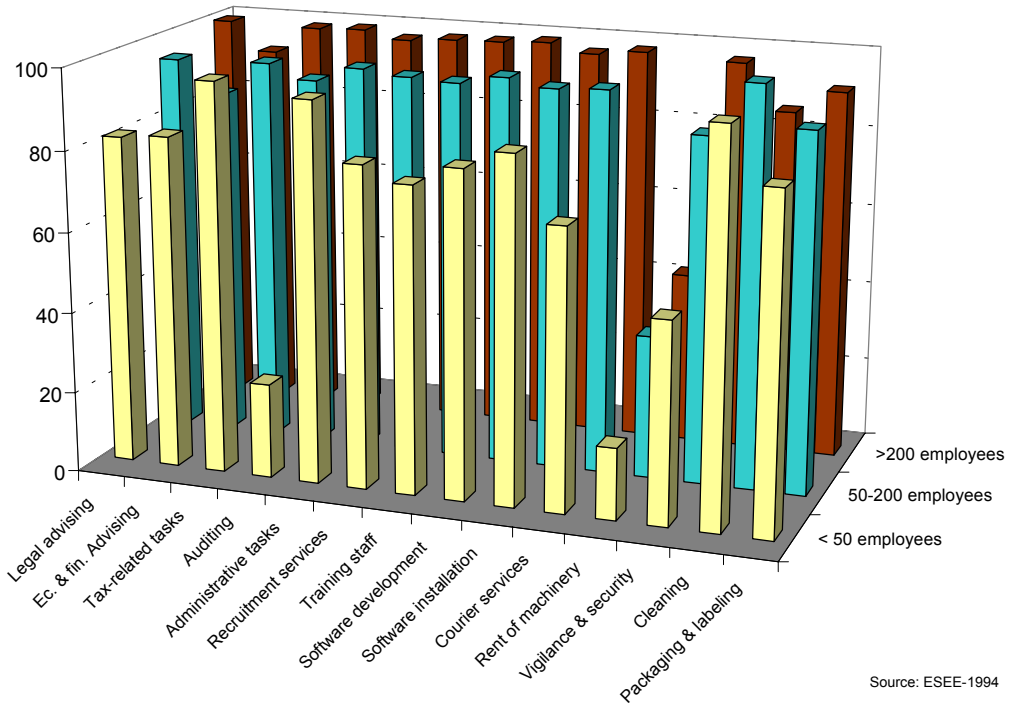


Table 3 presents how firms which use those activities obtain them. We distinguish among in-house provision, outsider suppliers and both jointly, for two years (1990 and 1998) and two size groups (200 or less employees and more than 200 employees). Very often the chosen option is outsourcing. See, for example, that more than 50% of those firms that use services such as legal and tax-related advising, couriers or vigilance externalise them, fully or partially. From these data, we can establish a general pattern on the kind of services which Spanish manufacturing firms are not prone to outsource: those ones linked to the most sensitive areas of the firm (recruitment services, administrative tasks) and those which are highly integrated in the production chain (as packaging and labelling).

Table 3: Business services outsourcing
(percentages over firms using every activity)

