



Munich Personal RePEc Archive

The geography, variety and dynamics of service exports in Spain: a firm-level analysis

Minondo, Asier

Deusto Business School, University of Deusto

30 September 2015

Online at <https://mpra.ub.uni-muenchen.de/66993/>

MPRA Paper No. 66993, posted 01 Oct 2015 08:34 UTC

**The geography, variety and dynamics of service exports in Spain:
a firm-level analysis**

Asier Minondo

Deusto Business School

Camino de Mundaiz 50; 20012 San Sebastian (Spain)

Tel.: +34 943 326600; Fax: +34 943 273932

E-mail: aminondo@deusto.es

Abstract

This paper uses Spanish firm-level data to analyze the difference in the destination and variety-portfolios among service exporters. As for manufacture exporters, there is heterogeneity in the value of exports, the number of destinations and the number of varieties supplied among service exporters. However, compared to manufacture exporters, service exporters have a higher number of destinations and the number and value of transactions play a major role in explaining the evolution of aggregate exports.

Resumen

Este trabajo analiza, a partir de microdatos, las diferencias en la cartera de destinos y variedades de las empresas exportadoras de servicios. Al igual que en las empresas exportadoras de manufacturas, existe heterogeneidad entre los exportadores de servicios con relación al valor exportado, el número de países a los que exportan y la variedad de servicios que ofrecen. Sin embargo, en comparación a los exportadores de manufacturas, las empresas exportadoras de servicios tienen un mayor número de destinos, y el número y el valor de las transacciones juegan un papel más relevante en la evolución de las exportaciones.

JEL Code: F14, F19, F23

Keywords: services, exports, firm-level data, heterogeneity

1. Introduction

During the last decades, service exports have grown faster than merchandise exports and by the year 2013 they already represented 20% of world exports.¹ Moreover, during the Great Recession export of services suffered a lower decline than merchandise exports (Borchert and Maatoo, 2009; Ariu, 2014). Despite its increasing relevance in international flows, the micro-level literature has just begun to analyze the trade behavior of firms that export services (Conti et al., 2010; Breinlich and Criscuolo, 2011; Jensen, 2011; Vogel, 2011; Ariu, 2012; Minondo, 2013; Haller et al., 2014).

Most of the recent literature on service exporters has focused on the first layer of heterogeneity, which analyzes why some firms export and others do not. However, previous literature based on manufacture exporters points out that there are also large differences among exporting firms regarding the number of destinations they serve and the number of products they sell (Lawless, 2009). This second layer heterogeneity is important to understand the dynamics in aggregate exports and highlights a new margin to reallocate resources and improve productivity at the firm level (Eaton et al., 2008; Bernard et al., 2010; Goldberg et al., 2010; Iacovone and Javorcik, 2010). The analysis of the processes that might raise productivity in service exporters is relevant from the policy perspective as many of these firms belong to the services sector, an economic branch that accounts for a growing share of the overall economic activity both in developed and developing countries.

This paper contributes to the scant literature on the heterogeneity among service exporters and the micro-structure of trade dynamics in services, analyzing the Spanish case, a leading exporter of services in the world. I study the heterogeneity among service

¹ World Trade Organization trade database. Available at: <http://www.wto.org>

exporters regarding their destination and product portfolio, and the dynamics of these portfolios, during the period 2008-2013. Comparing the results on service exporters with the ample evidence on manufacture exporters, this paper also contributes to identify the differences between service exporters and manufacture exporters. The main results can be summarized as follows. There is a large heterogeneity across exporters of services regarding the number of destinations and varieties supplied. Exports of services are concentrated in a small group of firms. These firms export to many destinations, but they do not offer many varieties. Moreover, firms concentrate their service exports in one variety and one destination. Spanish firms tend to select destinations that have a large market size, are relatively close to Spain and belong to the European Union. Regarding the dynamics of destination and product portfolios, the results suggest that firms follow a weak productivity hierarchy when adding and dropping new destinations and service varieties. Results also suggest that the number and the value of transactions play an important role in explaining firm-level export dynamics.

Some of these results, such as the heterogeneity in destinations and products, or the concentration of exports per firm, are similar to those found for exporters of manufactures. This seems surprising given the substantial differences between services and manufactures.² However, I also identify some differences between exporters of services and exporters of manufactures. Service exporters, as average, have a higher number of destinations and the number and value of transactions play a more important role in explaining the evolution of aggregate exports. This suggests that service exporters are more

² For example, services are not tangible, cannot be stored and frequently require the simultaneous presence in space and time of both the customer and the supplier.

likely to increase the value of their foreign operations intensifying the relations in the markets they are already present, than expanding to new markets (Ariu, 2012).

The rest of the paper is organized as follows. Section 2 presents the database used in the empirical analyses, Section 3 presents the results of the empirical analyses and Section 4 concludes.

2. Data

Data for the empirical analyses are from the Spanish Statistical Institute's (INE) Index of International Trade in Services (IITS) database. The IITS includes all firms that export services on a regular basis according to the Bank of Spain Foreign Payments and Collections Declarations System.³ It complements this information by random samples from three additional populations: 1) Firms listed in the Large Firms Valued Added Tax File of the Spanish Revenue Agency which declare an international transaction and are not included in the regular exporters group; 2) Firms listed in the Large Firms Valued Added Tax File of the Spanish Revenue Agency which do not declare any international transaction in goods and are not included in the previous group; 3) Firms with more than 10 employees included in INE's Firms' General Directory (DIRCE). Every year the IITS renews 25% of the firms included in the random samples.

Firms might belong to any economic activity (primary sector, industry and services). IITS classifies services exports into the 51 categories of the Extended Balance of

³ A firm is a regular exporter if it exports, at least, in a quarter during four consecutive years.

