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Service Traders in Hungary Evidence from Firm Level Data

(A szolgáltatás külkereskedelem alakulása Magyarországon vállalati adatok alapján)

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Contents

Abstract

The aim of this paper is to present new empirical evidence on the characteristics of service trader firms using a novel dataset for Hungary. In the period of slowing growth of goods trade, services, which are more resilient to cycles and are growing steadily since the crisis, might open new alternatives for foreign trade expansion. By using firm level data for the period 2006-2014, this paper documents a series of stylized facts as follows. First, services exporters or goods and services exporters (bi-exporters) are even fewer than goods exporters, but they are present in almost all major sectors of the economy. Even manufacturing firms trade in services. Second, average yearly export values are higher for bi-exporters, both in services and goods. Third, services exporters outperform goods exporters in various dimensions: they are larger in terms of employment, give higher wages, have higher labor and total factor productivity. The effect of exporting slightly differs by industries and it is more pronounced for SMEs than for large companies. Service traders increase their productivity before starting to export and increase it further after entering foreign markets. Lastly, there is also some evidence on switching trader status. Earlier services exporter status is positively correlated with future services exporter status and bi-exporter status, indicating that firms might be willing to diversify their export portfolio in the goods-services dimension and not only along product/service type and destination country, as documented earlier. Most of the above findings prevail for importing as well.

JEL classification: F14, F19, F23
Keywords: International trade, Services, Firm-level evidence

Összefoglaló

Jelen tanulmány célja a szolgáltatás külkereskedelemben résztvevő vállalatok tulajdonságainak bemutatása egy új magyar adatbázis felhasználásával. A lassuló áru-világkereskedelem időszakában a szolgáltatások, melyek kevésbé érzékenyek a gazdasági ciklusokra és a válságot követő években folyamatosan növekedtek, új lehetőséget jelentenek a külkereskedelem bővítésére. Vállalati adatokat felhasználva az elemzés az alábbi stilizált tényeket mutatja be a 2006-2014-es időszakra. Először, a szolgáltatás exportálás vagy az áru és szolgáltatás exportálás kevésbé gyakori tevékenység a vállalatok körében, mint az áru exportálás, viszont a szolgáltatás külkereskedelemben is résztvevő vállalatok a legtöbb gazdasági szektorban jelen vannak. A feldolgozóipari vállalatok is exportálnak szolgáltatást. Másodszor, az éves átlag export értéke az árut és szolgáltatást is exportáló vállalatoknál a legmagasabb, úgy az áru, mint a szolgáltatás esetén. Harmadszor, a szolgáltatás exportálók több dimenzió mentén is jobban teljesítenek az áru exportálóknál: több munkavállalót foglalkoztatnak, magasabb béreket fizetnek, esetükben magasabb a munkatermelékenység és a teljes tényezőtermelékenység. A külkereskedelemben való részvétel hatása kismértékben eltér iparáganként és pozitívabb a hatása a kkv-knál, mint a nagyvállalatoknál. A szolgáltatás külkereskedelemben résztvevő vállalatoknál az exportálást megelőzően nő a termelékenység és tovább növekszik a külföldi piacra történő belépés után. Végül a vállalatok külkereskedő státuszai közötti átmenetet is bemutatom. Amennyiben egy vállalat már exportált szolgáltatást, úgy a jövőben várhatóan szolgáltatást vagy szolgáltatást és árut is exportál, mely azt jelzi, hogy a vállalatok hajlandóak export portfóliójuk diverzifikálására áru-szolgáltatás mentén is és nem kizárólag áru/szolgáltatás típusok és célország szerint, amint arra korábbi tanulmányok rámutattak. A fentebb összefoglalt következtetések az importálás esetén is jórészt helytállnak.

Executive summary

With the slowdown in global goods trade after the crisis, special attention is payed to services, a rising component of world trade. Services are many times important inputs to businesses (Francois and Hoekman, 2010) and due to their special characteristics (e.g. intangible, indivisible) they are less prone to fluctuations than goods (Borchert and Mattoo 2009). At the same time, advances in information and communication technologies made them more tradeable worldwide. To illustrate with examples, it is more and more prevalent for a firm to delegate some *accounting or business administration related services* to a partner in another country, resulting in services importing, or yet another firm might sell abroad machinery together with *software or repair and maintenance services*, with the latter being registered as services export for the domestic firm.

Micro level trade databases might help us better understand the factors behind the aggregate increase in services trade. Given that exporting and importing are firm level decisions, in order to have a clear picture, the determinants of service trade and characteristics of service traders should be analyzed using firm level data. In the past years, the international literature was abundant of papers studying trading activity (mainly goods exporting and importing) in relation with other firm level characteristics. All these papers highlighted the exceptional performance of exporters and/or importers, but mostly due to data limitations, services trade at the firm level was explored to much lesser extent.

The main goal of this paper is to provide a set of stylized facts regarding firm level services trade, in comparison with goods trade, on a sample of Hungarian firms for the period 2006-2014. Mapping world-level developments in services trade, aggregate data for Hungary shows that trade in services was growing faster than goods trade, especially after the crisis and the share of services exports reached around 19 percent in the period 2012-2014. Services, mainly fast growing exports, contributed significantly to the positive trade balance in the past years (MNB, 2015).

