The relationship between export status and productivity in services: A firm-level analysis for Spain

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Abstract

This paper analyzes the relationship between export status and productivity in a major service exporter, Spain, during 2001-2007. I find that exporters in the services sector are 37% more productive than non-exporters. This productivity premium is larger for firms that supply non-Internet-related services than for firms that supply Internet-related services. The results show that exporters were more productive than non-exporters before beginning to export. The results also show that exporting increases productivity growth; however, this positive shock vanishes quickly.

JEL Codes: F14, F19, F23
Keywords: exports, services, firm-level evidence, Spain, productivity.

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1. Introduction

In 2009, services accounted for 75% of GDP in high-income countries and 50% of GDP in low- and medium-income countries (World Development Indicators). Due to their large and growing share of GDP, growth in the world economy will be increasingly linked to productivity growth in services. In this paper, I analyze whether international trade can contribute to this process.

Studies based on manufacturing firms have shown that exporters are more productive than non-exporters (Bernard et al., 2007). This positive relationship can be explained by a self-selection process, in which only the most productive firms are able to overcome the extra barriers of selling in foreign markets and still obtain profits. Alternatively, this relationship can be explained by a learning-by-exporting process, in which firms increase their productivity due to their participation in foreign markets. If self-selection is prevalent, aggregate productivity can be enhanced through policies, such as trade liberalization, that provoke a shift of resources from less productive firms to more productive firms. If firms learn from exporting, aggregate productivity can be enhanced if policies facilitate the entry of new firms into foreign markets.

Can we also expect a relationship between export status and productivity in services? From the self-selection perspective, the traditional view among scholars is that services firms face much larger barriers to trade than manufacturers because they require the coincidence of suppliers and customers in space and time (Francois and Hoekman, 2010). Due to these large barriers to trade, it is reasonable to expect a strong link between export status and productivity for firms operating in services. However, I expect this link to be weaker for firms operating in services in which the

movement of the supplier is inherent to the activity, such as transport services, and for firms that supply their services through the Internet (e.g., call-centers) or whose final output can be digitalized and transferred through the Internet (e.g., a machine design or an electronic book). Regarding the learning by exporting hypothesis, I expect that higher competition and interaction with new suppliers and customers should also contribute to productivity growth in services firms.

Some empirical studies that have analyzed the relationship between productivity and export status for services firms, such as Breinlich and Criscuolo (2011), find that service exporters in the UK are more productive than non-exporters. However, these authors do not analyze whether this link is due to a process of self-selection or to a process of learning by exporting. Vogel (2011) also finds a link between productivity and export status for large firms in three business services industries in Germany and presents evidence supporting the self-selection process. However, he does not analyze the role of learning by exporting.

The contribution of this paper is that it enhances the limited evidence on the relationship between export status and productivity in the services sector using firm-level data from Spain, the world's seventh-largest exporter of services in 2009.[1] I examine whether exporters in the services sector are more productive than non-exporters and whether this productivity premium is due to self-selection or to learning by exporting. I also test whether the productivity premium is similar for Internet-related services, non-Internet-related services and transport services.

The paper is organized as follows. The next section presents the database and provides some descriptive analyses. Section 3 analyzes the relationship between

[1] World Trade Organization database. Available at http:\\www.wto.org

export status and productivity and evaluates the self-selection and leaning-by-exporting hypotheses. Section 4 concludes.

2. Database

We draw our data from the Annual Survey of Services (ASOS) conducted by the Spanish Statistical Institute (INE). We divide firms into three groups: Internet-related services, non-Internet-related services, and transport services. Following Freund and Weinhold (2002), the first group includes services that can be transferred electronically: computer and related activities, research and development, and business services. The second group includes accommodations and restaurants, real estate activities, rentals of machinery and equipment, recreational, cultural, and sporting activities, and other personal service activities. The third group includes all transport activities. The ASOS does not survey firms engaged in financial intermediation, public administration and defense, or education and social work.