Services Classification (EBOPS).⁴ It is important to point out that this disaggregation level is much lower than found for manufactures' classifications, which can identify more than 5,000 product categories. Hence, we should be careful when comparing exporters of manufactures and services regarding the range and dynamics of the product portfolio. The IITS observation reports the code of the firm, the number of employees, the classification of the exported service, the destination country, the year and the quarter in which the export operation took place. Our period of analysis is 2008-2013. We exclude from the sample all transactions below 1,500€, and all firms with no employees.

Table A1 in the appendix presents the average number of firms, employees and exports during the period 2008-2013. As average, the IITS sample includes almost 3,000 firms per year, which employ around 1.5 million employees and account for 37 billion € in service exports; 83% of firms operate in services, 13% in manufacturing and the remaining 4% in primary & mining, and utilities; 80% of the employees covered in the sample work in the services sector and 88% of service exports are carried out by firms that operate in the services sector. Manufacturing accounts for 9% of service exports and the remaining 3% by the rest of sectors. The IITS is representative of the firms that export services regularly, and covers between 75% and 80% of services exports recorded by the Bank of Spain (INE, 2008). The average exports per firm are 12,5 million € and the average number of employees per firm is 505.

Table A2 in the appendix presents the main export of each 2-digit NACE subsector. Most of primary and manufacturing industries export business services and few of them export transportation services. The construction and services industries export their activity.

⁴ We exclude from the analysis two sub-chapters: reinsurance premiums and reinsurance compensations, because they might take negative values in the year 2008.

Table A3 shows that most of service exports correspond to other business services: 47%; the next chapters in the ranking are transportation (24%), computer and information services (14%) and financial services (5%).

3. Empirical analyses on the geography, variety and dynamics of service exporters

In this section I analyze the heterogeneity in the number of destinations and varieties among service exporters. I also study the concentration of exports across and within firms, the hierarchy of destinations and varieties, and the extensive and intensive margins of trade, from a static and a dynamic perspective.

3.1. Number of destinations and service varieties

Figure 1a and 1b present the percentage of firms by number of destinations and number of service varieties. The figures show that there is heterogeneity in the number of destinations and varieties across exporters of services. Around 26% of exporters only serve one destination, 12% two destinations and 9% three destinations. If we compare our results with those reported by Bernard et al. (2012) for exporters of manufactures, we find that the percentage of exporting firms that only export to one market is lower in services than in manufactures (26% vs. 64%).⁵ One possible explanation is that some services are provided through the Internet. In these cases, the market-specific barriers are lower. If a firm has the productivity-level to break-in a foreign market, it will not face large costs to expand to new

⁵ Gaulier et al. (2011) also find that the number of destinations is larger in service exporters than in goods exporters in France.

markets. Another possible explanation is related to the fact that the provision of a service to a foreign customer by a firm in its domestic market is recorded as an export of services. For example, if a Spanish bus company provides a transport service to a foreign tour-operator, this service will be accounted as exports. In these cases as well, the cost of providing a service to a different country seems to be lower than when the local firm has to provide the service or sell the product in the foreign market, such as in manufactures. In fact, we find that the number of destination per exporter is higher in transportation (10), characterized by the provision of services to foreign customers in the local market, and in computer services (7), which rely heavily on the Internet, than in business services (6) and construction (3), which have much higher market-specific entry costs.⁶

The specialization is much higher regarding service varieties: 73% of exporters only sell one variety, 17% sell two varieties and 6% export three varieties. However, we should be careful with this analysis, because the level of varieties disaggregation is low: 51. This low level might conceal the fact that firms supply different varieties within each broad category.

I analyze whether size, measured by the number of employees, is correlated with the number of destinations and services provided by the exporter. The estimated regression is

$$\ln N_{it} = \alpha + \beta \ln L_{it} \quad (1)$$

where N_{it} is the variable of interest (number of destinations or number of services) of exporter i at time t , α is a constant and L_{it} is the number of employees. As shown in Table 1, size is positively correlated with the number of destinations and varieties exported by a

⁶ See Walsh (2008) and Borchert et al. (2012).

firm. The positive relationship between size and the number of destinations and services might be explained by the positive correlation between size and productivity found by empirical studies (Bernard et al., 2007). For example, for firms operating in the service sector in Spain, Minondo (2013) finds that exporters tend to be both larger and more productivity. For activities that face market-specific costs, there is a positive correlation between firm productivity and number of destinations (Lawless, 2009; Bernard et al., 2013). Likewise, if firms have to face a sunk cost every time they introduce a new variety, only the most productive firms will market many varieties (Bernard et al., 2010).

3.2. Concentration of exports across firms and within firms

Table 2 presents data on the concentration of exports across firms. Panel A covers the concentration by firms, Panel B by firms and number of destinations, and Panel C by firms and number of services. Exports are highly concentrated by firms: the top 1% of exporters account for 55% of all exports and the top 5% account for 75% of all exports. These percentages are similar to those reported by Mayer and Ottaviano (2007) for exporters of manufactures in some European countries, but lower than those presented in Bernard et al. (2007) for US trade. As shown in Panel B, exports are concentrated in firms that serve a large number of destinations. In particular, firms exporting to more than 50 destinations account for 41% of all exports. However, there is no positive correlation between the number of varieties and the amount of exports. Firms exporting only one variety represent 55% of all exports and firms exporting more than 5 varieties only represent 3% of exports. This is in stark contrast with manufacture exporters, where exports are concentrated in

firms that export a large number of products (Bernard et al. 2007). However, as mentioned before, we should be very careful with this comparison, because the disaggregation level for manufactures is much larger than for services.