Following the methodology of Bernard and Jensen (1999) used to analyze the exceptional performance of goods traders, in this paper I present a wide set of stylized facts regarding services traders, using goods traders as a clear benchmark of comparison. First, in line with earlier findings, I show that *services exporting or goods and services exporting is more selective than goods exporting*, but these firms are present in almost all major sectors in the economy. The share of goods exporters trading also in services has increased over the past years in manufacturing and the share of firms exporting only services has increased in the typical service industries. Second*, average export values are higher for bi-exporters, both for services and goods*. For the last year in the sample, the value of services export was the highest for transportation and storage for service-only exporters and for bi-exporters in manufacturing. *Services exports are much more concentrated than goods exports*: for 2014, around 12 percent of total trade belongs to goods, around 33 percent belongs to services and around 39 percent belongs to top five by-exporters by export value and within their respective categories. Third, *services exporters outperform goods exporters in various dimensions*: they are larger in terms of employment, give higher wages, they have higher labor and total factor productivity. The effect of exporting slightly differs by industries and it is more pronounced for SMEs than for large companies. Services traders increase their productivity before starting to export or import and increase it further after entering foreign markets. However, *trading in services seems to be a riskier business*: on average and in comparison with goods traders, a slightly smaller share of firms survives and it is more prevalent for services traders to be only occasional exporters/importers. Once a firm enters services exporting rather than goods exporting, *on the short term increases faster and has higher labor productivity and TFP*. Lastly, there is also some evidence on switching trader status. Earlier services exporter status is positively correlated with future services exporter status and goods and services exporter status indicating that *firms are willing to diversify their export portfolio*

along the goods-services dimension and not only along product/service type and destination country. The above findings prevail for importing as well.

Overall, from a policy perspective it is important to understand the adjustments on the extensive and intensive margins and to what extent trade is related to other firm level characteristics. As the above results suggest, there is a *strong relationship between trade and productivity* and firm level decisions concerning trade ultimately affect industry level and aggregate productivity.

1 Introduction

With the slowdown in global goods trade after the crisis, special attention is payed to services, a rising component of world trade. Services are many times important inputs to businesses (Francois and Hoekman, 2010) and due to their special characteristics (e.g. intangible, indivisible) they are less prone to fluctuations than goods (Borchert and Mattoo, 2009). At the same time, advances in information and communication technologies made them more tradeable worldwide. Given that trade is a firm level decision, in order to have a clear picture and understand the evolution of trade on the aggregate, the determinants of services trade and characteristics of services traders should be analyzed using firm level data. In the past years, the international literature was abundant of papers studying trading activity (mainly goods exporting and importing) in relation with other firm level characteristics. All these papers highlighted the exceptional performance of exporters and/or importers, on the one hand due to self-selection into trading activities of the best firms, on the other hand due to learning-by-exporting effects. At the same time, mostly due to data limitations, services trade at the firm level is explored to much lesser extent.

The main goal of this paper is to provide a set of stylized facts regarding firm level services trade, in comparison with goods trade, on a sample of Hungarian firms for the period 2006-2014. In this sense, this paper uses for the first time a unique firm level dataset on services exports and imports for Hungary. Mapping world-level developments in services trade[1], aggregate data for Hungary shows that trade in services was growing faster than goods trade, especially after the crisis and the share of services exports reached around 19 percent in the period 2012-2014. Services, mainly fast growing exports, contributed significantly to the positive trade balance in the past years (MNB, 2015). In addition, I provide further evidence on trader dynamics and switching between trader status. The time span covered (pre-crisis, big trade collapse and post-crisis) offers on its own interesting insights about changes in trading activity during crisis and subsequent recovery period.

This paper aims to contribute to the findings of earlier authors which document various stylized facts regarding services trade on the firm level. In this sense, one of the first papers was that of Breinlich and Criscuolo (2011) who study the characteristics of UK services exporters and importers and trading patterns of service providing firms. They find that services trade is selective, only a small share of firms is involved in services exports or imports, but they are present in all major sectors of the UK economy, they are larger than non-traders and slightly more productive and much more skill intensive than goods-only exporters. They also find that services export and import values per firm show a large variance and that they are highly concentrated among the few firms that trade with many countries and in many service types. Federico and Tosti (2013) analyze Italian services exporters and importers for 2009. Similar to the UK, they show that service trade is highly concentrated, but present even in manufacturing, accounting for one third of the total value of both exports and imports of services in the economy. A decomposition of firm-level trade value shows that variations occur mainly on the intensive margin, whereas country-level variations occur mainly on the extensive margin. Biewen and Blank (2014) arrive to similar conclusions when decomposing trade flows for a sample of German firms for the period 2001 to 2012: they show that changes on the extensive margin contribute rather to the cross-sectional variation of services trade, whereas changes on the intensive margin mostly explain the variations over time and in growth rates. Kelle and Kleinert (2010) provide further evidence on German service traders for the year 2005. They show that trade in services is concentrated at a small number of firms, but they are present in all major sectors of the economy. The very few services exporters tend to trade with one partner country and in one service group.

