

A portrait of Portuguese international traders of non-tourism services

João Amador
Banco de Portugal
Nova SBE

Sónia Cabral
Banco de Portugal

Birgitte Ringstad
Nova SBE

July 2018

Abstract

The role of services international trade on firms' activities has been growing in the recent decades and its study is an active topic of research. This article uses firm-level data on Portuguese international traders of non-tourism services, combined with detailed balance-sheet information, and offers two types of insights. Firstly, we draw a detailed profile of Portuguese exporters and importers of services in dimensions like sector of activity, age, size, productivity and profitability. Secondly, we explore the firm-year-service-country detail of the data to examine the service and geographical portfolios of Portuguese traders. We confirm most of the evidence observed for other countries, namely the high degree of firm-level heterogeneity in services trade and the concentration of trade flows both between and within-firms. We also show that two-way traders play a prominent role in Portuguese international trade of non-tourism services. (JEL: F1, F14, L25)

Introduction

In recent decades, international trade in services has been growing strongly, leading to higher shares of this sector in total gross output, employment and trade. Portugal has also been experiencing a progressive increase in its trade openness and there has been a growing importance of trade in services. Even if tourism remains the largest sector in Portuguese trade in services, accounting for around 45 percent of total exports of services and

Acknowledgements: The authors are grateful to Fundação Francisco Manuel dos Santos for supporting this project. In particular, Birgitte Ringstad worked in the project while visiting the Economics and Research Department of Banco de Portugal and Nova School of Business and Economics under a grant by this institution. We thank the Balance of Payments and International Investment Position Statistics Division in the Statistics Department of Banco de Portugal, headed by Paula Menezes, for the initial treatment of the international trade data. We are also grateful to Nuno Alves, Miguel Gouveia and Maximiano Pinheiro for their useful comments and suggestions. The opinions expressed in the article are those of the authors and do not necessarily coincide with those of Banco de Portugal, the Eurosystem or Fundação Francisco Manuel dos Santos. Any errors and omissions are the sole responsibility of the authors.

E-mail: jamador@bportugal.pt; scabral@bportugal.pt; biringstad@gmail.com

28 percent of total imports of services, trade in non-tourism services has been gaining importance since the 2000s (Figure 1). In 2015, total Portuguese trade in non-tourism services represented around 13 percent of GDP, which compares to around 9.5 percent in the world economy. In addition, since the 2000s, Portugal has been recording surpluses in the non-tourism services account, which contrasts with the systematic deficits registered previously. In 2015, the Portuguese services account, excluding tourism, showed a surplus of 2.5 percent of GDP, with exports and imports representing 7.7 and 5.2 percent of GDP, respectively.

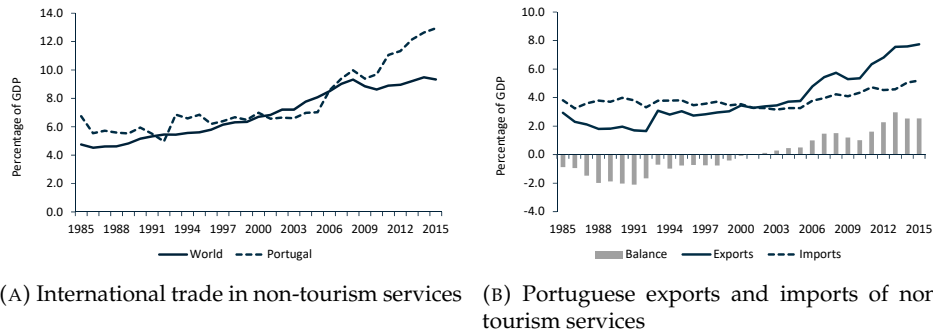


FIGURE 1: International trade of non-tourism services as a percentage of GDP

Source: CEPII-Chelem database.

Notes: Nominal Balance of Payments transactions and nominal GDP are denominated in current US dollars. Exports and imports of services exclude transactions of the travel account.

The literature on international trade in services using firm-level data has been growing recently but it is still limited when compared with the large number of studies on firm-level international trade in goods. This article contributes to this literature by reporting a set of stylised facts using detailed firm-level data on Portuguese exporters and importers of services. Portugal is an interesting case-study as its export performance stands out as a key variable in the economic recovery initiated after the latest sudden stop in external financing, triggered by the sovereign debt crisis in the euro area.

Our analysis relies on firm-year-service-country data on Portuguese international trade in non-tourism services at a disaggregated breakdown level, as collected by the Statistics Department of Banco de Portugal, merged with firms' balance-sheet information for 2014 and 2015. We distinguish between firms that only export, that only import, and those that engage in both international flows of services (two-way traders).

Most of the facts shown in this article are in line with and reinforce the conclusions of the still relatively scarce literature on firm-level international

trade in services. As found for other countries and for trade in goods, firm-level heterogeneity is a key feature of Portuguese services trade. We show that Portuguese international trade in non-tourism services is highly concentrated in some firms: two-way traders represent around 45 percent of total traders and account for around 90 percent of total trade values.

Taking into account the service and geographical portfolios of traders, we find that most exporters and importers trade only one type of service, representing around three-quarters of total exporters and half of total importers, and have only one partner country (around 40 percent for both traders). However, these firms are responsible for much smaller percentages of total exports and imports. In fact, as identified for other countries, the values of Portuguese services trade are concentrated in the group of multi-service and multi-country traders. Nevertheless, even for firms with diversified portfolios, the main service type/partner country still represents a high percentage of a firm's total trade.

The article is organized as follows. Section 2 briefly discusses the specificities related with the measurement of international trade flows of services, describes the main features of the two databases used and provides some basic descriptive statistics of the sample. Our findings are reported along two blocks. Firstly, section 3 analyses some basic attributes of the three types of service traders in terms of sector of activity, age, size, productivity and profitability. Secondly, section 4 examines the portfolios of trading firms at a detailed level, with regard to the number of services and partner countries. Finally, section 5 offers some concluding remarks.

Concepts, measurement and data

Concepts and measurement

Part of the explanation for the relatively limited number of firm-level studies on international trade in services relates with the difficulties in compiling and interpreting the data. In fact, the services sector has several specificities that lead to fundamental differences relatively to trade in goods.

Firstly, services are intangible and hence their international trade does not involve shipping. As a consequence, services are inherently harder to monitor, measure and tax. Secondly, services are non-storable, so their production and consumption tend to occur simultaneously. Thirdly, services are highly differentiated, as they are sometimes tailored to the needs of customers. Fourthly, all services require some form of interaction between producer and user, the so-called joint production. It can be a direct person-to-person contact (e.g., haircut), a telecommunication (e.g., internet banking) or an exchange of written documents. Some services may require the consumer to move to the location where the services are supplied (e.g., tourism), while

others may require the producer to move his location (e.g., maintenance engineering). As a result, even with the strong improvements in information and communication technologies, services are still less tradable than goods.