It is also interesting to analyze how exports are concentrated across destinations and varieties within a firm. Table 3 – Panel A presents the distribution of firm-level exports by top destinations. As average, firms sell 68% of their exports in their top export destination; this percentage is 3.5 times higher than the share of the second destination (19.3%) and 6.8 times higher than the third destination.⁷ These results are similar to those found by Breinlich and Criscuolo (2011) for exporters of services in the United Kingdom. The table also presents data on the share of each destination for firms with different number of destinations. For example, for firms that only export to two destinations, the first destination is four times more important than the second destination. As the number of destination increases, the weight of the top destination is reduced. Notwithstanding this trend, the weight of the top destination remains important; for example, for firms that export to 50 destinations the top market still represents 30% of total exports.

Regarding the number of varieties, the weight of the top service is very high. For all exporters, the top service represents 94% of exports, and the second service only 20% of exports. The weight of the first service remains very high when we analyze the shares by number of services exported. For example, for firms that export two services, top service exports are four times higher than second service exports. Compared to the number of destinations, the weight of the top service reduces more gradually, remaining above 60%.

⁷ It is important to note that the sum of percentages does not have to add-up to 100, because figures are calculated as averages across firms.

3.3. Destinations and service hierarchies

As explained in Lawless (2009), trade models based on firm-heterogeneity predict a strict hierarchy of destinations. It is assumed that each destination has a cut-off threshold productivity and firms can rank destinations based on this threshold. Hence, firms should follow a strict order when adding new destinations: they should start exporting to the destination with the lowest threshold and follow with the destination with the next lowest threshold. Firms will stop adding destinations when their productivity is lower than the cut-off productivity of the next destination. I use the procedure developed in Eaton et al. (2011) to test the strict hierarchy prediction in the top five destinations of Spanish service exporters. Top five destinations are identified by the number of firms that export to these markets (Table 4-Column 1). These markets, from top to bottom, are: France, United Kingdom, Germany, Portugal and Italy. If there was a strict hierarchy, Spanish service exporters would add new destinations following the order of the most important destinations. So, firms should begin exporting to France; then, they should expand to the United Kingdom, then to Germany, then to Portugal and, finally, to Italy. Table 4-Column 5 reports the number of exporters in each destination-combination. For example, the number corresponding to FR denotes that 1,046 Spanish firms exported services to France but not to the United Kingdom, Germany, Portugal or Italy. Only 28% of firms (5009/17876) obey the strict hierarchy rule for the top five destinations. This low percentage does not support the strong destination hierarchy model.

However, firms seem to follow a weaker version of a destination hierarchy. Column 6 in Table 4 reports the number of firms expected to export to each destination combination if selling in one market was independent of selling in another market. To calculate these

figures, first, I calculate the independent probabilities of exporting to each of the five top markets (Table 4-Column 2). Then, I multiple the number of exporters by the independent probabilities of exporting to the selected combined destinations, and by the independent probabilities of not exporting to rest of the top five destinations. The comparison of the total figure in column 6 with the figure in column 5 shows that the number of firms following a strict hierarchy under independence is around 60% of what we observe in the data (3131/5009). This result points out that the ranking of hierarchies does not follow a pure independence rule, giving support to the weak version of a destination hierarchy.

Following Lawless (2009), we look to the entry and exit of firms from export destinations as an additional proof for the existence of a weak destination hierarchy. The theory predicts that a firm should enter destinations that are less popular than the destinations it is already serving; and a firm should leave the least popular destination within its set of destinations. Figure 2 analyzes this hypothesis. The horizontal axis measures the change in the number of destinations served by a firm between year t and year $t+1$; the vertical axis measures the change in the ranking of the least popular market between year t and year $t+1$. Firms are expected to locate in the upper-right quadrant and the lower-left quadrant. As shown in the figure, the majority of firms are located on these quadrants, which gives some support to the weak hierarchy hypothesis.

Recent models on multiple-product firms also predict a hierarchy in how firms add or remove varieties from their export portfolio. Bernard et al. (2010) argue that firms start exporting the variety in which their profitability is higher and expand their export portfolio with less profitable varieties. As profitability determines export volumes, the model predicts that when a firm adds a new variety its exports should be lower than the exports of

incumbent varieties; and when a firm drops a variety from its export-portfolio, exports of the dropped variety ought to be lower than exports of the remaining varieties. In our sample, when a variety was dropped the export value of the dropped variety was lower than the minimum value of the remaining varieties in 70% of cases; in 63% of cases the export value of the added variety was lower than the minimum export value of the incumbent varieties. These results support the claim that exporters also follow a weak hierarchy when adding and dropping new service varieties.

3.4. Extensive and intensive margins of trade

Following Breinlich and Criscuolo (2011), this section analyzes the contribution of the extensive and intensive margins to the differences in service exports across firms and countries. To analyze the differences in exports across firms, total firm-exports are divided into three components: number of destinations, number of service varieties, and exports per destination and service variety. The first two components belong to the extensive margin of trade and the third component to the intensive margin of trade. To determine the contribution of each margin to explain the difference in exports across firms, I run separate regressions of the log of each component on the log of exports:

$$\ln N_{it} = \alpha + \beta \ln X_{it} \quad (2)$$

where N_{it} is the dependent variable of interest (number of destinations, number of service varieties, and exports per destination per variety) of firm i at time t , α is a constant and X_{it} are firm-level exports at time t .

Table 5 – Panel A shows that the intensive margin is much more important than the extensive margin in explaining the differences in exports across firms. The intensive margin explains 70% of the difference in exports across firms, the number of destinations explains 26% of the differences and the number of services only explains 4% of the differences. These results are similar to those reported by Breinlich and Criscuolo (2011) for exporters of services in the United Kingdom. The contribution of the intensive margin is also similar to that found for merchandises (Bernard et al., 2007).

We can use a similar procedure to understand the differences in Spanish service exports across countries:

$$\ln N_{jt} = \alpha + \beta \ln X_{jt} \quad (3)$$

where N_{jt} is the dependent variable of interest (number of firms, number of varieties and average export value per firm and variety) for destination j and time t , α is a constant and X_{jt} total export of services to destination j at time t . Table 5-Panel B shows that the number of firms explains 53% of the difference in exports across countries, the number of services explains 29% of the differences and the intensive margin explains 18% of the differences.