[1] World level service exports were around 20 percent of total trade for the period 2012-2014 (WTO, 2015).

One of the limitations of all these earlier mentioned papers is that, due to lack of data, they cannot provide a benchmark for comparing service trader characteristics. Services and goods trade data at the firm level are available for a small set of countries and there are only a few papers offering comparable evidence on services and goods trader characteristics. In this sense, Ariu (2012) performs a quite exhaustive analysis of Belgian goods, services and bi-exporters and importers from a static and dynamic perspective. He finds that bi-exporters make a large contribution in value to total trade, have the highest employment, turnover, labor productivity and wages. Bi-exporters are followed by services and goods exporters in these performance measures. Both exporters and importers of services have higher entry and exit rates and lower survival rates than goods exporters or importers. New exporters, and especially bi-exporters tend to have higher employment, turnover, labor productivity, wages and they are more capital intensive. Entrant bi-importers also outperform entrant services-only or goods-only importers. Patterns for exitors compare in the same way to non-traders as in the case of entrants. Haller et al. (2012) offer comparable evidence on the performance of service sector trading firms for Finland, France, Ireland and Slovenia for the pre-crisis period. In general, there are fewer trading firms in the service sectors than in manufacturing, and they are rather goods-only importers. Firms engaging in both services and goods trade are rare. It is prevalent for service traders to be already engaged in goods trade and product diversification (goods-services dimension) is increasing in firm size. Relative to non-traders, exporters and importers in all the studied countries are larger, offer higher wages and have higher labor and total factor productivity. Both-way traders are the largest and have the highest labor productivity in Slovenia, offer the highest average wage in Ireland and have the largest total factor productivity (TFP) in France. Malchow-Moller et al. (2015) and Masayuiki (2015) further explore the productivity growth of services traders. In the first paper, using data on firms from Denmark, the authors show that starting to export or import goods is followed by larger productivity gains than starting trade in services. On the industry level, trading enhances performance rather in services. The second paper shows that Japanese firms involved in services trade have higher TFP and wage level than goods traders or firms selling domestically.

Altogether, from the studies documenting stylized facts about service traders it can be concluded that firms doing service trade often outperform goods traders along various characteristics.

In this paper, following the methodology of Bernard and Jensen (1999) used to analyze the exceptional performance of goods exporters I present a wide set of stylized facts regarding service traders, using goods traders as a clear benchmark of comparison. First, in line with earlier findings, I show that services exporters or goods and services exporters (bi-exporters) are even fewer than goods exporters, but they are present in all major sectors of the economy. The share of goods exporters trading also in services has increased over the past years in manufacturing and the share of firms exporting services has increased in the typical services industries. Second, average export values are higher for bi-exporters, both in services and goods. For the last year in the sample, the value of services export was the highest for transportation and storage for service-only exporters and for bi-exporters in manufacturing. Services exports are much more concentrated than goods exports: for 2014, around 12 percent of total trade belongs to top five goods, around 33 percent belongs to top five services and around 39 percent belongs to top five by-exporters by export value and within their respective categories. Third, services exporters outperform goods exporters in various dimensions: they are larger in terms of employment, give higher wages, they have higher labor and total factor productivity. The effect of exporting slightly differs by industries and it is more pronounced for SMEs than for large companies. However, trading in services seems to be a riskier business: on average and in comparison to goods traders, a slightly smaller share of firms survives and it is more prevalent for services traders to be only occasional exporters/importers. Once a firm enters services exporting rather than goods exporting, on the short term increases faster and has higher labor productivity and TFP. Lastly, there is also some evidence on switching trader status. Earlier services exporter status is positively correlated with future services exporter status and goods and services exporter status indicating that firms are willing to diversify their export portfolio along the goods-services dimension and not only along product/service type and destination country. The above findings prevail for importing as well.

The results of this paper could be interpreted in the framework of heterogeneous firm models in international trade. The workhorse model developed by Melitz (2013) predicts that highly productive firms expand and

enter export markets, low productive ones exit, leading to improvements in aggregate industry productivity. At the same time, firms can endogeneously determine their productivity (size, product mix, investment in technology, etc.) in relation with their trader status. Atkeson and Burstein (2010) show how globalization affects the innovation intensity of firms whereas Bustos (2011) and Verhoogen (2008) show that exporting leads to more advanced production technology adoption, which in turn leads to increases in labor productivity (Lileeva and Trefler, 2010)[2].

Overall, from a policy perspective it is important to understand the adjustments on the extensive and intensive margins and to what extent trade is related to other firm level characteristics. As the above results suggest, there is a strong relationship between trade and productivity and firm level decisions concerning trade ultimately affect industry level and aggregate productivity.