Since services are intangible, in general, tariffs cannot be levied directly on their transactions, except for a few activities like transportation and tourism. Therefore, barriers to trade in services are mostly non-tariff barriers, like quotas, prohibitions and government regulations. These restrictions can take the form of limits on the market shares of foreign providers of services or on the scope of their activities. Moreover, regulations may include provisions on licensing and certification, technical and environmental standards or government procurement and sourcing policies. As discussed in OECD (2014), even though regulatory barriers to product market competition have been reduced since the mid-nineties, there is scope for further reforms, especially in professional services. In fact, services are the sectors in which most economic regulation is concentrated and where it is most relevant for economic activity. Nordås and Rouzet (2017) use a recent OECD regulatory database on services trade restrictions and highlight the large potential costs of regulations that restrict trade and investment in these sectors.

The intangible nature of trade in services also makes these flows difficult to measure. As such, finding efficient ways of collecting data on services international transactions is a statistical challenge. There are several studies devoted to the measurement of trade in services (see, for instance, Lipsey (2009) and Sturgeon *et al.* (2006)) and most country studies on trade in services also discuss this issue in detail. In line with the classical approach, Balance of Payments (BoP) data is still the main source used to measure international trade in services. Nevertheless, there is a broad consensus that the growth of services trade is significantly underestimated, as we will discuss in detail below.

In order to understand the consequences on the analysis arising from alternative definitions of trade in services, it is useful to provide additional details and examples. The United Nations Manual on Statistics of International Trade in Services (UN 2010) describes in depth the four modes through which services may be traded internationally, according to the General Agreement on Trade in Services (GATS), taking into account the location of both suppliers and consumers.

Mode 1 (cross-border supply) applies when suppliers in one country provide services to consumers in another country, without either of them moving into the territory of the other. This mode is similar to the traditional notion of trade in goods, where both the consumer and the supplier remain in their respective territory. Freight transport services, correspondence courses and telediagnosis are examples of cross-border supply of services.

Mode 2 (consumption abroad) comprises the cases when a consumer resident in one country moves to another country to obtain a service. Tourism services and related activities are typical examples of consumption abroad.

Medical treatment of non-resident persons and language courses taken abroad are other examples.

Mode 3 (commercial presence) includes the situations when firms supply services internationally through the activities of their foreign affiliates. Medical services provided by a foreign-owned hospital and services supplied by a domestic branch of a foreign bank are examples of supplies through commercial presence. Most mode 3 services concern domestic sales of foreign affiliates that are not included in the BoP services data, as they are considered transactions between residents. Statistics on foreign affiliates trade in services (FATS) are the main sources of data on international trade in services through mode 3. The main exception refers to short-term construction projects done by unincorporated site offices, which are recorded in the BoP under construction services.

Finally, mode 4 (presence of natural persons) describes the process by which an individual moves temporarily to the country of the consumer in order to provide a service. This mode of supply includes trade in services in the BoP sense, like auditing services by a foreign auditor or entertainment services by a foreign artist on tour in the host country. In addition, mode 4 also includes non-permanent employment in the country of the consumer, which is recorded in the BoP as labour income.

From the discussion above it results that the BoP trade in services broadly covers modes 1, 2, a significant part of mode 4 and a small part of mode 3. Therefore, the international trade in services is being underestimating when it is measured as BoP transactions in services. This underestimation can be significant since foreign direct investment (FDI) is an important channel for the international provision of services. Rueda-Cantuche *et al.* (2016) provide recent evidence on the high relevance of mode 3, showing that it was the largest mode of supply of European exports of services in 2013.

Moreover, recent evidence shows that services are increasingly incorporated in exports of goods. Francois *et al.* (2015) examine in detail the value-added linkages between services and goods and find that most of the services exports on a value-added basis are embodied in exports of goods. In that context, Cernat and Dimitrova (2014) go beyond the four modes of services supply and suggest the so-called "mode 5" to account for services embodied in exports of manufacturing goods. Mode 5 services are a subset of servitisation and include the domestic intermediate services inputs that are incorporated in a country's goods exports.¹ Given its nature, mode 5 services are not included in the traditional BoP data for services and trade policy issues may arise as they become an important part of cross-border exchanges of services. In this context, Rueda-Cantuche *et al.* (2018) provide evidence that mode 5

1. See Baines *et al.* (2009) for a detailed discussion of servitisation, i.e., the rise of the participation of manufacturing firms in service activities.

services trade may have contributed to sustain the European manufacturing employment base.

Databases

This article uses detailed data on Portuguese firms exporting and importing services from the Banco de Portugal's official Portuguese BoP services account, combined with detailed balance-sheet and income statement information from the Simplified Corporate Information (*Informação Empresarial Simplificada*, Portuguese acronym: IES). We merge the databases by using a common and unique firm identifier. Our period of analysis corresponds to the years of 2014 and 2015, for which both databases are available.

The services account of the BoP measures transactions of services between residents and non-residents according to the guidelines of the IMF (2016) Balance of Payments Manual (6th edition). As described in the previous section, this definition of international trade in services is narrower than the one of GATS, which has broadened the statistical concept of trade in services, moving it beyond a subset of the BoP and reflecting the modes by which services are supplied.

Banco de Portugal collects monthly detailed data on international trade in services to compile the services account of the Portuguese BoP. However, there is no firm-level data for travel and tourism flows. The survey sets a non-reporting yearly threshold of 100 thousand euros on the total value of a firm's economic and financial operations with non-residents. Therefore, no specific threshold is imposed on the reporting of international transactions of services. The firm-level data covers more than 90 percent of total exports and around 80 percent of imports of non-tourism services as published in the official Portuguese BoP. In this article, the data is aggregated at the annual level and values are expressed in current euros. For each record, the database reports the firm identifier, partner country, type of service and time period. Services are classified according to the Extended Balance of Payments Services (EBOPS) 2010 nomenclature, including 29 types of services as described in Appendix A.

The balance-sheet data bases on annual information for Portuguese firms reported under Simplified Corporate Information (*Informação Empresarial Simplificada*, IES), which results from a partnership between the Ministry of Finance, the Ministry of Justice, Statistics Portugal and Banco de Portugal. The IES follows the new accounting standards system from 2010 to 2015, and it covers almost the universe of non-financial corporations in Portugal.²

2. More precisely, it does not include firms of sections O - Public administration and defence, compulsory social security (division 84); T - Activities of households as employers; undifferentiated goods and services producing activities of households for own use (division 97

The nearly universal coverage of IES results from the fact that it is the system through which corporations report mandatory information to the tax administration and statistical authorities, including detailed annual balance-sheet, profit and loss accounts. IES also includes information on firms' characteristics such as age, number of employees and sector of activity under the Portuguese industrial classification Rev 3 – *Classificação Portuguesa das Actividades Económicas* (CAE).

In order to remove erroneous, inconsistent or missing observations, some filters were imposed on the data. Firstly, the sample was restricted to firms with information on key variables, like age and sector of activity. Secondly, the database was limited to firms with positive gross value-added, turnover labour costs, employment and total assets.

In this article, the sample contains only firms that are present in both the BoP and IES databases. Hence, it only comprises firms that are active in international trade of non-tourism services in 2014 and/or 2015. The final sample includes 9,903 unique firms. Taking into consideration the two years, there are 16,177 firms-year, of which 4,430 only import, 4,506 only export, and 7,181 both export and import. Hence, 11,687 firms-year report positive exports and 11,611 firms-year positive imports.