In the second section of the table, I analyze how gravity forces influence each trade component:

$$\ln N_{jt} = \alpha + \beta_1 \ln GDP_{jt} + \beta_2 \ln dist_j + \beta_3 lang_j + \beta_4 adj_j + \beta_5 RTA_j \quad (4)$$

where N_{jt} is the same dependent variable of interest as in equation (3), α is a constant, GDP_{jt} is the GDP of the importing country j at time t , $dist_j$ is the distance between the destination and Spain, $lang_j$ is a dummy variable that takes the value of 1 if Spain and the importer speak the same language and zero otherwise, adj_j is a dummy variable that takes

the value of 1 if Spain and the importer share a border and zero otherwise, and RTA_j is a dummy variable that takes the value of 1 if Spain and the importer belong to the same trade agreement and zero otherwise.⁸

Estimations show that a larger GDP in the destination market, a lower distance, speaking the same language, sharing a border and belonging to the same trade agreement increase the number of exporters.⁹ Except for sharing a border, the effect of the rest of variables is the same on service varieties. However, the intensive margin is only correlated positively with the size of the market and negatively with belonging to the same trade agreement. This result is different to that reported by Bernard et al. (2007) for merchandises, who find that the intensive margin is negatively related with GDP and positively related with distance.

I end up the empirical analyses looking to the contribution of the extensive and intensive margins to the evolution of aggregate service exports. As 25% of the non-regular firms are renewed in the sample every year, I restrict the analysis to firms that are present during the whole period 2008-2013. This period is interesting because it encompasses a time-interval characterized by a severe decline in world exports and a time-interval characterized by a sharp recovery in trade flows. As shown in Table 6, the extensive margin is divided into three components: number of destinations (*dest*), number of services (*ser*) and number of transactions (*tran*). I proxy, loosely, this latter component by the number of

⁸ GDP data is obtained from the World Bank's World Development Indicators database (available at <http://databank.worldbank.org>). The rest of variables are obtained from CEPII's database (available at <http://www.cepii.fr>).

⁹ As explained in Feenstra and van Wincoop (2012), not controlling for destination effects might bias the estimated coefficients. However, the inclusion of destination-specific fixed effects would preclude the estimation of the coefficients of the variables that are invariant in time, such as distance, language, adjacency and sharing a trade agreement (which does not change in the short period covered in our sample). Hence, recognizing the limitations of the estimations, and following the procedure of previous studies (Bernard, 2007; Lawless, 2010), we estimate the equation without destination-specific fixed effects.

quarters a firm exports a variety to a destination. Now, the intensive margin is the value of exports per transaction. I add another component, which captures the combined effect of the changes in all previous components. For each component, I distinguish between the contribution of the increase of the component and the contribution of the decrease of the component. As shown in the table, between the year 2008 and the year 2009 export of services by regular exporters suffered a severe decline: 17%. In the year 2010 exports grew by 11% and kept on rising until 2012; however, in the year 2013, there was a small decline in the value of service exports by regular exporters.

The year-to-year evolution is governed by the evolution in the number of transactions, a component of the extensive margin, and the value per transaction, a component of the intensive margin, and the combined effect of both components. These results are in line with Ariu (2012), who also finds an important role for the transaction margin in the dynamics of services exports. The contribution of the other components of the extensive margin, new destinations and new varieties, to annual growth rates is modest. In fact, as shown in Table A4 in the appendix, the average number of destinations per firm remains quite stable during the period 2008-2012, and rises in 2013; the average number of service varieties per firm remains quite stable during the whole period. I also observe a large degree of stability in the adding and dropping of destinations and service varieties at the firm level (gross churning). Regarding the churning of destinations, around 40% of firms do not change the number of markets they serve, and less than 20% add or drop a destination (Figure 3a). The stability is even more remarkable at the service variety level (Figure 3b): more than 80% of firms do not add or drop a service variety. This contrast with the evidence for manufacturing firms, which finds much larger changes in the product mix

within firms, especially in developed countries (Bernard et al., 2010; Goldberg et al. 2010). However, as mentioned before, we should be very careful with this latter comparison, due to the differences in disaggregation levels between service and manufacture classifications.

5. Conclusions

Recent studies which measure trade with value added point out that services and manufactures represent similar shares of world exports (Johnson, 2014). Despite its importance in international trade, evidence of firm-level exports of services is scant. The contribution of this paper is to enhance our knowledge on the characteristics of services exporters using firm-level Spanish data for the period 2008-2013. In particular, it analyzes the differences across firms regarding destinations, varieties and value of exports; the contribution of the most important markets and varieties to firm level exports; and the micro-structure of trade dynamics. As previous studies based on exporters of manufactures, I find heterogeneity across service exporters regarding the value of exports, number of destinations served and number of varieties exported. As for manufacture exporters, the adding and dropping of destinations and varieties follow a weak hierarchy rule and the intensive margin is the main contributor to the difference in exports across firms. However, I also identify some differences between exporters of services and exporters of manufactures. In particular, service exporters have a larger number of destinations and the number and value of transactions contribute more to changes in the aggregate value of exports.