	Small-medium firms			Large firms		
	In-plant only	In-plant & outside suppliers	Outside supplier only	In-plant only	In-plant & outside suppliers	Outside supplier only
Legal advising						
1990	6.2%	31.4%	62.4%	31.2%	33.3%	35.5%
1998	4.1%	29.7%	66.2%	23.5%	30.2%	46.4%
Econ. & fin. Advising						
1990	36.2%	27.0%	36.9%	77.9%	14.1%	8.0%
1998	36.4%	29.0%	34.6%	69.0%	22.5%	8.5%
Tax-related advising						
1990	8.7%	30.2%	61.1%	31.9%	36.9%	31.3%
1998	9.5%	29.9%	60.6%	25.2%	41.5%	33.3%
Auditing						
1990	10.1%	12.5%	77.5%	7.6%	14.3%	78.1%
1998	4.4%	10.6%	85.0%	6.3%	12.0%	81.7%
Administrative tasks						
1990	84.8%	8.4%	6.7%	97.8%	1.9%	0.3%
1998	84.0%	10.9%	5.1%	94.8%	3.9%	1.2%
Recruitment staff						
1990	87.8%	8.7%	3.5%	60.6%	34.5%	4.9%
1998	84.8%	11.5%	3.7%	59.6%	35.5%	4.9%
Training staff						
1990	88.0%	9.0%	3.0%	48.0%	43.1%	8.9%
1998	66.9%	25.1%	8.0%	36.1%	51.5%	12.3%
Software development						
1990	33.6%	26.6%	39.8%	60.5%	33.3%	6.2%
1998	24.5%	29.7%	45.8%	45.3%	41.7%	13.0%
Software installation						
1990	26.9%	23.7%	49.4%	48.4%	35.1%	16.4%
1998	22.2%	26.2%	51.7%	32.6%	44.2%	23.2%
Courier services						
1990	16.4%	36.0%	47.5%	11.2%	33.3%	55.5%
1998	8.5%	28.0%	63.5%	5.7%	23.0%	71.3%
Machinery renting						
1990	15.3%	57.6%	27.1%	25.2%	53.4%	21.4%
1998	16.6%	45.7%	37.7%	11.4%	50.0%	38.6%
Vigilance & security						
1990	38.6%	20.2%	41.2%	27.3%	31.1%	41.6%
1998	18.7%	17.6%	63.7%	12.6%	20.5%	66.9%
Cleaning						
1990	65.3%	13.6%	21.1%	27.8%	27.3%	44.9%
1998	50.7%	12.9%	36.5%	14.1%	20.0%	65.9%
Packaging & labelling						
1990	96.5%	1.6%	1.9%	91.2%	6.3%	2.4%
1998	95.0%	2.6%	2.4%	88.1%	9.0%	2.9%

SOURCE: Own elaboration on Survey on Business Strategies

This result is consistent with the underlying rationale on the theoretical analysis of outsourcing, which has considered two steps in the adoption of this strategy. According to it, firms start to externalise as a way to reduce costs or to free resources to invest. As the firm assimilates the use of externally provided activities, outsourcing gets a strategic perspective, allowing the firm to be centred in its core activity with all its resources devoted to it. Accordingly, firms start the externalisation strategy for supportive activities, advancing towards those ones that are critical for the firms.

Different authors have hypothesised that size is an important variable to determine how the activity will be provided (internally or externally). Our results are in accordance with this hypothesis for services such as recruitment, training staff, vigilance & security or cleaning. Meanwhile more sophisticated activities as legal, economic & financial advising or software development are less externally contracted out among those firms with more than 200 employees. This result suggest that, for these activities, the minimum scale to be efficient can only be achieved in large firms and, consequently, these firms prefer to internalise in order to avoid the high transaction costs that may arise.

It has also grown the use of external firms to carry on some of these functions in the period 1990-98. The most striking cases are the development of software, whose complexity has experienced an important increase, courier vigilance and cleaning. Firms with more than 200 employees have also increased notoriously the use of external (service) firms for economic, legal and tax-related advising. Therefore, this step forward on the externalisation process has been taken mainly on those activities which do not constitute the critical core of services by firms: administrative tasks and recruitment staff are the ones which have been less often externalised in this period.

For a more precise analysis of this question, Table 4 shows the percentage of firms which contracted out each service in 1998 among those ones which had provided them in-house in 1990. It can be seen as a measure about the relevance of the progression of outsourcing in every activity during the nineties. Of course, these values need to be considered with caution, given that the frequency of outsourcing presented notorious differences among these activities in 1990, as Table 3 shows. In fact, a relevant percentage of firms that had outsourced in 1990 left to do it in 1998.

Jointly considered, these results show an important volatility in the provision of services by manufacturing firms.