Due to the merge with IES, some service traders were excluded from the sample resulting in a final coverage of around 85 percent for exports and 65 percent for imports. In particular, most of the insurance and banking sectors are not included in the final sample, leading to a reduced coverage of these type of services.³ Nevertheless, the sample still includes data on international transactions of financial services of non-bank institutions.

Finally, it should be noted that the EBOPS classification of types of services is distinct and independent from the CAE classification of sector of activity. Firms are officially assigned to a sector of CAE according to their main reported activity, while international trade in non-tourism services is classified along the 29 service types of the EBOPS nomenclature.

Descriptive aggregate statistics

We classify international traders of services in three groups in line with their trading status: only export (one-way exporters), only import (one-way importers) or engaging in both activities (two-way traders). The general

– 98); U - Activities of extraterritorial organisations and bodies (division 99) of the Portuguese statistical classification of economic activities Rev 3 – *Classificação Portuguesa das Actividades Económicas* (CAE). In addition, most corporations in section K - Financial and insurance activities (divisions 64 – 66), like banks and insurance companies, are also excluded. However, other financial and insurance intermediaries and auxiliaries are present in the database.

3. For insurance services, the sample covers around 37 percent and 17 percent of total exports and imports of these services in 2014-2015, respectively. For financial services, the sample coverage is around 15 percent for exports and 13 percent for imports.

term importers (exporters) refers to firms importing (exporting) services irrespective of the export (import) dimension. Throughout the analysis, statistics are computed using firm-year observations, meaning that a firm active in services trade in both years is counted as a new observation in each year. For simplicity, the term *firm* is used for *firm-year* and non-tourism services are referred to as services in the remaining of the article. Finally, the tables and graphs represent pooled results for 2014 and 2015.

Table 1 shows the representation of firms and trade flows according to 10 broad categories of services at the 2-digit level of EBOPS classification, based on the 29 types of services considered in the database. In terms of number of firms, "Other business services" is the largest category for both exporters and importers, followed by "Transport" on the export side and "Telecommunications, computer and information" on the import side. The two latter service categories are third in the ranking of number of importers and exporters. In terms of values traded, "Transports" accounts for almost half of the value exported (48.2 percent), followed by "Other business services" (30.6 percent). On the import side, "Other business services" rank first (35.7 percent) and "Transports" second (27.5 percent). "Telecommunications, computer and information" accounts for the third highest share in exports and imports (10.6 and 15.6 percent, respectively). Hence, Portuguese international trade in non-tourism services is dominated by three main categories of services: "Other business services", "Transports" and "Telecommunications, computer and information". Within these broad categories, the most important types of services are "Air transport", "Telecommunications", "Computer services", "Scientific and other technical services", "Trade-related services" and "Other business services n.i.e", both on the export and import sides.⁴

To examine the geographical composition of Portuguese international trade in services, Table 2 reports the ten largest export and import partner countries in terms of their percentage share in the respective trade flows and number of firms. The main trade partners are almost identical on the export and import side, where countries of the European Union (EU) and Portuguese speaking countries dominate. UK, Spain and France are the top export destinations, while Spain, UK and Germany are the top import origins. Interestingly, Spain represents a larger share of Portugal's imports than exports (17.7 versus 11.1 percent). In addition, Spain is also the country that accounts for the largest number of both exporters and importers. Regarding non-European countries, Angola and Brazil are more relevant in terms of exports than imports, while USA has a higher importance in imports than exports.

4. A detailed breakdown of service types exported and imported according to the 29 service types of the EBOPS classification, comprising the trade values, number of firms-year, partner countries and transactions of each service is included in Tables A.1 and A.2 of the Appendix.

Code	Description	Exports	Exporters	Imports	Importers
SB	Maintenance and repairs	3.4	5.1	4.9	7.9
SC	Transports	48.2	19.1	27.5	11.6
SE	Construction	4.4	6.7	1.5	2.8
SF	Insurance	0.4	3.4	1.0	4.6
SG	Financial services	0.5	2.2	1.1	5.3
SH	Charges for the use of intellectual property	0.5	1.4	9.1	2.9
SI	Telecommunications, computer, and information	10.6	8.3	15.6	17.9
SJ	Other business services	30.6	50.0	35.7	41.0
SK	Personal, cultural, and recreational services	1.3	3.7	3.5	5.8
SL	Government goods and services	0.00	0.02	0.00	0.16
	Total	100.0	100.0	100.0	100.0

TABLE 1. Shares in total trade and firms by broad service categories, 2014-2015

Notes: The 29 types of services are aggregated in 10 broad categories at the 2-digit level of EBOPS 2010 for presentation purposes. Firms are counted each time they export/import a specific service type at the disaggregated breakdown level of 29 service types in the current year, implying that a firm-year can appear more than once across the broad categories of services listed. The share of each aggregate service category represents its percentage fraction in total exports or imports in both years.

Countries	Exports	Exporters	Countries	Imports	Importers
UK	12.1	5.9	Spain	17.7	14.2
Spain	11.1	10.5	UK	13.4	8.8
France	10.3	7.6	Germany	10.2	7.5
Germany	7.9	6.8	USA	9.0	5.0
Angola	7.2	2.9	France	8.4	8.0
Brazil	5.7	1.6	Netherlands	6.2	5.3
USA	5.5	3.2	Switzerland	4.1	2.9
Switzerland	4.8	3.2	Belgium	3.9	3.8
Netherlands	3.7	4.7	Ireland	3.3	3.6
Italy	3.3	3.4	Brazil	3.3	1.7
Other	28.4	50.1	Other	20.6	39.1
Total	100.0	100.0	Total	100.0	100.0

TABLE 2. Main partner countries - shares in total trade and firms, 2014-2015

Notes: Firms are counted each time they export or import with a different partner country in the current year, implying that a firm-year can appear more than once across the listed countries. The share of each country represents its percentage fraction in total exports or imports in both years.

Characteristics of Portuguese international traders of services

We start by examining the frequency and trade representativity of the different types of traders by their main sectors of economic activity. Table 3 illustrates the sectoral distribution of trading firms, while Table 4 reports the same information for the values of exports and imports.

For the sample as a whole, Table 3 shows that a substantial share of Portuguese firms that participate in international trade of services are active in both flows: two-way traders represent 44.6 percent of trading firms. In addition, the proportions of one-way exporters and importers are very similar: 28.0 and 27.5 percent of total traders, respectively. However, the distribution of firms within sectors of activity reveals that there is a high heterogeneity

between sectors regarding the shares of one-way and two-way traders. Trading firms in the wholesale sector are equally distributed among the three firm types, while in the manufacturing industry almost half of the firms only import services. In contrast, the sectors of transportation, and professional, scientific and technical activities are dominated by only exporters and two-way traders, while the latter type represents almost 80 percent of trading firms in the sector of information and communication.