Firms with ten or more employees receive a broader ASOS questionnaire in which they are asked to distribute their sales between the domestic market and foreign markets. We use this information to identify exporters. The period of analysis is 2001-2007. The average number of firms included in the sample per year is approximately 17,000. Because firms with less than 10 workers are excluded, the coverage of the sample is low in terms of establishment (1.3%) but large in terms of employment and exports (52% and 31%, respectively).[2] Because ASOS does not provide data on capital, we can only calculate labor productivity. It is important to emphasize that the survey does not specify whether firms export services,

[2] INE and Bank of Spain databases. Available at http:\\www.ine.es and http:\\www.bde.es, respectively.

manufactured goods or both. However, as previous studies have shown, if the wholesale industry is excluded, exporters in the services sector mostly export services (Haller et al., 2012).

As shown in Figure 1, exporters constitute a small percentage (14.9%) of all firms. This percentage is much lower than that for manufacturers. Drawing on data from the Survey of Firms' Strategies (Encuesta de Estrategias Empresariales), Campa (2004) and Mañez et al. (2004) document a percentage of exporters of approximately 60%. This higher percentage suggests that exporters in manufacturing face lower barriers to trade than firms in the services sector.

Transport is the industry with the highest share of exporters, at 28%. The share of exporters in Internet-related services (16%) is larger than the share of exporters in non-Internet-related services (10%). These figures suggest that firms that supply non-Internet-related services face larger barriers to export than firms that supply Internet-related and transport services.

3. The relationship between productivity and export status

To test the relationship between productivity and export status, I estimate a descriptive regression. The dependent variable is the log value of labor productivity. The set of independent variables includes controls for size, industry and time and a dummy variable that captures the export status of the firm. A firm is considered an exporter if it exports during at least two consecutive years and becomes a regular exporter after it begins to export. I pool all observations for the 2001-2007 period.

As shown in Table 1, exporters are 37% more productive than non-exporters. This premium is larger than the one found for exporters in the manufacturing sector in Spain of 17% (Fariñas and Martínez-Marco, 2007). This result suggests that barriers to export are larger for firms in the services sector than for firms in the manufacturing sector.

Contrary to expectations, I find that exporters' productivity premium in non-Internet-related services is lower than exporters' productivity premium in Internet-related services (30% vs. 51%, respectively) and is similar to exporters' productivity premium in transport industries (30%). This strange result can be explained by the accommodation and restaurant industries. Some accommodations and restaurants can be considered passive exporters because they receive foreign guests without engaging large marketing efforts abroad. In these situations, being an exporter does not require a productivity premium. In fact, as shown in Column 4, when we remove accommodation and restaurant industries from the non-Internet-related services group, the productivity premium rises to 57%. This figure is slightly larger than the premium in Internet-related services and is much larger than the premium in transport industries. However, the small difference between Internet-related services and non-Internet-related services suggests that the latter group, despite having a lower proximity burden, may face other barriers to trade. On this point, Borchert et al. (2012) find that professional services, which are included in the Internet-related services group, are among the most protected industries in developed and developing countries.

In the second part of this section, I analyze whether exporters' productivity premium is due to ex-ante differences or ex-post differences. If self-selection explains exporters' higher productivity, I should find significant differences in

productivity between future export starters and non-exporters several years before some of them begin to export. Table 2 presents the differences in labor productivity between non-exporters and export starters three years before beginning to export, two years before beginning to export, and one year before beginning to export. As shown in the table, export starters were already more productive than non-exporters before beginning to export, validating the self-selection hypothesis. Moreover, the table shows that the productivity premium rises as firms approach the entry year, suggesting that firms may prepare to export (López, 2009). I do not find statistically significant differences in productivity between Internet-related services and non-Internet-related services, excluding accommodations and restaurants.