Table 4

Changes in provision of business services

	Percentage of firms internal providers in 1990 that contracted out in 1998		*Percentage of firms external providers in 1990 that did not contracted out in 1998*	
	Small - medium firms	Large firms	Small - medium firms	Large firms
Legal advising	60.3%	62.5%	7.1%	35.0%
Ec. & fin. Advising	33.3%	28.8%	26.8%	62.7%
Tax-related tasks	58.2%	63.0%	8.9%	34.8%
Auditing	60.0%	50.0%	3.2%	22.2%
Administrative tasks	8.2%	10.5%	65.5%	87.3%
Recruitment services	17.9%	16.0%	44.7%	74.8%
Training staff	31.5%	33.8%	30.6%	54.7%
Software development	52.8%	53.5%	21.1%	43.4%
Software installation	61.4%	64.6%	22.7%	29.1%
Courier services	72.2%	79.3%	4.3%	10.3%
Rent of machinery	33.3%	30.8%	8.8%	7.7%
Vigilance & security	54.5%	48.8%	5.5%	32.6%
Cleaning	42.2%	35.5%	12.9%	63.6%
Packaging & labelling	6.6%	6.5%	61.3%	88.4%

SOURCE: Own elaboration on Survey on Business Strategies

Finally, in order to analyse the differences in outsourcing of services among manufacturing firms in every sector, we have synthesised the information on the services externally provided in the Outsourcing Services Index (OSI). The value of this index is computed as the percentage of the used activities that the firm actually contracts out. In Table 5 we present the mean values of OSI for every industry (on a 2-digit basis classification) for 1990-98 and distinguishing on firms' size. The evolution of this index shows a clear increase from 1990 to 1998, as we could expect from the values presented before. Looking at the different manufacturing sectors, we observe that the

most important increases in services' outsourcing among firms with less than 200 employees are those firms in branches 6 (Office machinery, data processing, precision instruments and similar), 12 (Drinks) and 17 (Plastic and rubber products). Meanwhile, among large firms, those of sectors 2 (Non-metal mineral products), 12 (Drinks) and 18 (Miscellaneous) externalised more their service's activities in this period. Besides, differences among industries are statistically significant.

Table 5:
Outsourcing Service Index

	Small-medium firms		*Large firms*	
	1990	1998	1990	1998
1.- Basic metal products	38.3	44.5	38.5	44.1
2.- Nonmetal mineral products	42.2	48.2	42.2	53.7
3.- Chemicals	42.2	52.5	40.1	47.1
4.- Fabricated metal products	43.9	50.9	38.4	45.1
5.- Industrial & agricultural equipment	43.9	52.7	38.3	44.8
6.- Office mach., data proc., precision instr. and similar	34.8	41.6	32.0	39.9
7.- Electric materials and accessories	47.1	50.8	40.2	50.6
8.- Vehicles and accessories	49.4	45.3	42.3	51.1
9.- Other transportation materials	43.9	51.5	42.3	49.6
10.- Meat related products	41.5	40.0	42.2	50.3
11.- Food and tobacco	40.3	43.6	37.9	42.5
12.- Drinks	36.2	46.0	39.3	47.3
13.- Textiles and clothing	40.4	46.9	37.0	44.7
14.- Leather. fur and footwear	41.7	45.4	30.0	50.6
15.- Timber and furniture	43.5	48.6	42.5	33.7
16.- Paper.printing and publishing	44.3	48.8	43.1	48.7
17.- Plastic and rubber products	42.0	50.7	42.8	53.5
18.- Miscellaneous	37.8	49.7	30.5	49.1
TOTAL INDUSTRY	42.5	48.3	39.7	47.9
Test of equality of means	1.696**	2.248**	1.803**	2.098**

SOURCE: Own elaboration on Survey on Business Strategies
NOTE:
*. ** statistically significant coefficientes at 5 and 1% respectively

3. SOME FEATURES OF THE OUTSOURCING STRATEGY

3.1. THE DECISION TO OUTSOURCE

As it was indicated before, one of the main questions about the service activities used by firms is the decision about how they are provided, internally or externally. As the decision to outsource is service-specific, the empirical analysis should not "mix" the different studied services. The purpose is not to carry on an exhaustive analysis of all the possible determinants for every activity, but to show the effect that some of the main characteristics of the user have on the "make or buy" dilemma in the most common service activities. Particularly, we follow to O'Farrell (1995) who, departing from previous empirical evidence, suggests a number of hypotheses to test. Those hypotheses link the extent of externalisation with size firm, ownership, type of service subcontracted, regional location, and performing office strategic functions on site. Additionally, Abraham and Taylor (1996) remark the importance of wage differentials between the user and the service provider as a factor that promotes outsourcing.