Sector of activity	No. firms	Shares in total firms, exporters or importers				
		Within sectors			By sector	
		Exp Only	Imp Only	Exp & Imp	Exporters	Importers
Primary	331	11.2	64.4	24.5	1.0	2.5
Manufacturing	3,285	18.7	49.6	31.7	14.2	23.0
Electricity, gas, water	211	9.0	55.9	35.1	0.8	1.7
Construction	1,230	33.2	15.2	51.6	8.9	7.1
Wholesale and retail trade	3,917	30.8	36.3	33.0	21.4	23.4
Transportation and storage	1,993	41.6	4.1	54.3	16.4	10.0
Hotels and restaurants	439	23.5	45.1	31.4	2.1	2.9
Information and communication	1,016	14.9	7.0	78.1	8.1	7.4
Financial and insurance activities	234	17.1	21.8	61.1	1.6	1.7
Real estate activities	182	34.6	23.6	41.8	1.2	1.0
Professional, scientific and technical activities	1,862	28.5	9.1	62.4	14.5	11.5
Administrative activities	963	45.1	12.8	42.2	7.2	4.6
Others	454	15.9	27.3	56.8	2.8	3.3
Total (column) and % share in total	16,177	28.0	27.5	44.6	100.0	100.0

TABLE 3. International traders of services by firm type and sector of activity, 2014-2015

Notes: Values are based on firm-year observations, implying that a firm can appear more than once and change firm type category in the two years. The sample contains 16,177 firms-year, in which 4,506 only export, 4,430 only import and 7,181 engage in both activities. In the two last columns, an exporter (importer) is defined as a firm-year exporting (importing) services regardless of the import (export) dimension of the firm.

The last two columns of Table 3 show that wholesale is the largest sector in terms of the number of trading firms, accounting for more than 20 percent of both exporters and importers. As found for other countries, manufacturing firms represent a significant part of total international traders of services. The fact that more than 14 percent of firms exporting services belong to the manufacturing industry (23 percent for importers) links with recent evidence on the relevance of servitisation of manufacturing. Servitisation (or servicification) refers to the increase of purchases, production, sales and exports of services by manufacturing firms and can be considered as a shift from selling only goods to the supply of an integrated combination of goods and services that add value and contribute to product differentiation (see Baines *et al.* (2009) for a discussion). Other relevant sectors in terms of the number of traders of services are transportation, professional, scientific and technical activities, and information and communication.

The representativity of sectors and firm types differs when assessed in terms of export and import values, rather than in the number of firms (Table 4). For the sample as a whole, international trade flows of services are extremely

(A) Exports

Sector of activity	Exports	Shares in total exports		
	Total	Within sectors		By sector
		Exp Only	Exp & Imp	Exports
Primary	51,988	15.7	84.3	0.2
Manufacturing	1,306,592	9.0	91.0	5.9
Electricity, gas, water	23,832	13.0	87.0	0.1
Construction	1,164,858	12.3	87.7	5.3
Wholesale and retail trade	1,359,003	13.9	86.1	6.2
Transportation and storage	10,801,095	7.9	92.1	49.2
Hotels and restaurants	36,283	30.5	69.5	0.2
Information and communication	2,445,279	1.7	98.3	11.1
Financial and insurance activities	161,383	5.7	94.3	0.7
Real estate activities	72,712	29.6	70.4	0.3
Professional, scientific and technical activities	3,515,690	23.4	76.6	16.0
Administrative activities	818,762	15.5	84.5	3.7
Others	202,825	19.7	80.3	0.9
Total (column) & % share in total	21,960,303	10.9	89.1	100.0

(B) Imports

Sector of activity	Imports	Shares in total imports		
	Total	Within sectors		By sector
		Imp Only	Exp & Imp	Imports
Primary	56,922	25.7	74.3	0.5
Manufacturing	1,502,506	16.1	83.9	13.0
Electricity, gas, water	113,364	18.4	81.6	1.0
Construction	385,898	7.3	92.7	3.3
Wholesale and retail trade	1,542,319	12.8	87.2	13.3
Transportation and storage	4,239,237	0.8	99.2	36.6
Hotels and restaurants	125,885	22.8	77.2	1.1
Information and communication	2,388,423	1.0	99.0	20.6
Financial and insurance activities	204,187	24.8	75.2	1.8
Real estate activities	48,964	42.6	57.4	0.4
Professional, scientific and technical activities	598,366	5.3	94.7	5.2
Administrative activities	197,202	13.9	86.1	1.7
Others	183,876	9.7	90.3	1.6
Total (column) & % share in total	11,587,146	6.4	93.6	100.0

TABLE 4. Trade values of services by firm type and sector of activity, 2014-2015

Notes: Trade values are in thousand euros. The table gives total exports or imports per sector, the percentage share of firm types in exports or imports per sector, and the percentage share of each sector in total exports or imports.

concentrated in two-way traders: these firms account for 89.1 percent of total exports and 93.6 percent of total imports. This concentration of exports and imports of services in two-way traders is common to most sectors of activity. In two of the main sectors in Portuguese services trade – transportation, and information and communication – two-way traders are responsible for 99 percent of the imports of the respective sector and for more than 90 per cent of its exports. One-way traders have an above average importance in exports of professional, scientific and technical activities, accounting for more than 23 percent of the flows.

On the export side, the relevance of wholesalers in terms of the value of transactions is smaller than their share in the number of firms, as they represent 21.4 percent of exporters but only 6.2 percent of overall exports. The same is visible for the manufacturing industry, which accounts for 14.2 percent of total exporters of services and 5.9 percent of total exports. On the import side, there is also a difference in the importance of both wholesalers and manufacturers, as each of them accounts for about 23 percent of importers and 13 percent of imports. Thus, firms in the wholesale and manufacturing sectors are more relevant on the import than on the export side, suggesting that the international sourcing of services inputs is important in these sectors. The opposite applies to transportation, which is the largest sector in terms of trade values, representing around half of total exports and more than one third of imports. Firms in information and communication activities account for around 20 percent of total imports, while their share in exports is smaller (11.1 percent). The contrary happens with professional, scientific and technical activities, which have a stronger relevance in exports than in imports (16.0 percent and 5.2 percent, respectively).

Table 5 presents the joint distribution of traded values and traders by their type and size categories. The four size categories are defined according to the EU official classification, which combines number of employees, turnover and balance-sheet total.⁵ Large firms account for the majority of international trade flows of services in Portugal, representing 63 percent of exports and 67 percent of imports. However, most international traders of services are micro and small firms. In particular, around half of one-way exporters are micro firms, while more than 40 percent of one-way importers are small firms. The proportion of large firms is higher in two-way traders, representing more than 11 percent of the total. The distribution of firms and international trade flows of services along size classes is in line with that identified for Portuguese international trade in goods (Amador and Opromolla 2013).

The joint distributions of Portuguese international trade of services on the age and firm type dimensions are shown in Table 6. Older firms are responsible for a substantial proportion of trade in services. Firms with more than 20 years represent 37.3 percent of total exporters and 43.3 percent of importers and account for around 60 percent of both trade flows. On average,

5. The criterion for the classification by size categories was taken from the "Commission Recommendation 2003/361/EC of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises". According to this definition, the category of micro, small and medium-sized enterprises (SMEs) is made up of firms which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance-sheet total not exceeding EUR 43 million. Within the SME category, a small firm is defined as employing fewer than 50 persons and whose annual turnover and/or annual balance-sheet total does not exceed EUR 10 million. Within the SME category, a micro-firm is defined as employing fewer than 10 persons and whose annual turnover and/or annual balance-sheet total does not exceed EUR 2 million. All other firms not classified as SMEs are considered as large firms.