Finally, I analyze whether firms in the services sector learn from exporting. Following Wagner (2002), I compare productivity growth between export starters and a matched group of non-exporters.[3] As shown in Table 3, the difference in productivity growth between export starters and non-exporters is only significant at the entry year and becomes non-significant in the following years.[4] This result is consistent with models in which higher revenues due to exporting allow firms to introduce new technologies, leading to a jump in the productivity level at the entry year (Bustos, 2011).

[3] To match export starters and non-exporters, we use data on size, labor productivity, 4-digit industry and time.

[4] We use the one nearest neighbor algorithm to match treated and untreated firms. The results are robust to other matching algorithms, such as two and three nearest neighbor and Epanenchikov with different bandwidths, and to imposing and not imposing common support.

4. Conclusions

This paper analyzes the relationship between productivity and export status for firms operating in the services sector. Using a sample of Spanish firms during the period of 2001-2007, we find that exporters in the services sector are 37% more productive than non-exporters. This productivity premium is larger than the one found for firms in the manufacturing sector. My results show that exporters in non-Internet-related services, excluding accommodations and restaurants, have a slightly larger productivity premium than exporters in Internet-related services. I also find that exporters in the services sector were more productive than non-exporters before beginning to export, confirming the self-selection hypothesis. The results show that productivity grows at a greater pace among exporters than among non-exporters; however, this difference is only significant at the entry year.

These findings indicate that trade liberalization, which provokes a shift of resources from less productive firms to more productive firms, can contribute to increased productivity in the services sector. Because there is also a positive productivity shock when beginning to export, policies facilitating the entry of new firms into foreign markets may contribute to increased productivity in the services sector.

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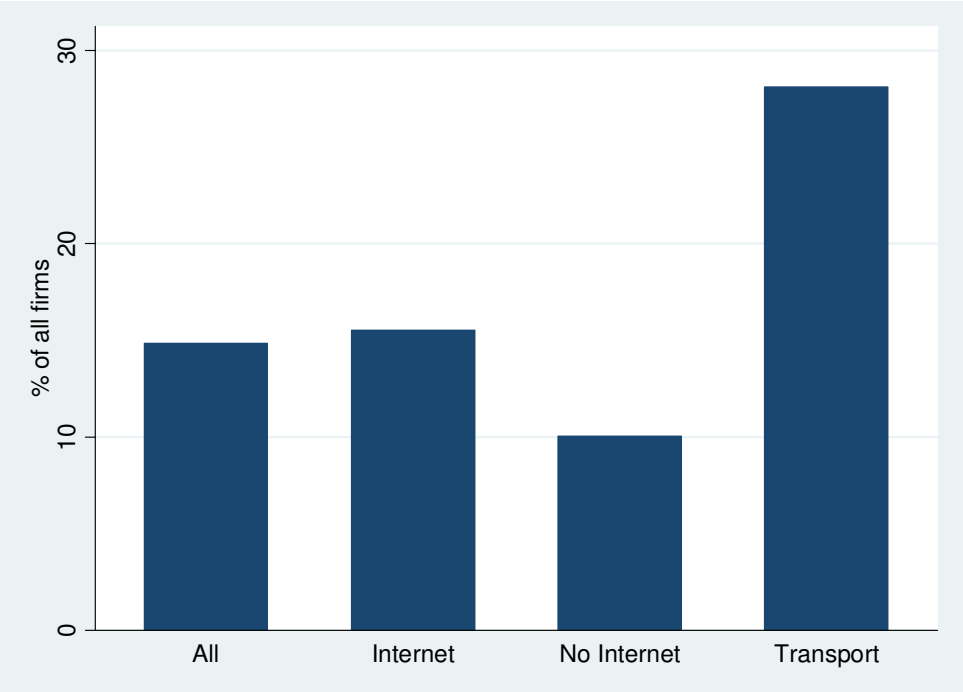
Figure 1. Share of exporters in services, 2007



Note: Percentages are weighted by sample to population elevation factors.

Table 1. Productivity and export status. Descriptive regressions.