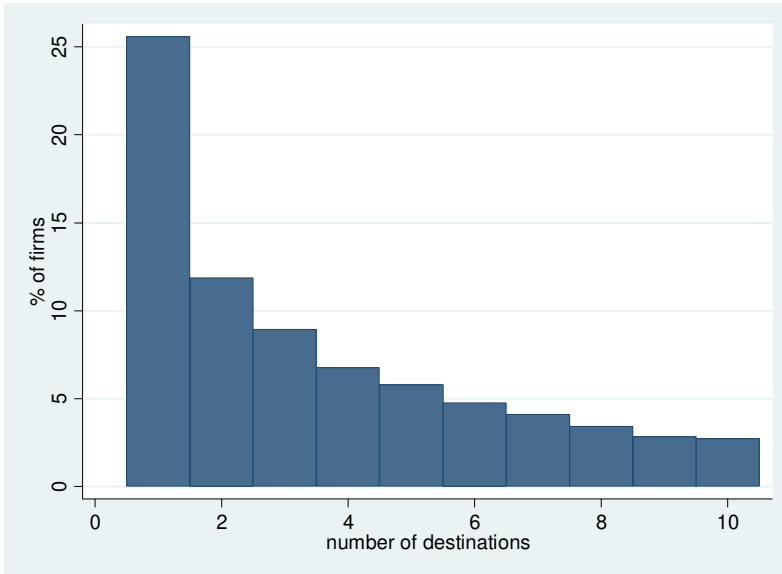
We can draw some policy recommendations from our findings. First, the heterogeneity in the number of destinations across firms suggests that exporters encounter destination-specific fixed costs for some services. A policy to reduce and homogenize the technical barriers across countries would facilitate the entry of firms in new markets. Notwithstanding that, our results also suggest that firm exports are highly concentrated in one country and in one product. Hence, policies aiming to foster service exports should take into account that exports' growth is more likely to happen through the intensification of the presence in one market, rather than the expansion to other markets.

References

- Ariu, A. (2012). "Services versus Goods Trade: Are They the Same?", *CEPR Discussion Paper n° 9032*, Centre for Economic Policy Research, London.
- Ariu, A. (2014). "Crisis-Proof Services: Why Trade in Services Do Not Suffer During the 2008-2009 Crisis?", available at:
http://perso.uclouvain.be/andrea.ariu/Sito/Research_files/Trade%20Crisis%20Services%206.pdf
- Bernard, A.B. and Jensen, J.B. (1995). "Exporters, Jobs and Wages in U.S. Manufacturing, 1976-87", *Brookings Papers on Economic Activity*, Microeconomics 1995, 67-119.
- Bernard, A.B., J.B. Jensen, S.J. Redding and P.K. Schott (2007). "Firms in International Trade", *Journal of Economic Perspectives*, **21**, 3, 105-130.
- Bernard, A.B., J.B. Jensen, S.J. Redding and P.K. Schott (2012). "The Empirics of Firm Heterogeneity and International Trade", *Annual Review of Economics*, 4, 283-313.
- Bernard, A.B., Redding S.J. and Schott P.K. (2010). "Multiple-Product Firms and Product Switching", *American Economic Review*, **100**, 1, 70-97.
- Borchert, I. and Mattoo, A. (2009). "The crisis-resilience of services trade". *The Service Industries Journal*, **30**, 13, 2115-2136.
- Borchert, I., Gootiiz, B. and Mattoo, A. (2012). "Policy Barriers to International Trade in Services. Evidence from a New Database", *Policy Research Working Paper 6109*, World Bank, Washington.

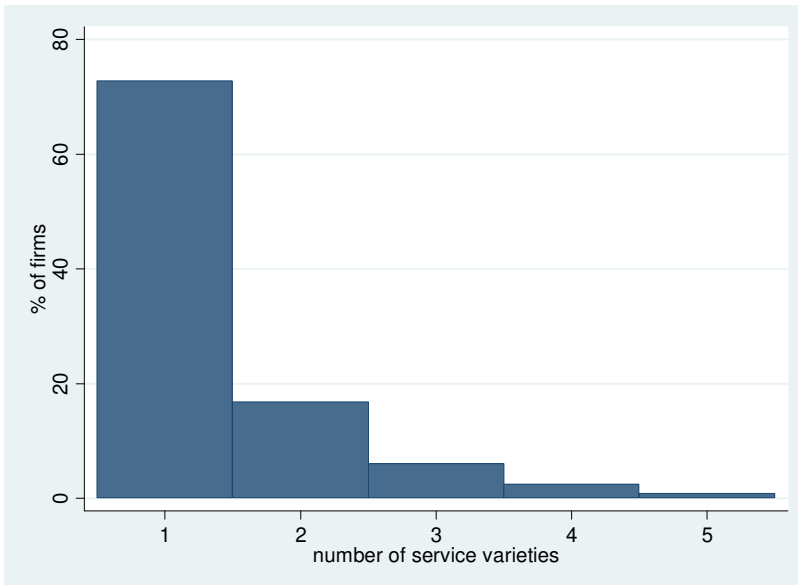
- Breinlich, H. and Criscuolo, C. (2011). "International trade in services: A portrait of importers and exporters", *Journal of International Economics*, **84**, 2, 188-206.
- Conti, G., Lo Turco, A. and Maggioni, D. (2010). "Exporters in Services: new Evidence from Italian Firms", *Applied Economics Quarterly*, **56**, 1, 73-98.
- Eaton, J., S.S. Kortum and F. Kramarz, F. (2011). "An Anatomy of International Trade: Evidence from French Firms", *Econometrica*, **79**, 5, 1453-1498.
- Feenstra, R.C. and van Wincoop, E. (2002). "Border Effects and the Gravity Equation: Consistent Methods for Estimation", *Scottish Journal of Political Economy*, **49**, 5, 491-506.
- Gaulier, G., Milet, E. and Mirza, D. (2011). "Les Firmes Francaises dans le Commerce International de Services", *Economie et Statistiques*, n° 435-436, 125-147.
- Goldberg, P.K., Khandewal, A., Pavcnik, N. and Topalova, P. (2010). "Multiproduct firms and product turnover in the developing world: evidence from India", *Review of Economics and Statistics*, **92**, 4, 1042-1049.
- Haller, S.A., Damijan, J., Kaitila, V., Kostevc, C., Maliranta, M., Milet, E., Mirza, D. and Rojec, M. (2014). "A Portrait of Trading Firms in the Services Sectors. Comparable Evidence from Four EU Countries", *Review of World Economics*, forthcoming.
- Iacovone, L. and Javorcik, B.S. (2010). "Multi-product exporters: product churning, uncertainty and export discoveries", *The Economic Journal*, **120**, May, 481-499.
- INE - Instituto Nacional de Estadística (2008). *Índices de Comercio Exterior de Servicios (ICES)*, available <http://www.ine.es/metodologia/t37/t3730198.pdf>
- Jensen, J.B. (2011). *Global Trade in Services. Fear, Facts, and Offshoring*, Peterson Institute for International Economics, Washington, D.C.
- Lawless, M. (2009). "Firm export dynamics and the geography of trade", *Journal of International Economics*, **77**, 2, 245-254.
- Lawless, M. (2010). "Deconstructing gravity: trade costs and the extensive and intensive margins of trade", *Canadian Journal of Economics*, **43**, 4, 1149-1172.
- Mayer, T. and G.I.P. Ottaviano (2007). "The Happy Few: The internationalisation of European Firms. New facts based on firm-level evidence", *Bruegel Blueprint Series Volume III*, Bruegel, Brussels.
- Minondo, A. (2013). "Trading firms in the Spanish service sector", *Revista de Economía Aplicada*, **21**, 63, 5-28.
- Vogel, A. (2011). "Export Performance in the German Business Service Sector", *The Service Industries Journal*, **31**, 7, 1015-1031.
- Walsh, K. (2008). "Trade in Services: Does Gravity Hold? A Gravity Model Approach to Estimating Barriers to Trade", *Journal of World Trade*, **42**, 2, 315-334.