(A) Exports								
Firm size	Exports			Exporters			By firm type	
	Only Exp	Exp & Imp	Total	Only Exp	Exp & Imp	Total	Only Exp	Exp & Imp
Micro	1.7	2.5	4.1	19.2	14.4	33.6	49.7	23.4
Small	3.1	10.2	13.2	14.2	24.1	38.2	36.7	39.2
Medium	2.3	17.4	19.6	4.5	16.0	20.5	11.7	26.0
Large	3.9	59.1	63.0	0.7	7.0	7.7	1.9	11.4
Total	10.9	89.1	100.0	38.6	61.4	100.0	100.0	100.0

(B) Imports								
Firm size	Imports			Importers			By firm type	
	Only Imp	Exp & Imp	Total	Only Imp	Exp & Imp	Total	Only Imp	Exp & Imp
Micro	0.3	2.3	2.6	8.9	14.5	23.4	23.4	23.4
Small	1.4	8.3	9.8	16.6	24.2	40.8	43.5	39.2
Medium	1.8	18.6	20.4	10.2	16.1	26.2	26.6	26.0
Large	2.8	64.4	67.2	2.5	7.0	9.5	6.5	11.4
Total	6.4	93.6	100.0	38.2	61.8	100.0	100.0	100.0

TABLE 5. Joint distribution of trade values and traders by firm type and size category

Notes: Each cell represents the percentage of total exporters (importers) or exports (imports) associated with firms-year belonging to a certain size class (row category) and firm type (column category) in 2014-2015. The four size classes are defined according to the EU official classification (for more details, see footnote 5 of the main text).

(A) Exports								
Firm age	Exports			Exporters			By firm type	
	Only Exp	Exp & Imp	Total	Only Exp	Exp & Imp	Total	Only Exp	Exp & Imp
1-5	0.7	3.7	4.4	5.2	6.2	11.5	13.6	10.1
6-10	1.3	9.7	11.0	7.7	11.4	19.1	20.0	18.5
11-20	2.3	21.6	23.9	12.7	19.4	32.1	32.9	31.6
>20	6.6	54.1	60.7	12.9	24.4	37.3	33.5	39.7
Total	10.9	89.1	100.0	38.6	61.4	100.0	100.0	100.0

(B) Imports								
Firm age	Imports			Importers			By firm type	
	Only Imp	Exp & Imp	Total	Only Imp	Exp & Imp	Total	Only Imp	Exp & Imp
1-5	0.5	5.0	5.4	2.8	6.3	9.1	7.3	10.1
6-10	1.1	8.0	9.1	5.8	11.4	17.2	15.1	18.5
11-20	1.8	23.1	24.9	10.9	19.6	30.5	28.5	31.6
>20	3.0	57.6	60.6	18.7	24.6	43.3	49.1	39.7
Total	6.4	93.6	100.0	38.2	61.8	100.0	100.0	100.0

TABLE 6. Joint distribution of trade values and traders by firm type and age group

Notes: Each cell represents the percentage of total exporters (importers) or exports (imports) associated with firms-year belonging to a certain age group (row category) and firm type (column category) in 2014-2015.

one-way importers tend to be older than the other two types of trading firms, with almost half of them having more than 20 years.

Figure 2 illustrates the distribution of values traded by one-way exporters, one-way importers and two-way traders. The main message is that the majority of firms export and/or import values below 250 thousand euros. This pattern is particularly pronounced on the import side, where more than 90 percent of one-way importers and more than 70 percent of two-way traders

are located in the first bin of the respective histograms. The percentage of firms exporting less than 250 thousand euros amounts to 73.8 percent for one-way exporters and to 52.1 percent for two-way traders. The spikes on the last bin of the histograms of two-way traders indicate that some of these firms have very high trade flows. This feature is more important on the export than on the import side: the percentage of two-way traders exporting more than EUR 3 million reaches 10.5 percent, while the corresponding share for imports is 6.7 percent.

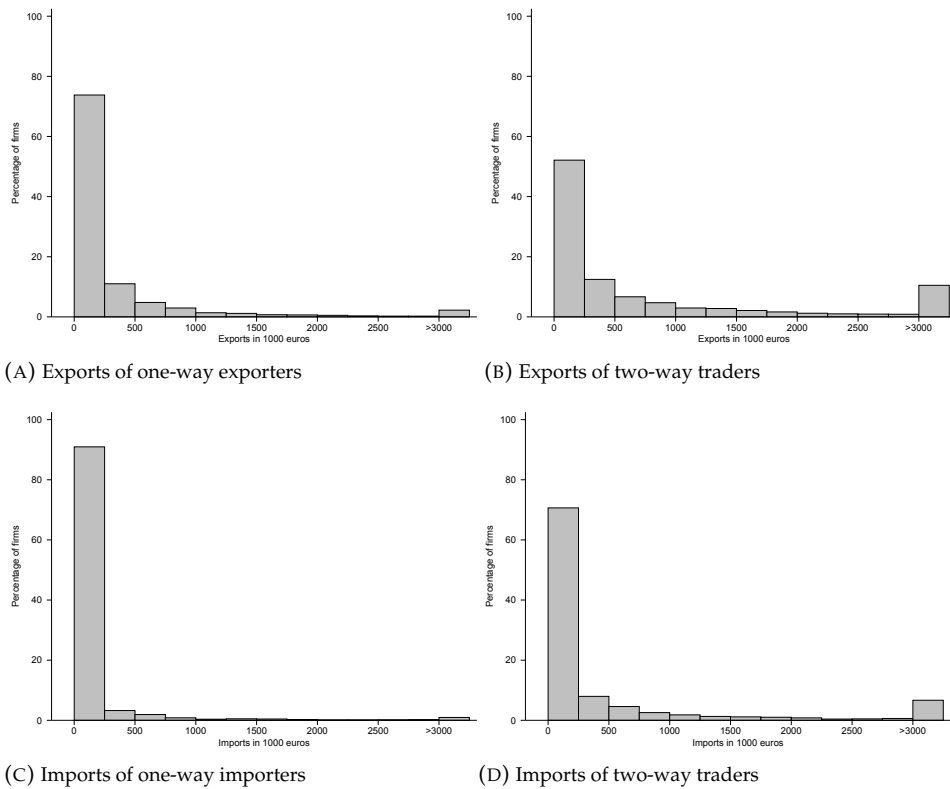


FIGURE 2: Distribution of trade values by firm type, 2014-2015

Notes: Exports and imports are in thousand euros. Distributions are based on firm-year observations in 2014-2015.

The two panels of Figure 3 depict the distributions of productivity and profitability of the three types of Portuguese international traders of services. Labour productivity is defined as gross value added per worker and profitability is defined as the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) over total assets, which is an approximate measure of operating cash flow based on income statement data. This is an indicator commonly used for profitability assessment and usable

for small and large firms. We tested alternative measures like earnings before taxes over total assets or simple price-cost margins and the results were very similar. All distributions of labour productivity are markedly right-skewed, but two-way traders tend to have higher productivity levels. In addition, firms that only import services appear to be somewhat more productive than those that just export. The profitability distributions are closer to a normal distribution, but that for two-way traders presents less density at lower profit rates. Therefore, this set of firms tends to be not only more productive but also more profitable than one-way traders of services.