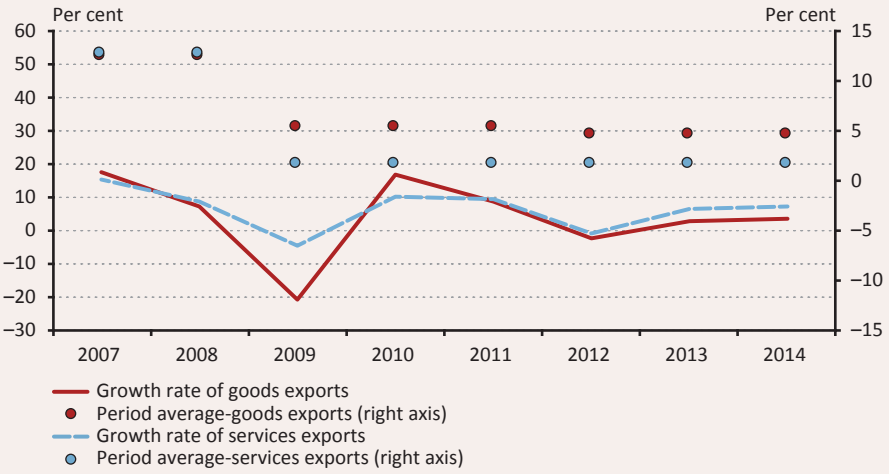
The rest of the paper is organized as follows. The next section presents the evolution and growing importance of Hungarian service trade. Section 3 describes the data used and provides details about compiling the dataset. In section 4, I present the methodology used to detect exceptional trader performance. Section 5 gives basic descriptives for services traders whereas section 6 presents trader performance, both ex-ante and ex-post. The decision to trade, switching trader status and survival are presented in Section 7. The last section concludes.

[2] An exhaustive review of the heterogeneous firms and trade literature is provided in Melitz and Redding (2015)

2 The Importance of Service Trade in Hungary

When assessing the evolution of international trade, attention is often limited to goods flows between countries. However, with advances in technology, services became more and more tradeable and they represent a dynamically growing component of total trade not only on the world level or among top trading economies, but also in Central Europe, especially Hungary. Macroeconomic statistics show that before the crisis, both goods and services exports were growing at high (around 12 percent) rates. With the crisis, there was a huge decline in goods trade, leading to a significant decline in the period-average growth rate to around 1.3 percent. At the same time, services growth rates are less affected during business cycles. Services export continued to grow at around 5 percent in the period of the crisis. The pronounced difference between the growth rate of services and goods is present also in the aftermath of the crisis: services continued to grow at around 4 percent whereas the average growth rate of goods after 2012 is still below 2.5 percent (**Figure 1**). This points to the fact that services might be able to offset slowing goods trade to some extent. In the case of Hungary, this growth has been mainly driven by the growth of business services, transportation and tourism (Central Statistical Office, 2015).

Figure 1
Hungarian exports of goods and services
(year on year percentage change)

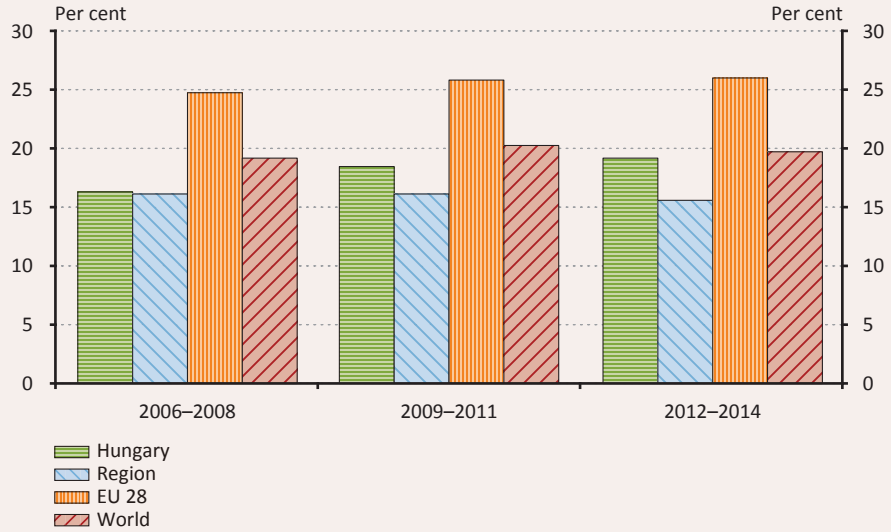


Note: Average growth rates are calculated for three periods: pre-crisis (2007-2008), crisis (2009-2011) and post-crisis (2012-2014).
Source: Eurostat.

On the import side, the picture is slightly different (**Figure A 4**). Growth rates were even higher than for goods before the crisis and services were expanding more dynamically (14 versus 11 percent) than goods imports. With the crisis, both growth rates declined significantly and ever since there was a very slow recovery. In the post crisis period, imports of goods and services were growing at around 1.5 percent.

On the world level, services trade represents around 20 percent of total exports and imports (**Figure 2, Figure A 5**). In the case of Hungary, especially services exports represent a growing share of total trade. By the end of the studied period, services export reached almost 20% of total trade in Hungary. In 2006, this ratio was around 16% thus services play a role of growing importance in Hungarian exports.

Figure 2
Services exports as a share of total exports
(%)



Note: Countries in the region group are the following: Czech Republic, Poland, Slovenia, Slovakia.
Source: Eurostat, WTO.

Services imports have been steadily around 15-16 percent of total imports which is somewhat below world services import shares and markedly more below EU28 services import shares. At the same time, Hungary has higher shares in services exports and imports than countries from the region.