Figure 1a. Percentage of exporters by number of destinations



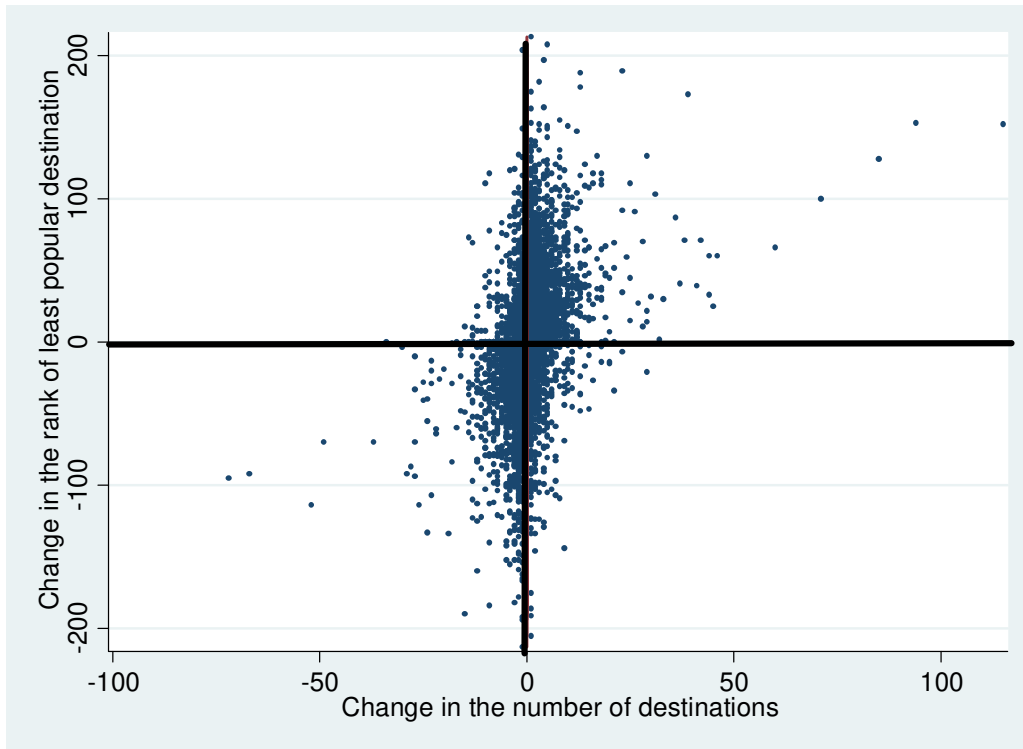
Source: author's own elaboration from IITS database.

Figure 1b. Percentage of exporters by service varieties



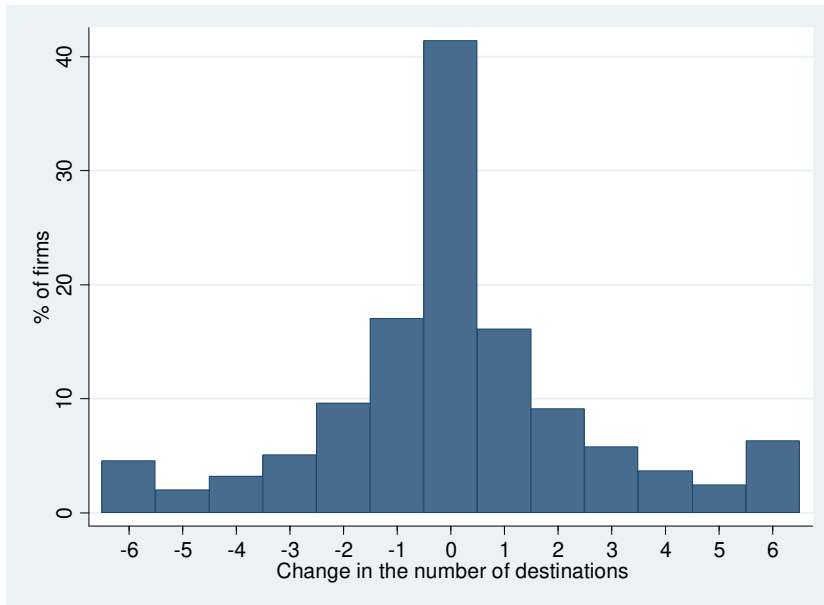
Source: author's own elaboration from IITS database.