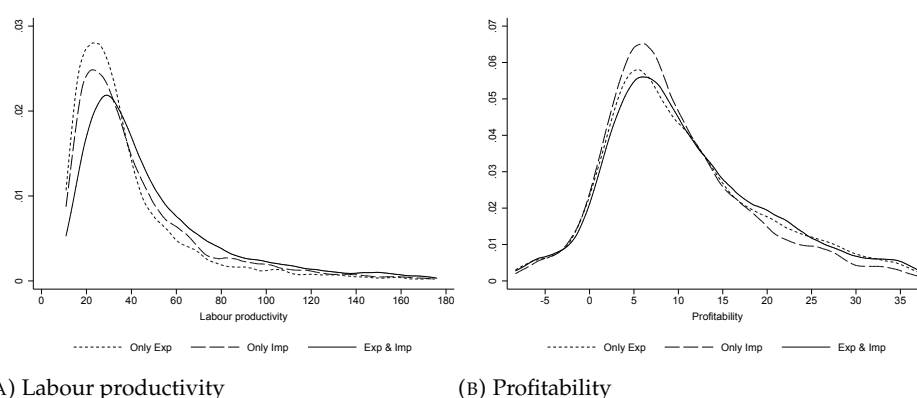


FIGURE 3: Distribution of labour productivity and profitability, 2014-2015

Notes: Labour productivity is in thousand euros and it is defined as a firm's gross value added divided by the number of employees. Profitability is defined as the percentage share of a firm's earnings before interest, taxes, depreciation and amortization (EBITDA) in total assets. Firms-year with values in the lower 5th and upper 95th percentiles are excluded.

Trade portfolios of Portuguese international traders of services

This section builds on the availability of firm-year-service-country data for Portuguese international trade in services to examine trade portfolios along several dimensions, differentiating between the three types of traders.

Table 7 presents some basic descriptive statistics on the service and geographical portfolios of international traders of services. Two-way traders not only have higher levels of exports and imports than one-way traders, but they also have broader portfolios of partner countries and service types for both flows. For instance, the average one-way exporter ships 1.1 services to 4.1 countries and receives about 530 thousand euros, while the average two-way trader exports 1.6 services to 6 countries for 2,725 thousand euros. The median one-way trader exports 1 service to 1 country for 78 thousand euros, and the median two-way trader exports 1 service to 3 countries for

217 thousand euros. Considering the 25th and 75th percentiles, the number of partner countries ranges between 1 and 7 for two-way exporters and between 1 and 3 for one-way exporters. The 25th/75th percentile dispersions are always higher in the case of the number of partner countries than in the case of the number of service types traded, which should be related to lower disaggregation of the services classification. Overall, these simple statistics illustrate the high variance and skewness in the underlying distributions of the number of services, and especially, the number of partner countries and firms' traded values.

(A) Exports						
Firm-level	Only Export			Exp & Imp		
	No. services	No. countries	Exports	No. services	No. countries	Exports
Mean	1.1	4.1	530	1.6	6.0	2,725
Median	1	1	78	1	3	217
1st quartile	1	1	10	1	1	27
3rd quartile	1	3	264	2	7	939
Standard deviation	0.4	8.4	10,102	1.2	9.9	41,469

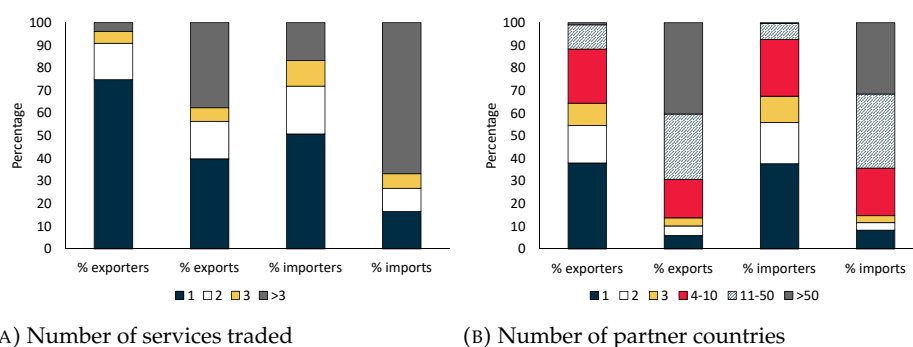
(B) Imports						
Firm-level	Only Import			Exp & Imp		
	No. services	No. countries	Imports	No. services	No. countries	Imports
Mean	1.8	2.2	166	2.5	5.3	1,511
Median	1	1	5	2	3	53
1st quartile	1	1	1	1	1	6
3rd quartile	2	3	36	3	6	370
Standard deviation	1.3	2.7	1,075	2.1	8.5	17,321

TABLE 7. Summary statistics of the trade portfolios of Portuguese international service traders, 2014-2015

Notes: Values of exports and imports are in thousand euros. The firm-level statistics are based on firm-year observations in 2014-2015.

Figure 4 depicts the marginal distributions of service traders and trade values along the service and geographical dimensions. Most Portuguese firms trade only one service type abroad: around three-quarters of total Portuguese exporters sell only one service type and around half of importers buy only one service. However, these firms are responsible for much smaller proportions of total trade, 39.8 percent for exports and 16.5 percent for imports. The diversification is higher in terms of partner countries than in terms of service types traded. Firms that have only one destination country are 38.0 percent of total exporters and represent 5.9 percent of total Portuguese exports of services. The proportions are similar on the import side, with traders with only one source country accounting for 37.6 percent of total importers and 8.3 percent of total imports. Considering both dimensions together, firms that only export one service to one country represent 34.5 percent of total exporters but only 4.2 percent of total exports. On the import side, firms with a single service and source country represent 30.8 percent of importers and account for 5.1 percent of total imports.

Conversely, firms that trade multiple services are responsible for disproportionate large shares of total values traded. Firms that export more than 3 service types represent 3.8 percent of exporters and 37.6 percent of exports (16.7 percent and 66.8 percent for importers and imports, respectively). This feature is particularly evident on the geographical dimension: firms that export to more than 50 destination countries represent only 0.9 percent of exporters but 40.3 percent of exports, while firms that import from more than 50 source countries represent 0.4 percent of total importers and 31.5 percent of total imports. When the service and geographical dimensions are taken together, firms that export more than 3 services to more than 50 countries represent just 0.3 percent of total exporters but account for 27.9 percent of total exports. Values are similar for imports as firms that buy more than 3 services from more than 50 source countries represent 0.2 percent of importers and 31.1 percent of imports.



(A) Number of services traded

(B) Number of partner countries

FIGURE 4: Distribution of trade values and traders by number of services and partner countries, 2014-2015

Notes: For the number of services, the values represent the percentage of total exporters (importers) and exports (imports) associated with firms-year exporting (importing) a certain number of service types in 2014-2015. For the number of partner countries, the values represent the percentage of total exporters (importers) and exports (imports) associated with firms-year exporting (importing) to (from) a certain number of partner countries in 2014-2015.