3 Data

3.1 DATA SOURCES

The analysis is based on two datasets. The first one is the Hungarian National Tax and Customs Office (Nemzeti Adó- és Vámhivatal, NAV) database which gives full coverage of the Hungarian corporate sector. On a yearly frequency, this firm panel contains balance sheet and income statement information for all taxpaying entities in Hungary. The main variables from this database used for the analysis are the following: annual employment, payroll, capital, investment and cost of goods and materials used to calculate value added. The definitions of the variables are given in **Table A 2**. I have information on the public, private and foreign share of equity. The sector of activity of a firm at 4-digit is also provided.

Then I use the Hungarian Central Statistical Office's (HSO) Trade in goods and services databases which contain on a monthly frequency and at the firm level export revenues and import expenditures for trade in goods, and on a quarterly frequency exports and imports of services. The Hungarian Central Statistical Office started to record trade in services in 2006, thus my sample will cover the period between 2006 and 2014, the last year available in the NAV database in the time of the analysis.

A few issues should be mentioned regarding trade data. First, service trade statistics (the main types of trade in services are presented in **Table A 1**) are collected following the structure proposed by the Balance of Payments Manual, 5th Edition[3] (BPM5). Although there was an upgrade in trade data compilation in 2013 to BPM6, the structure of the data used in this paper follows BMP5 for the whole period of study. Second, there is a change in the reporting threshold of goods trade: since 2005, intra-EU trade is reported only if yearly export is above 100 million HUF (322,581 EUR on 2015 exchange rate) whereas import is reported if its yearly value exceeds 40 million HUF (129,032 EUR on 2015 exchange rate). The reporting threshold for goods import changed twice since then: in 2006 to 60 million HUF (193,548 EUR on 2015 exchange rate) and since 2008 to 100 million HUF (322,581 EUR on 2015 exchange rate). At the same time, for the recorded services trade flows there is no reporting threshold. **Figure A 2** and **Figure A 3** show the distribution of traded value for goods and services and exports and imports in the original database. Given that in the version of the database I use there is no information on whether the trade partner is located in the EU or outside of it, in order to obtain comparable results throughout the analysis, I use a common threshold for all the trade data for the entire period of study, 2006-2014: a firm is considered trader if its exports or imports exceed 100 million HUF annually.

[3] More information on service trade content is available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Measuring_international_trade_in_services_-_from_BPM5_to_BPM6

Table 1
Descriptive statistics
(averages)

Exporter				
VARIABLES	**Non-exp.**	**G**	**S**	**G&S**
Employment (nr.)	5	89	101	798
Wage (ml. HUF)	2	3	7	7
Capital (ml. HUF)	47	1,087	2,564	23,300
Investment (ml. HUF)	8	181	284	3,772
Foreign ownership (%)	4	39	54	80
Labor productivity (ml. HUF)	4	12	74	30
Importer				
	Non-imp.	**G**	**S**	**G&S**
Employment (nr.)	5	51	103	611
Wage (ml. HUF)	2	4	7	7
Capital (ml. HUF)	41	506	3,775	17,100
Investment (ml. HUF)	7	85	453	2,638
Foreign ownership (%)	4	39	58	85
Labor productivity (ml. HUF)	4	12	113	26

Note: G, S and G&S denote goods, services and goods and services exporters/importers, respectively.
Source: Own calculations.

3.2 COMPILING THE DATASET

I merge the balance sheet and trade data by unique firm identifiers and years. The NAV database which contains balance sheet information is the starting point for merge and I aggregate up the goods and services trade databases to yearly frequency. Further on, I proceed by merging the firm panel with the Hungarian Central Statistical Office's trade databases. Some observations are discarded during the merge: out of the 33,146 observations in the services trade database, 1,939 observations (around 6%) do not have a matching firm in the NAV panel by tax id. Similarly, in the case of the goods trade database, out of the 197,866 observations 18,511 (around 9.3%) cannot be merged to the NAV panel. I omit state owned companies (1,314 goods traders and 461 services traders) and those which did not report employment (9,778 goods traders and 1,509 services traders)[4]. **Figure A 1** from the Appendix presents the value of trade in the database obtained after the merge.

Exporter (importer) status used throughout the analysis is defined based on the trade flow reported in the Hungarian Statistical Office's trade database and by considering the above mentioned common threshold: if a firm reports at least 100 million HUF export (import) revenue annually in the goods trade database, then the firm is a goods exporter. If the firm reports at least 100 million HUF export (import) revenue annually in the services trade database, then the firm is a services exporter (importer). Finally, if the firm reports at least 100 million HUF export (import) revenue annually in both databases, then the firm is a bi-exporter (bi-importer). Exporters might be importers and vice-versa. In this study, to avoid too many categories of trading activity, exporting and importing are treated separately. The main goal is to compare services exporting to goods exporting, which is widely explored and for which various stylized facts have been presented, but the analysis would not be complete without mentioning the import side.

The baseline statistics by trader status for firm level variables used in the analysis are summarized in **Table 1**.