The key factors we pay attention to are size, productivity and wages. Size is measured by the number of employees, and its squared value will also be considered to allow for a non-linear relationship with the decision. Although there is not a clearly defined sign for the relationship between size and outsourcing in the literature, the possibility to exploit scale economies in the service activity will promote an internal provision.

Productivity is measured by the added value of the firm divided by the number of employees. In this case, to measure the productivity by value added seems more adequate than to do it by total output. The reason is that total output will not change for the decision to outsource, but the number of employees will do it. Therefore, a productivity measure based on total output would be affected by the fact of externalisation of activities, independently of the differences in the efficiency level.

With respect to wages, in order to capture whether the firm pays any wage premium, we compute the ratio between the firm's salary (total labour costs divided by

the number of employees) and the salary average in its sector.

Finally, there is a set of variables whose influence is worthy to know. We include dummy variables for those firms which are integrated in a group of firms (given that their outsourcing strategies might be different), for those which estimate their unit costs (so they may have a better knowledge of the cost of in-house provision) and for those which are located in cities (where a larger supply and variety of suppliers are supposed to be).

Using probit estimations, Table 6 shows the estimated coefficients and t-ratios of the set of explanatory variables for the decision to contract out each of the fourteen activities considered in 1998. In every case, we have used the sample of the firms that use each service.

The results indicate a large heterogeneity about the influence of the considered factors in service outsourcing. Size has usually a mixed effect, with a non-lineal relationship. Only packaging & labelling, cleaning and training staff show a positive relationship. On its part, recruitment staff shows an inverse U-shaped relationship that indicates that medium sized firms are the ones more prone to externalise this activity, other things being equal.

Legal and economic advising are more likely externalised in the less productive firms; meanwhile the most productive firms are the ones which more often externalise recruitment and training staff, security and cleaning. The firms that are part of a group externalise more likely the staff-related activities, cleaning or vigilance & security, while they produce in-house the advising activities. The fact that firms have a better knowledge of their costs does not seem to be a significant variable in order to take the decision of outsourcing most of the considered activities, again with the exception of training staff. Finally, the wider supply that to be in a city implies is only positive (statistically) linked with the outsourcing of vigilance and cleaning. Concerning the wage premium, we observe that firms with higher salaries contracted out more likely activities such as cleaning and the staff-related ones, indicating that they were motivated by a cost-reduction purpose. Meanwhile, firms with the highest wages tend to provide

in-house economic, financial and tax related advising.

Summing up, we may say that legal, economic, financial and tax-related advising are more likely contracted out by those firms with lower size, low productivity levels, which are integrated in groups and that pay low salaries. On the other hand, the externalisation of staff-related activities is more likely among large firms, which reach high productivity levels, pay high wages, are part of a group and have internal procedures of determining costs. Activities such as cleaning are more likely outsourced by large firms, with high productivity levels, high labour costs, integrated in groups and located in cities (as it happens with vigilance & security), given that more often the providers are in cities than in small towns.

Firms searching higher levels of efficiency may use the outsourcing strategy as a tool to get it. In fact, outsourcing of services would be part of a wider process of reorganisation of firms, being related with the use of flexible system of production. It would be then similar to other process of vertical disintegration, such as the use of sub-contractors of components. The relationship between outsourcing and productivity then deserves a deeper analysis.