Evidence on the concentration of traded values in a small group of firms is corroborated by the fact that the top 1 percent exporters account for 59 percent of the total export value, while the top 10 percent exporters represent 86 percent of total exports. These percentages are similar to those reported by Minondo (2016) for Spain. The values are very similar for imports, with the top 1 percent and 10 percent importers accounting for 60 and 91 percent of total import value, respectively. Moreover, the vast majority of these top exporters and importers are two-way traders.

We proceed by analysing how international flows of services are concentrated within a firm. Figure 5 shows the average share of a firm's

exports and imports accounted for by its top four service types and partner countries. The main service type exported by a firm represents a sizeable share of its exports even for firms exporting more than 3 different services (73.6 percent of total). The same holds in terms of imports, as the top service accounts for 68.1 percent of total imports for firms importing more than 3 service types. When partner countries are considered, instead of services types, a similar pattern for average shares emerges in exports and imports, though the role played by the top partner is less dominant, in particular as the geographical scope broadens. Nevertheless, even for firms trading with more than 50 countries, the major partner accounts for almost 30 per cent of its exports and imports.

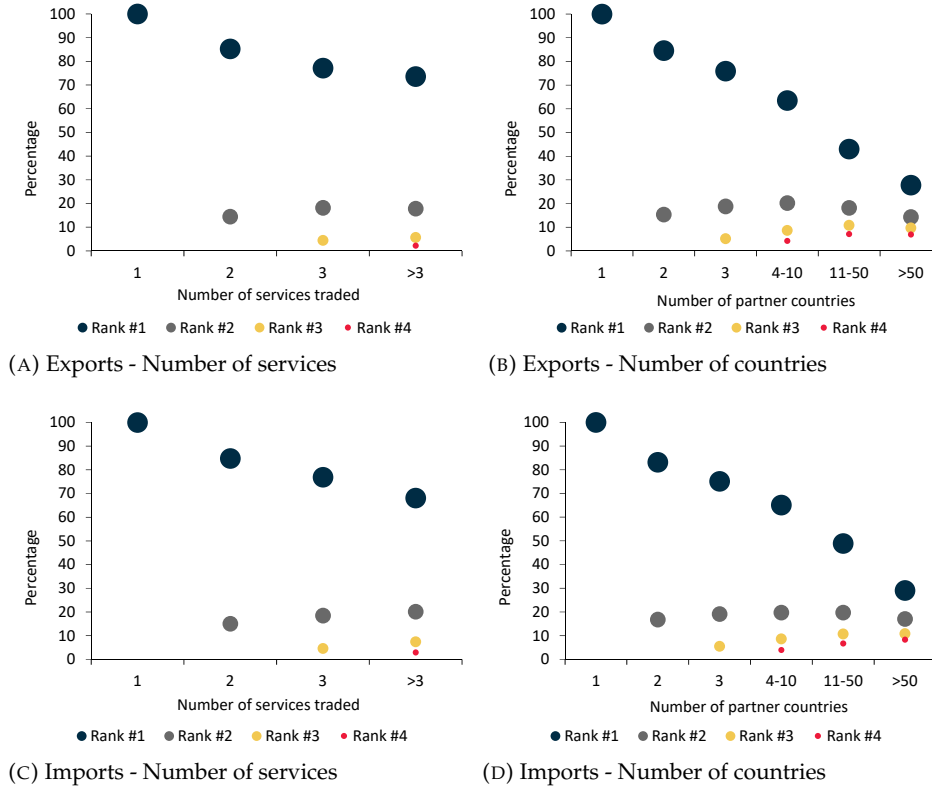


FIGURE 5: Concentration of firms' exports and imports by service type and partner country, 2014-2015

Notes: For the services rank, the values report the average share of a firm's exports (imports) accounted for by its four most important service types exported (imported) for firms-year exporting (importing) 1, 2, 3 or >3 service types. For the countries rank, the values report the average share of a firm's exports (imports) accounted for by its four most important export (import) partner countries for firms-year exporting (importing) to (from) 1, 2, 3, 4-10, 11-50 or >50 countries. Service types and partner countries are ranked within each firm according to their share in total exports (imports) of that firm in 2014-2015.

The concentration of Portuguese international trade flows of services both between and within firms is in line with the results observed for other countries, like the UK (Breinlich and Criscuolo 2011), Italy (Federico and Tosti 2017) and Spain (Minondo 2016). Our findings on the service and geographical portfolios of international traders of services are also consistent with the behaviour of Portuguese firms in export markets of goods (Amador and Opromolla 2013).

Concluding remarks

Exports and imports of non-tourism services are an important component of Portuguese international trade of goods and services. The purpose of this article is to improve the understanding of firm-level international trade of this type of services. Using a new firm-level database for international trade in non-tourism services merged with balance-sheet data for the years 2014 and 2015, we describe the main characteristics of Portuguese international services traders in dimensions like sector of activity, age, size, productivity and profitability. Moreover, we explore the detailed data to examine the service and geographical portfolios of Portuguese services traders.

We find that most Portuguese international traders of services are micro and small firms but that large firms account for the majority of trade flows of services. Older firms are responsible for a significant share of services trade, both in terms of the number of traders and of the value traded for both exports and imports.

A substantial share of Portuguese traders is active in both flows (45 percent). Furthermore, there is a high concentration of both exports and imports of services in these firms: two-way traders account for 90 percent of total international trade in non-tourism services. Compared with firms that only export and that only import, two-way traders of services tend to be more productive and more profitable.

Another conclusion is that a significant proportion of Portuguese firms trades only one service type or with one partner country, but the importance of these firms in total traded values is smaller. In fact, as found for international trade in goods, we show that multi-service and multi-country firms are crucial in explaining the level of Portuguese international trade in services. However, even for traders with broad service and geographical portfolios, the main service type and partner country represent an important share of a firm's total exports and imports.

The increase in the share of exports in Portuguese GDP has been one positive development of the latest years. This path signals a reorientation of resources towards the tradables sector, thus consolidating the correction of Portuguese external imbalances. Non-tourism services are becoming increasingly tradable and contributing to this structural transformation of

the Portuguese economy. This article provides detailed information on firms engaging in international trade of non-tourism services, thus contributing to better inform policy-decisions in this area.