[4] In fact, it might be meaningful to drop all observations which report very few employees, like under 5. However, for some years this would discharge a significant share of trade value. I run all regressions without firms with less than 5 employees, but results and main concluisions are unchanged.

4 Methodology

In this section, I provide an overview of the methodology used to estimate service trader premia along various productivity measures as well as self-selection and learning-by-trading effects and trader survival. The analysis follows closely the methodology of Bernard and Jensen (1999) used to explore the performance of goods exporter firms. I further explore the characteristics that determine service trading and whether firms switch their trader status. Trading is often a temporary activity, thus, in the dynamic part of the analysis, I treat entrant, exitor and continuing exporter/importer firms separately and present their characteristics in relation to their status. In addition, I estimate survival probabilities for service traders. In order to understand the magnitude of the effect of service trading, I include in the regressions goods traders and bi-traders as well. The coefficients of interest give the differentials for various characteristics/growth rates relative to non-traders. Exporting and importing are treated separately and all regressions are done for both exporting and importing.

The aim of these regressions is to provide a characterization of services trading firms and by no ways should they be interpreted as causal.

4.1 TRADER PERFORMANCE

In the first step, I regress firm level characteristics on trader dummies, a set of past controls and industry and year fixed effects. The characteristics of interest are firm size captured by employment, average wage, capital, investment, foreign ownership, labor productivity and total factor productivity (TFP).

$$x_{it} = \beta_0 + \beta_1 G\_T_{it} + \beta_2 S\_T_{it} + \beta_3 GS\_T_{it} + \varphi Controls_{it-1} + \beta_4 IND_i + \beta_5 YR_t + \varepsilon_{it} \quad (1)$$

In this specification x_{it} stands for a given firm level performance measure, G_T_{it} is goods trader, S_T_{it} is services trader, GS_T_{it} is goods and services trader, $Controls_{it-1}$ respresents a set of controls such as past employment, capital, investment, foreign ownership, labor productivity and TFP, IND_i denotes industry, whereas YR_t denotes year fixed effect. Except for foreign ownership, all firm level characteristics are in logarithm.

The main coefficient of interest is β_2, which shows the average percentage difference between services traders and non-traders in various performance measures. However, as a comparison, it is important to consider goods traders and those firms which are bi-traders when assessing trader performance (coefficients β_1 and β_3).

Regression **(1)** is estimated for each firm level characteristic listed earlier and separately for exporters and importers. Results for exporters are given in **Table 9** and for importers in **Table A 13**. I reestimate the same regression for selected industries and separately for small and medium enterprises (SME) and large firms. Result by industry are given in **Table A 16** for exporters and in **Table A 17** for importers. **Table A 18** and **Table A 19** report the results for SMEs and large firms, for exporting and importing.

4.2 EX-ANTE TRADER PERFORMANCE

The aim here is to answer whether traders were better than non-traders already before trading. In this sense, the left-hand side captures the change in firm level characteristics in the years before trading. I estimate the regression for changes in the short term (T=2) and medium term (T=5).

$$\frac{x_{it-1}-x_{it-T}}{T}=\beta_0+\beta_1 G\_T_{it}+\beta_2 S\_T_{it}+\beta_3 GS\_T_{it}+\varphi Controls_{it-1}+\beta_4 IND_i+\beta_5 YR_t+\varepsilon_{it} \quad (2)$$

The variables in regression **(2)** are denoted as in equation **(1)** and presented above. The regressions for changes in employment, wages, capital, investment, labor productivity and TFP are again estimated separately for exporters and importers and the results are reported in **Table 10** and **Table A 14**.

4.3 EX-POST TRADER PERFORMANCE

This regression documents the changes in firm level characteristics after becoming a trader. The growth rate of log performance measures on the short (T=1) and medium (T=5) term is regressed on initial trader status.

$$\frac{x_{it+T}-x_{it}}{T}=\beta_0+\beta_1 G\_T_{it}+\beta_2 S\_T_{it}+\beta_3 GS\_T_{it}+\varphi Controls_{it-1}+\beta_4 IND_i+\beta_5 YR_t+\varepsilon_{it} \quad (3)$$

The notation of variables used in the regression is as earlier and results for changes in firm level characteristics after starting to trade are reported separately for exporting and importing in **Table 11** and **Table A 15**.

4.4 DECISION TO TRADE

In this section, I explore the characteristics that might explain the probability of trading in services, goods or both. Earlier plant level characteristics as well as earlier trader status have an effect on the probability of trading in services, goods or both in this logit regression.

$$TRADE_{it}=\begin{cases}1 \; if \; \beta_0+\beta_1 G\_T_{it-1}+\beta_2 S\_T_{it-1}+\beta_3 GS\_T_{it-1}+\varphi Controls_{it-1}+\beta_4 IND_i+\beta_5 YR_t+\varepsilon_{it}>0\\ 0 \qquad\qquad otherwise\end{cases} \quad (4)$$

The notation of variables in the above regression is as presented earlier. The results on the probability to export or import services (goods or both) are reported in **Table 12**.