3.2. OUTSOURCING AND FIRM'S PRODUCTIVITY

Several studies have analysed the effect of outsourcing on manufacturing productivity. The most usual hypothesis raises that firms outsource the less productive activities. Therefore, as outsourcing increases, growth on overall productivity of manufacturers would be expected. However, the results are not conclusive. Using input-output techniques, ten Raa and Wolff (1996) find an outstanding impact: one quarter of the growth of manufacturing productivity would be due to outsourcing. Also, using industry-level data for the period 1959-1990 and input-output tables, Fixler and Siegel (1999) obtain a significant correlation between outsourcing and productivity. By opposite, Siegel and Griliches (1992) found a weak correlation between purchased services and total factor productivity during the eighties.

Table 6:
Factors affecting the outsourcing decision

	Size		$Size^2$		Productivity		Group		Costs estim		City		Wage	
Legal advising	-0.5875	**	0.03442	**	-0.02683	**	-0.5977	**	-0.11		-0.296	**	-0.1395	
	(-5.131)		(3.053)		(-2.573)		(-5.289)		(-0.604)		(-2.879)		(-1.295)	
Ec. & fin. Advising	-0.358	**	0.02069		-0.0213	**	-0.451	**	-0.459	**	-0.018		-0.1991	**
	(-2.867)		(1.584)		(-2.349)		(-5.011)		(-4.307)		(-0.251)		(-2.518)	
Tax-related tasks	-0.3	**	0.01287		-0.003911		-0.4311	**	-0.1262		-0.0457		-0.2866	**
	(-2.715)		(1.117)		(-0.398)		(-4.383)		(-0.958)		(-0.545)		(-2.914)	
Auditing	-0.3881	**	0.01126		0.00159		0.06317		0.07324		-0.253		-0.0546	
	(-2.889)		(0.774)		(0.104)		(0.394)		(0.263)		(-1.705)		(-0.274)	
Administrative tasks	-0.6103	**	0.04192	*	0.01521		-0.0923		-0.2942	**	-0.0713		-0.272	*
	(-2.775)		(2.210)		(1.339)		(-0.778)		(-2.751)		(-0.832)		(-2.018)	
Recruitment services	1.0691	**	-0.5028	**	0.03511	**	0.4493	**	0.2661	*	-0.1468		0.1529	
	(3.855)		(-3.576)		(3.841)		(4.738)		(2.008)		(-1.843)		(1.771)	
Training staff	0.3622	**	-0.0556	**	0.03688	**	0.3786	**	0.2933	**	-0.0804		0.3175	**
	(2.509)		(-2.341)		(3.818)		(4.256)		(2.664)		(-1.111)		(3.078)	
Software development	-0.08914		-0.0009		0.004709		-0.3167	**	0.01013		-0.002		-0.2459	**
	(-0.838)		(-0.073)		(0.523)		(-3.653)		(0.094)		(-0.027)		(-2.373)	
Software installation	-0.2315	*	0.01577		0.005369		-0.0335		0.08331		-0.0644		-0.1238	
	(-2.184)		(1.507)		(0.563)		(-0.365)		(0.776)		(-0.876)		(-1.430)	
Courier services	-0.1841		0.01286		0.04427	**	-0.0166		0.2456		-0.082		0.1315	
	(-1.232)		(0.814)		(2.579)		(-0.123)		(1.710)		(-0.760)		(0.840)	
Rent of machinery	-0.5366		0.2218		0.006904		0.3155		-0.3015		-0.4316	**	0.4172	
	(-1.081)		(0.985)		(0.342)		(1.645)		(-1.248)		(-2.740)		(1.733)	
Vigilance & security	-0.009056		-0.0097		0.05087	**	0.3057	**	0.04359		0.3891	**	0.07371	
	(-0.068)		(-0.801)		(3.380)		(2.619)		(0.303)		(4.072)		(0.520)	
Cleaning	0.2729		-0.0254	*	0.1007	**	0.7761	**	0.14		0.2063	**	0.5044	**
	(1.876)		(-1.969)		(7.552)		(7.499)		(1.448)		(2.820)		(4.356)	
Packaging & labelling	0.2813		-0.0262		0.01969		0.3941	**	-0.2574		0.07955		0.1402	
	(1.940)		(-1.383)		(1.653)		(3.114)		(-1.605)		(0.734)		(0.965)	

SOURCE: Own elaboration on Survey on Business Strategies

NOTES: t-ratios in parentheses

We may distinguish two main aspects on the link between productivity and outsourcing. The first one requires analysing whether manufacturing firms really externalise the less productive activities. The second one refers to the effects of externalisation on manufacturing firms' productivity[12].