Figure 2. Hierarchy in entry and exit



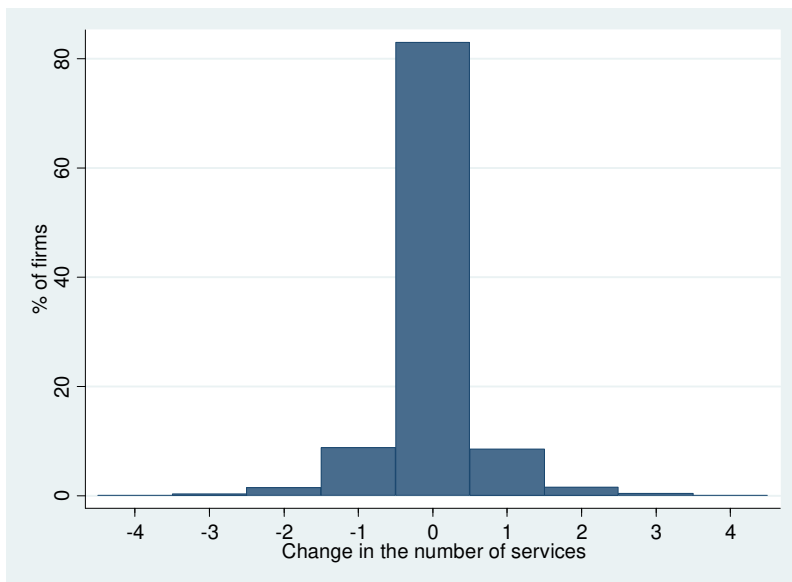
Source: author's own elaboration from IITS database.

Fig 3a. Churning of destinations



Source: author's own elaboration from IITS database.

Figure 3b. Churning of service varieties



Source: author's own elaboration from IITS database.

Table 1. Relationship between number of destinations and number of services, and firm-level productivity

	(Ln) Number of destinations	(Ln) Number of services
Ln (Employment)	0.225*** (0.004)	0.037*** (0.001)
Observations	17,876	17,876

Note: ***, * statistically significant at 1% and 10% respectively. Standard errors in parentheses. Regressions include year and industry 2-digit fixed effects.

Table 2. Concentration of exports

Panel A. Top exporters			
Top exporters	N° of firms	% of firms	% of exports
1	179	1	55
5	894	5	75
10	1788	10	83
20	3576	20	91
Panel B. Concentration by firms and number of destinations			
N° of destinations	N° of firms	% of firms	% of exports
1	4571	26	7
2	2120	12	4
3-5	3835	21	8
6-10	3176	18	8
11-25	2896	16	18
26-50	901	5	14
>50	377	2	41
Panel C. Concentration by firms and number of services			
N° of services	N° of firms	% of firms	% of exports
1	13018	73	55
2	3012	17	28
3	1070	6	11
4	433	2	2
5	150	1	1
>5	193	1	3

Source: author's own elaboration from IITS database.

Table 3. Panel A. Concentration of firm exports in top markets, 2008-2013

Top destinations	All firms	Firms with 1 destination	Firms with 2 destinations	Firms with 3 destinations	Firms with 5 destinations	Firms with 10 destinations	Firms with 25 destinations	Firms with 50 destinations
1	68.3	100.0	81.4	70.5	61.7	50.9	36.4	30.4
2	19.3		18.4	21.5	20.9	19.7	16.0	11.8
3	10.0			7.7	9.9	10.7	9.9	8.8
4	6.3				4.9	6.6	7.5	7.4
5	4.4				2.3	4.4	5.8	4.9
6	3.3					2.9	4.5	4.2
7	2.6					2.0	3.6	3.6
8	2.1					1.3	2.9	3.2
9	1.7					0.8	2.4	2.7
10	1.4					0.5	1.9	2.5

Source: author's own elaboration from IITS database.

Table 3 - Panel B. Concentration of firm exports in top services, 2008-2013

Top services	All firms	Firms with 1 service	Firms with 2 services	Firms with 3 services	Firms with 4 services	Firms with 5 services	Firms with 6 services	Firms with 10 services
1	93.4	100.0	80.3	71.6	66.1	64.5	61.3	68.1
2	20.2		19.6	21.3	21.7	20.9	21.4	11.1
3	7.9			6.9	8.8	9.0	10.6	8.8
4	3.8				3.4	3.7	3.9	4.5
5	2.3					1.6	1.9	3.1
6	1.3						0.7	1.9
7	0.8							1.4
8	0.5							0.5
9	0.3							0.4
10	0.2							0.1

Source: author's own elaboration from IITS database.

Table 4. Hierarchy of destinations

Export destination	Number of firms	Fraction of exporters	Destinations combination	Actual number of exporters	N° of exporters under independence assumption
FR	8,557	47.9	FR	1,046	1,035
UK	7,867	44.0	FR-UK	353	814
DE	7,841	43.9	FR-UK-DE	474	636
PT	6,989	39.1	FR-UK-DE-PT	410	408
IT	6,578	36.8	FR-UK-DE-PT-IT	2,726	238
Any destination	17,876	100.0	Total	5,009	3,131

Note: FR=France; UK=United Kingdom; DE=Germany; PT=Portugal; IT=Italy. The destinations combination FR-UK means that the firm exports to France and the United Kingdom, but not to another top 5 destination.

Source: author's own elaboration from IITS database.