4.5 TRADE DYNAMICS AND FIRM PERFORMANCE

A potential problem with the trader status in earlier regressions is that trading is not a continuous activity, firms might switch their status over the studied period, in which case earlier results might be misleading.

$$\begin{aligned}\frac{x_{it+T}-x_{it}}{T}=&\beta_0+\beta_1 EntryG\_T_{it}+\beta_2 ExitG\_T_{it}+\beta_3 StayG\_T_{it}+\beta_4 EntryS\_T_{it}+\\&+\beta_5 ExitS\_T_{it}+\beta_6 StayS\_T_{it}+\varphi Controls_{it-1}+\beta_4 IND_i+\beta_5 YR_t+\varepsilon_{it}\end{aligned} \quad (5)$$

In the regression above, traders are treated differently based on whether they are entrants, exitors or continuing exporters/importers and whether they are involved in services or goods trading. Those firms are considered entrants, which did not participate in trade at t-1, but they trade in t and t+1. Survivor firms trade at time t-1, t and t+1. A firm is considered exitor if it had positive export sales in t-1 and t, but not at time t+1. The coefficients of interest, β_1 to β_6, show the change in characteristics after entry, exit or staying on the foreign market compared to non-traders or occasional traders (those who trade just in one period, t). All the other variables from the regression are in accordance with earlier definitions. Estimation results on the short (T=1) and medium (T=5) run are presented in **Table 17** and **Table 18** for exporters and in **Table A 20** and **Table A 21** for importers.

4.6 SURVIVAL

In the last step of the analysis, controlling for earlier firm characteristics, I estimate the relationship between trader status and survival in the future.

$$SURVIVAL_{it} = \begin{cases} 1 \; if \; \beta_0 + \beta_1 G\_T_{it-1} + \beta_2 S\_T_{it-1} + \beta_3 GS\_T_{it-1} + \varphi Controls_{it-1} + \beta_4 IND_i + \beta_5 YR_t + \varepsilon_{it} > 0 \\ 0 \qquad otherwise \end{cases} \tag{6}$$

In this probit regression, a firm is considered survivor if it is present in the database both in t-1 and t, i.e. submits a financial report in both years. Other variables are used according to earlier definitions. Results for exporter and importer survival are reported in **Table 19**.

5 Service traders: basic descriptives

5.1 TRADE PARTICIPATION

In this section I provide some evidence on the concentration of firms in services trade, goods trade, goods and services trade, as well as about the distribution of traders by industry.

It is a widely-documented fact in the trade literature that there are very few firms involved in goods exporting (e.g. Békés et al., 2011 for Hungary) and some earlier papers using firm level service trade data show that trade in services is less common than trade in goods (e.g. Breinlich and Criscuolo, 2011, Ariu 2012). Findings are similar on the Hungarian firm-level database for services. The 2006-2014 sample contains 2,357,230 firm-year observations out of which slightly more than 1 percent are exporters (**Table 2**). Those few exporters participate in goods' exports (80 percent) and fewer are services exporters (14 percent) or goods and services exporters (7 percent).

Table 2
Share of exporters

	Export			
	Goods exporter	**Services exporter**	**Goods and services exporter**	**Non-exporter**
Share of firms (%)	0.94	0.16	0.08	98.82
Share of exporters (%)	79.72	13.55	6.73	
Firm-year obs. (2006-2014)	22,207	3,774	1,874	2,329,375

Source: Own calculations.

There is a slightly higher share of firms involved in importing (**Table 3**). They are mostly trading goods (82 percent) and some are involved in services and goods importing (8 percent) and service-only importing (10 percent). Further on, figures of traders' shares do not change considerably in yearly breakdown for Hungary (**Table A 3, Table A 4**): the share of firms involved in goods exports is usually around 1 percent, the share of services exporters is not more than 0.2 percent and those of bi-exporters usually does not exceed more than 0.1 percent for the period between 2006-2014.There are slightly more goods importers than goods exporters in each year. However, importing services is also a rarer activity, only around 0.15 percent of firms import only services and around 0.2 percent of firms import goods and services together.

Table 3
Share of importers

	Import			
	Goods importer	**Services importer**	**Goods and services importer**	**Non-importer**
Share of firms (%)	1.32	0.13	0.16	98.39
Share of importers (%)	81.89	7.99	10.12	
Number of obs. (2006-2014)	31,000	3,026	3,831	2,319,373

Source: Own calculations.

There is some variation in the share of traders by industry (**Table 4**). Typically, service sector firms have a relatively higher share of service-only exporters in the cross-industry comparison. They are present in transportation (1.6 percent of services exporters), electricity supply (1 percent), financial and insurance activities (0.4 percent) and information and communication (0.32 percent). In these sectors, the share of services export has mostly increased in the past two years (**Table A 7**), however services sectors are still less open to trade which might suggest that there are larger fixed costs and more obstacles to overcome when engaging in services trade instead of goods trade.