Concerning to the first question, a test of this hypothesis has to deal with some difficulties. We need to know the productivity associated to in-house provided services, data hardly available. It is then necessary to use an indicator of productivity provided by statistics of the service sector assuming that the pattern of differences in productivity among services is correctly reflected by service statistics. We are conscious of the difficulty of measuring productivity in service activities. The reason is that quality components are an important factor, and therefore the production will be underestimated and the usual price indicators are biased. Of course, measurement problems on quality are not specific of services. For example, the changes in quality in some high-tech industrial products, as computers, have originated an abundant literature treating to build quality-adjusted deflators based on hedonic prices. However, given that a general characteristic of service activities is that they cannot be stored, objective characteristics (i.e, processor velocity, RAM, etc.) can not be used as an indicator of this kind.

The productivity measurement problem is probably not equal for all types of business services. For example, cleaning services do not require highly specific arrangements on the kind of service between clients and providers, so that the "product" is narrowly defined. The advisory services are an opposite example. In those activities the product is usually made in relation with the clients. In this case is clear that, as De Bandt (1996) points out, productivity is "indirect".

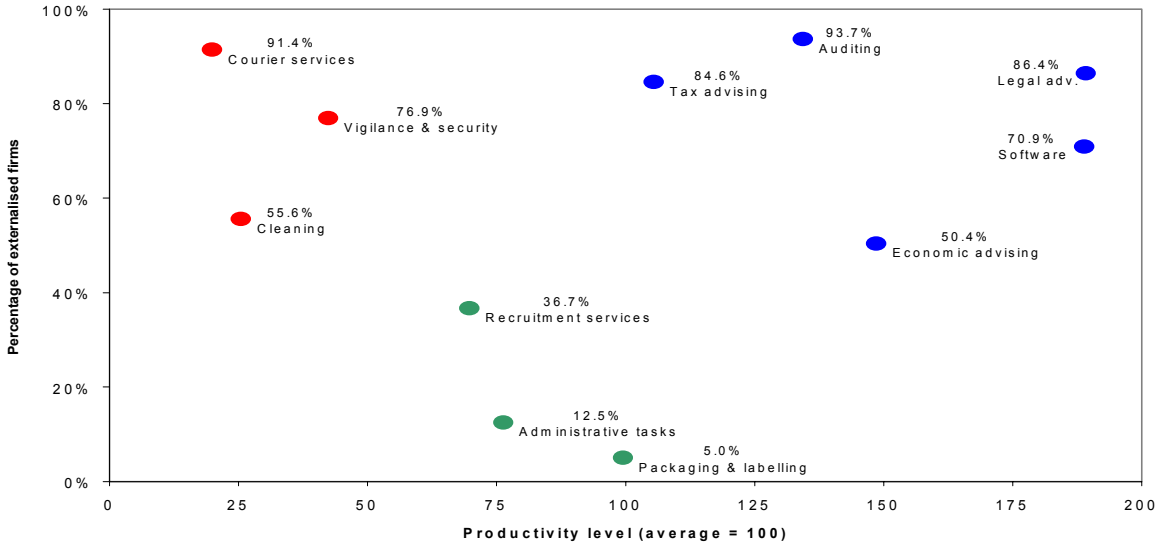
With those limitations, we may compare the relationship between the degree of services' externalisation by manufacturers and the level of productivity of each one of those activities. As it is showed in Figure 2, there is not a linear relation between the kind of services that firms decide to externalise and their productivity. In other words,