	All firms (1)	Internet-related (2)	Non-Internet-related (3)	Non-Internet-related, excluding accommodation and restaurants (4)	Transport (5)
Exporter	0.37	0.51	0.30	0.57	0.30
	(0.01)*	(0.01)*	(0.01)*	(0.03)*	(0.01)*
Size	0.02	-0.03	0.05	0.07	0.08
	(0.00)*	(0.00)*	(0.00)*	(0.01)*	(0.00)*
Adj. R-square	0.37	0.41	0.39	0.32	0.16
Observations	99,136	33,899	46,003	23,660	19,234

Note: Size (i.e., number of employees) is in natural logs. All regressions include 4-digit industry and time dummies (not reported). Robust standard errors in parentheses. * statistically significant at 1%.

Table 2. Self-selection. Exporters' labor productivity premium before beginning to export.

	All (1)			Internet-related (2)			Non-Internet-related (3)			Non-Internet-related, excluding accommodation and restaurants (4)			Transport (5)		
	1 year before	2 years before	3 years before	1 year before	2 years before	3 years before	1 year before	2 years before	3 years before	1 year before	2 years before	3 years before	1 year before	2 years before	3 years before
Exporter	0.26	0.23	0.20	0.36	0.33	0.31	0.20	0.16	0.12	0.39	0.37	0.29	0.21	0.16	0.15
	(0.01)*	(0.02)*	(0.02)*	(0.02)*	(0.03)*	(0.03)*	(0.02)*	(0.03)*	(0.03)*	(0.06)*	(0.07)*	(0.07)*	(0.03)*	(0.03)*	(0.04)*
Size	0.04	0.03	0.03	-0.01	0.00	0.00	0.06	0.04	0.04	0.07	0.04	0.03	0.09	0.08	0.07
	(0.00)*	(0.00)*	(0.00)*	(0.01)**	(0.00)	(0.01)	(0.01)*	(0.01)*	(0.01)*	(0.01)*	(0.01)*	(0.01)*	(0.01)*	(0.01)*	(0.01)*
R^2	0.42	0.45	0.47	0.41	0.44	0.46	0.45	0.47	0.49	0.43	0.45	0.46	0.16	0.16	0.16
Observations	49,151	30,412	18,847	18,116	11,945	7,868	22,779	13,489	8,039	12,853	7597	4,457	8,256	4,978	2,940

Note: Size (i.e., number of employees) is in natural logs. All regressions include 4-digit NACE branch and time dummies. Robust standard errors in brackets. *, ** statistically significant at 1% and 5%, respectively.

Table 3. Learning by exporting. Difference in labor productivity growth between export starters and matched non-starters.

	All (1)			Internet-related services (2)			Non-Internet-related services (3)			Non-Internet-related, excluding accommodations and restaurants (4)			Transport (5)		
	Entry year	1 year after entry	2 years after entry	Entry year	1 year after entry	2 years after entry	Entry year	1 year after entry	2 years after entry	Entry year	1 year after entry	2 years after entry	Entry year	1 year after entry	2 years after entry
Extra labor Productivity Growth	0.16 (0.07)**	0.24 (0.23)	-0.05 (0.06)	0.08 (0.04)**	0.22 (0.16)	-0.25 (0.15)	0.11 (0.14)	0.36 (0.52)	0.05 (0.06)	0.05 (0.40)	1,70 (1.88)	0.22 (0.20)	0.24 (0.16)	-0.06 (0.08)	-0.02 (0.09)
Nº of starters	564	379	297	202	146	111	253	164	131	88	69	33	109	69	55
Total Observations	18,125	10,343	7,511	9,187	4,318	3,146	6,571	4,246	3,018	3,327	1,633	1,324	2,367	1,633	1,236

Note: Firms are matched using the one nearest neighbor algorithm. The variables used to establish the matching are size, labor productivity, belonging to the same 4-digit NACE industry and year. Standard deviations in parentheses. ** statistically significant at 5%.