Table 5. Panel A. Contribution of extensive and intensive margins to difference in service exports across firms (2008-2013)

	Extensive margin		Intensive margin
	N° of destinations (log)	N° of services (log)	Exports per destination and service (log)
Value of exports (log)	0.263 (0.006)	0.036 (0.003)	0.701 (0.007)
Observations	17,876	17,876	17,876
R-squared	0.26	0.02	0.72

Note: The regression coefficient is estimated in a regression where the (log) of the component is regressed on the (log) of firm exports. All regressions include industry 2-digit and year fixed effects. Standard errors in parentheses clustered at the firm level. All coefficients are statistically significant at 1%.

Panel B. Contribution of extensive and intensive margins to difference in service exports across countries (2008-2013)

	Extensive margin		Intensive margin
	N° of firms (log)	N° of services (log)	Exports per firm and service (log)
<i>Section 1</i>			
Value of exports (log)	0.530*** (0.006)	0.293*** (0.004)	0.177*** (0.009)
Observations	1,291	1,291	1,291
R-squared	0.86	0.82	.24
<i>Section 2</i>			
GDP destination (log)	0.521*** (0.011)	0.266*** (0.008)	0.100*** (0.017)
Distance (log)	-0.469*** (0.051)	-0.353*** (0.034)	0.072 (0.076)
Language	1.284*** (0.078)	0.827*** (0.051)	0.167 (0.115)
Adjacency	0.531** (0.232)	-0.415*** (0.155)	0.513 (0.345)
Trade agreement	0.697*** (0.080)	0.174*** (0.054)	-0.226* (0.120)
Observations	870	870	870
R-squared	0.83	0.74	0.05

Note: In Section 1 the regression coefficient is estimated in a regression where the (log) of the component is regressed on the (log) of firm exports. All regressions include year dummies. Standard deviations in parentheses. ***, **, * statistically significant at 1%, 5% and 10% respectively.

Table 6. Contributions to net exports growth (percentages; regular firms; period 2008-2013)

year	Total	New dest	Drop dest	New ser	Drop ser	New dest+ser	Drop dest+ser	More tran	Less tran	More val	Less val	Comb
2009	-17	2	-1	0	0	0	0	6	-3	4	-9	-16
2010	11	1	-1	1	0	0	0	6	-4	7	-5	6
2011	4	1	-1	0	0	0	0	7	-4	6	-6	1
2012	6	1	-1	0	0	0	0	6	-8	8	-5	5
2013	-1	1	-2	0	-1	0	0	6	-5	6	-6	0

Notes: New dest (new destinations); Drop dest (destinations that disappear); New ser (new service varieties); Drop ser (service varieties that disappear); New dest+ser (new combination of destination and service); Drop dest+ser (combination of destination and service that disappears); More tran (higher number of transactions per destination and service); Less tran (lower number of transactions per destination and service); More val (a higher export value per service, destination and transaction); Less val (a lower export value per service, destination and transaction); Comb (combination of the previous items).

Source: author's own elaboration from IITS database.

Table A1. Number of firms, employees and exports included in the sample. Average for the period 2008-2013

Sector	Firms	Employees	Exports (million €)
Total	2,979	1,504,907	37,341
Primary & mining	9	1,485	112
Manufacturing	394	203,102	3,333
Utilities	15	28,846	113
Construction	100	64,514	1,011
Services	2,461	1,206,960	32,772

Source: author's own elaboration from IITS database.

Table A2. Main services export per NACE 2-digit industrial activity

NACE 2-digit industrial activity	Services export chapter
Crop, animal production and hunting	Personal, cultural and recreational services
Forestry and logging	Other business services
Fishing and aquaculture	Other business services
Mining of coal and lignite	Other business services
Extraction of crude petroleum and gas	Other business services
Other mining and quarrying	Other business services
Mining support service activities	Construction services
Food products	Other business services
Beverages	Other business services
Tobacco products	Other business services
Textiles	Other business services
Wearing apparel	Other business services
Leather and related products	Transportation
Wood and wood products	Transportation
Paper and paper products	Other business services
Printing and reproduction of recorded media	Other business services
Coke and refined petroleum products	Transportation
Chemicals	Other business services
Pharmaceutical products	Other business services
Rubber and plastic products	Other business services
Other non-metallic mineral products	Transportation
Basic metals	Other business services
Fabricated metal products	Construction services
Computer, electronic and optical products	Other business services
Electrical equipment	Other business services
Machinery and equipment	Other business services
Motor vehicles	Other business services
Other transport equipment	Other business services
Furniture	Other business services
Other manufacturing	Other business services
Repair and installation of machinery and equipment	Other business services
Electricity, gas, steam and air conditioning supply	Other business services
Water collection, treatment and supply	Other business services
Waste collection, treatment and disposal activities	Other business services
Remediation activities	Other business services
Construction of buildings	Construction services
Civil engineering	Construction services
Specialized construction activities	Construction services
Sale and repair of motor vehicles and motorcycles	Other business services

NACE 2-digit industrial activity

Libraries, archives, museums and other cultural activities

Gambling and betting activities

Sports activities and amusement and recreation activities

Activities of membership organizations

Repair of computers and personal and household goods

Other personal service activities

Activities of extraterritorial organizations and bodies

Services export chapter

Personal, cultural and recreational services

Other business services

Other business services

Financial services

Other business services

Personal, cultural and recreational services

Other business services

Source: author's own elaboration from IITS database.

Table A3. Exports by main chapter (percentage of total exports; 2008-2013 average)

Export chapter	Share
Other business services	47
Transportation	24
Computer and information services	14
Financial services	5
Communications services	4
Construction services	2
Insurance services	2
Royalties and license fees	1
Personal, cultural and recreational services	1
Government services	0

Source: author's own elaboration from IITS database.

Table A4. Average number of destinations and varieties per firm, 2008-2013

Year	Number of destinations	Number of varieties
2008	8.42	1.46
2009	8.34	1.41
2010	8.50	1.44
2011	8.93	1.45
2012	9.05	1.46
2013	9.96	1.60

Source: author's own elaboration from IITS database.