[12] A third question, not analysed in this paper, would be referred to the effects of outsourcing on services firms. About this topic see Fixler and Siegel (1999).

the wide differences in the relative use of each specific service do not seem to be related with the productivity level. We can observe three groups of services. Firstly, a group of services with low productivity, labour intensive and scarce know-how: cleaning, security and couriers. They are very likely externalised by a cost reduction purpose. In the other extreme, high productivity services which are also outsourced, but probably due to the high skills necessary in the workforce. They are services intensive in human capital such as legal or tax advising. In the middle, other types of services with medium productivity, such as administrative tasks or packaging and labelling, but with large difficulties to be outsourced due to high transaction costs.

Figure 2

Productivity of services and externalisation



Source: Cuentas del Sector de Servicios a Empresas en la Comunidad de Madrid-1994 (Instituto de Estadística de la Comunidad de Madrid. 1999). Encuesta de Servicios Postales y Telecomunicaciones 1996 (INE). and ESEE.

The second question refers to the effects of externalisation on manufacturing firms' productivity. As it is showed in Table 7, the differences in productivity would go in both senses. Some services are more often contracted out in those firms with a high productivity level. Recruitment services, training staff, courier services, cleaning and

vigilance are among them. The costs' reduction associated to outsource these services seems to have a positive effect[13] on productivity. But, at the same time, firms using in-house provided high skilled services appear to be more productive than those ones that used external suppliers. We have used other complementary ways to measure the productivity[14], but the results do not change substantially.

Table 7
Differences of productivity between outsourcing and not outsourcing firms

	Mean			
	In-house provided	In-plant & outside suppliers	t-test for equality of means	
Legal advising	9.39	6.41	6.33	**
Ec. & fin. Advising	8.03	5.71	8.12	**
Tax-related tasks	8.07	6.31	4.60	**
Auditing	7.97	8.18	0.31	
Administrative tasks	6.88	5.25	4.87	**
Recruitment services	6.39	8.51	6.41	**
Training staff	6.16	8.46	7.63	**
Software development	7.56	6.86	2.33	**
Software installation	7.61	6.76	2.77	**
Courier services	6.50	7.60	2.21	**
Rent of machinery	7.15	7.12	0.05	
Vigilance & security	6.45	8.05	4.91	**
Cleaning	5.17	8.23	-12.06	**
Packaging & labelling	6.75	9.24	3.82	**

SOURCE: Own elaboration on Survey on Business Strategies

[13] The term "effect" should be interpreted as correlation. A deeper analysis should take into account that causality can exist in both ways.
[14] An efficiency measure derived from a parametric residual approach, based on a Cobb-Douglas production function, and an index derived from a translog production function.

4. CONCLUSIONS

This paper studies the services outsourcing strategies by Spanish manufacturing firms along the nineties. In this period they have been involved in a process of modernisation and adaptation to a more deregulated and competitive market. Consequently, outsourcing has had a key role among the strategies to adapt to a new and changing global economy. In fact, business services are nowadays one of the most dynamic activity in the Spanish economy, with a growing role in the Service sector.

The results show that services linked to the most sensitive areas of the firm (such as recruitment services, administrative tasks) are the less often externalised. It would indicate that contracting out is still in a first step, where those services outside the core of activities are more often externalised. We have also showed that size plays an important role in the decision to provide these activities in-house or externally, being noticeable that the most sophisticated activities (legal, economic, financial advising) are more often in-house provided in large firms.

The analysis of the firm characteristics shows the influence of other variables, such as the wage level, the ownership or city location. However, the large heterogeneity of subcontracted services implies that the sign and relevance of each one of those factors are not coincident. The degree of service sophistication is very different, warning about the difficulties to get a general pattern of characteristics on outsourcing.

Concerning the relationship between outsourcing of services and firm's productivity, our results are not conclusive. It is not possible to assess a general relationship between these two variables, which again may be due to the great heterogeneity among the services considered. These results are in consonance with those obtained by Siegel and Griliches (1992).

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