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Appendix: Detailed breakdown of services traded

Code	Description	Exports		Firms		Countries		Transactions	
		Level	Share	No.	Share	No.	Share	No.	Share
SB	Maintenance and repair services n.i.e.	750,845	3.4	853	5.1	104	3.3	2,357	3.3
SC1	Sea transport	1,278,382	5.8	606	3.6	179	5.6	6,919	9.8
SC2	Air transport	7,238,084	33.0	528	3.2	198	6.2	4,632	6.5
SC3	Other modes of transport	1,871,417	8.5	1,947	11.7	156	4.9	9,263	13.1
SC4	Postal and courier services	204,204	0.9	100	0.6	123	3.9	571	0.8
SE	Construction	975,247	4.4	1,118	6.7	90	2.8	2,148	3.0
SF	Insurance and pension services	80,207	0.4	566	3.4	87	2.7	1,340	1.9
SG	Financial services	99,430	0.5	359	2.2	84	2.6	820	1.2
SH1	Franchises and trademarks licensing fees	53,349	0.2	85	0.5	40	1.3	145	0.2
SH3	Licenses to reproduce or distribute computer software	5,250	0.0	43	0.3	47	1.5	166	0.2
SH4	Licenses to reproduce or distribute audio-visual	60,574	0.3	100	0.6	74	2.3	462	0.7
SI1	Telecommunications services	1,037,562	4.7	212	1.3	191	6.0	1,560	2.2
SI2	Computer services	1,261,934	5.7	1,026	6.2	156	4.9	4,402	6.2
SI3	Information services	29,770	0.1	149	0.9	70	2.2	613	0.9
SJ1	Research and development services	168,137	0.8	166	1.0	56	1.8	468	0.7
SJ211	Legal services	283,157	1.3	248	1.5	140	4.4	2,659	3.8
SJ212	Accounting, auditing, bookkeeping, and tax consulting	223,073	1.0	266	1.6	118	3.7	1,714	2.4
SJ213	Business and management consulting and public relations	542,116	2.5	673	4.0	110	3.5	2,129	3.0
SJ22	Advertising, market research, and public opinion polling	540,719	2.5	819	4.9	102	3.2	2,783	3.9
SJ311	Architectural services	92,774	0.4	268	1.6	88	2.8	851	1.2
SJ312	Engineering services	457,938	2.1	394	2.4	110	3.5	1,325	1.9
SJ313	Scientific and other technical services	750,156	3.4	1,546	9.3	131	4.1	4,018	5.7
SJ32	Waste treatment and de-pollution, agricultural and mining	34,678	0.2	166	1.0	37	1.2	266	0.4
SJ33	Operating leasing services	216,728	1.0	448	2.7	103	3.2	1,506	2.1
SJ34	Trade-related services	531,173	2.4	1,881	11.3	196	6.2	8,956	12.7
SJ35	Other business services n.i.e.	2,883,445	13.1	1,453	8.7	139	4.4	5,285	7.5
SK1	Audio-visual and related services	114,485	0.5	148	0.9	115	3.6	775	1.1
SK2	Other personal, cultural, and recreational services	175,293	0.8	470	2.8	133	4.2	2,645	3.7
SL	Government goods and services n.i.e.	177	0.0	4	0.0	2	0.1	4	0.0
	Total	21,960,303	100.0	16,642	100.0	3,179	100.0	70,782	100.0

TABLE A.1. Service types exported: Values, firms, countries and transactions, 2014-15

Notes: The table reports the 29 service types considered and the corresponding code according to the Extended Balance of Payments Services (EBOPS) 2010 classification. The breakdown used is a combination of 2, 3 and 5 digit levels of the EBOPS 2010 classification. Exports are in thousand euros. Values are pooled for 2014 and 2015. Firms are counted each time they export a particular service type at the disaggregated breakdown level in the current year, implying that a firm-year can appear more than once across the listed services types. For that reason the total number of firms-year differs from the one reported in the main text where no service breakdown is used in the count. Countries are counted within the respective service type (service-country combination), thus independent of firm and year. A transaction is defined as firm-year-service-country in the database, i.e., an observation in the sample.

Code	Description	Imports		Firms		Countries		Transactions	
		Level	Share	No.	Share	No.	Share	No.	Share
SB	Maintenance and repair services n.i.e.	567,084	4.9	2,038	7.9	104	3.5	4,258	6.4
SC1	Sea transport	183,295	1.6	522	2.0	145	4.9	2,945	4.5
SC2	Air transport	2,704,447	23.3	936	3.6	175	5.9	3,968	6.0
SC3	Other modes of transport	155,889	1.3	1,312	5.1	103	3.5	3,406	5.2
SC4	Postal and courier services	143,842	1.2	218	0.8	135	4.5	744	1.1
SE	Construction	172,660	1.5	715	2.8	109	3.7	1,670	2.5
SF	Insurance and pension services	119,101	1.0	1,187	4.6	79	2.7	1,773	2.7
SG	Financial services	130,646	1.1	1,366	5.3	152	5.1	2,939	4.4
SH1	Franchises and trademarks licensing fees	671,716	5.8	388	1.5	54	1.8	583	0.9
SH3	Licenses to reproduce or distribute computer software	109,629	0.9	135	0.5	30	1.0	253	0.4
SH4	Licenses to reproduce or distribute audio-visual	277,265	2.4	227	0.9	75	2.5	916	1.4
SI1	Telecommunications services	950,790	8.2	1,001	3.9	198	6.7	2,689	4.1
SI2	Computer services	836,546	7.2	2,783	10.8	118	4.0	7,056	10.7
SI3	Information services	25,721	0.2	808	3.1	63	2.1	1,610	2.4
SJ1	Research and development services	255,436	2.2	423	1.6	60	2.0	913	1.4
SJ211	Legal services	72,105	0.6	1,140	4.4	142	4.8	2,775	4.2
SJ212	Accounting, auditing, bookkeeping, and tax consulting	86,996	0.8	670	2.6	112	3.8	1,427	2.2
SJ213	Business and management consulting and public relations	382,631	3.3	1,398	5.4	110	3.7	3,139	4.7
SJ22	Advertising, market research, and public opinion polling	374,203	3.2	2,635	10.3	120	4.0	6,971	10.5
SJ311	Architectural services	48,517	0.4	320	1.2	91	3.1	849	1.3
SJ312	Engineering services	120,851	1.0	373	1.5	79	2.7	886	1.3
SJ313	Scientific and other technical services	652,998	5.6	490	1.9	118	4.0	2,072	3.1
SJ32	Waste treatment and de-pollution, agricultural and mining	36,362	0.3	401	1.6	53	1.8	749	1.1
SJ33	Operating leasing services	451,107	3.9	1,645	6.4	115	3.9	2,815	4.3
SJ34	Trade-related services	490,265	4.2	418	1.6	102	3.4	2,041	3.1
SJ35	Other business services n.i.e.	1,166,330	10.1	609	2.4	122	4.1	2,346	3.5
SK1	Audio-visual and related services	249,962	2.2	246	1.0	82	2.8	816	1.2
SK2	Other personal, cultural, and recreational services	150,535	1.3	1,241	4.8	110	3.7	3,451	5.2
SL	Government goods and services n.i.e.	218	0.0	41	0.2	21	0.7	51	0.1
	Total	11,587,146	100.0	25,686	100.0	2,977	100.0	66,111	100.0

TABLE A.2. Service types imported: Values, firms, countries and transactions, 2014-15

Notes: The table reports the 29 service types considered and the corresponding code according to the Extended Balance of Payments Services (EBOPS) 2010 classification. The breakdown used is a combination of 2, 3 and 5 digit levels of the EBOPS 2010 classification. Imports are in thousand euros. Values are pooled for 2014 and 2015. Firms are counted each time they import a particular service type at the disaggregated breakdown level in the current year, implying that a firm-year can appear more than once across the listed services types. For that reason the total number of firms-year differs from the one reported in the main text where no service breakdown is used in the count. Countries are counted within the respective service type (service-country combination), thus independent of firm and year. A transaction is defined as firm-year-service-country in the database, i.e., an observation in the sample.