Table 4
Share of exporters by industry
(2006-2014, percent)

Section	Title	Goods exporter	Services exporter	Goods and services exporter	Non-exporter
A	Agriculture, forestry and fishing	1.59	0.00	0.04	94.62
B	Mining	2.44	0.16	0.45	86.18
C	Manufacturing	4.57	0.06	0.39	83.38
D	Electricity, gas, steam and air cond. supply	1.51	0.98	0.71	85.17
E	Water supply, sewerage	1.50	0.03	0.06	88.43
F	Construction	0.06	0.08	0.01	98.04
G	Wholesale and retail trade, repair of motorvehicles	1.21	0.08	0.09	89.50
H	Transportation and storage	0.19	1.61	0.06	92.75
I	Accommodation and food service activities	0.02	0.01	0.00	98.97
J	Information and communication	0.03	0.32	0.03	92.96
K	Financial and insurance activities	0.16	0.44	0.00	97.06
L	Real estate activities	0.14	0.04	0.00	97.70
M	Professional, scientific and technical activites	0.07	0.15	0.01	96.42
N-S	Public administration and other services	0.05	0.04	0.01	97.71
Average		**0.97**	**0.29**	**0.13**	**92.78**

Note: All firm-year observations for the period 2006-2014 are considered. The number of observations can be tracked down from Table A6.
Source: Own calculations.

Manufacturing is the sector which contains the highest share of goods exporters, however, somewhat surprisingly, one of the largest share of bi-exporters is also in this sector. This might suggest that for some firms, goods and services complement each other and are bundled in their exports. A closer look at manufacturing reveals that a relatively high percentage of bi-exporters is present in medium-high and high-technology manufacturing industries such as motor vehicles, basic pharmaceutical products and computer, electronic and optical products (**Table 5**). There are also some firms in the manufacturing sector which export only services. It is important to note that the share of bi-exporters has increased in the manufacturing sector since the crisis, pointing to the fact that these firms might have diversified their export portfolio to avoid a decrease in sales or competitiveness.

Turning to the import side, one can notice that manufacturing is one of the sectors which also contains the highest share of goods importers (**Table A 5**), but there are some manufacturing firms producing motor vehicles, basic metals, pharmaceutical products and computers which import both goods and services (**Table A 9**).

Table 5
Share of exporting firms in manufacturing by 2-digit NACE code in 2014
(percent)

Division	Section C Manufacturing	Goods exporter	Services exporter	Goods and services exporter	Total number of firms
10	Food products	7.25	0.11	0.37	2,719
11	Beverages	3.69	0.00	0.51	975
13	Textiles	6.84	0.00	0.40	497
14	Wearing apparel	6.47	0.00	0.09	1,143
15	Leather and related products	19.23	0.00	0.85	234
16	Wood and products of wood	3.33	0.00	0.12	1,680
17	Paper and paper products	10.03	0.00	0.86	349
18	Printing and reproduction of recorded media	1.75	0.00	0.00	1,832
19	Coke and refined petroleum products	22.22	0.00	11.11	9
20	Chemicals and chemical products	13.17	0.28	2.24	357
21	Basic pharmaceutical products and preparations	23.81	0.00	11.11	63
22	Rubber and plastic products	13.60	0.08	1.29	1,243
23	Other non-metallic mineral products	3.81	0.10	0.86	1,049
24	Basic metals	19.41	0.00	1.18	170
25	Fabricated metal products, except machinery and equipment	6.93	0.11	0.22	4,591
26	Computer, electronic and optical products	8.40	0.00	3.12	738
27	Electrical equipment	15.64	0.00	1.23	486
28	Machinery and equipment	7.76	0.00	0.97	1,546
29	Motor vehicles, trailers and semi-trailers	23.97	0.34	8.56	292
30	Other transport equipment	8.80	0.00	3.20	125
31	Furniture	3.60	0.00	0.07	1,362
32	Other manufacturing	2.45	0.00	0.16	1,224
33	Repair and installation of machinery and equipment	0.85	0.17	0.00	1,757

Source: Own calculations.

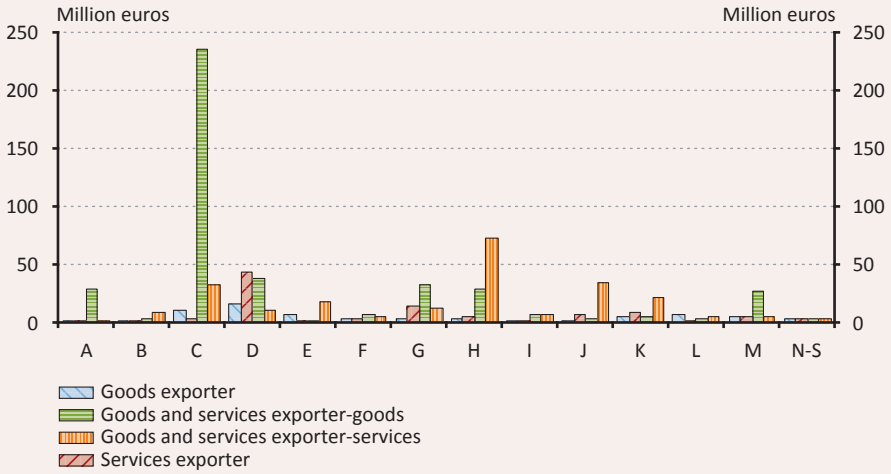
Bi-importers or services importers are present in larger shares in electricity supply, financial and insurance activities and transportation and storage and information and communication (**Table A 4**). In the past years, services importing was increasing steadily in the transportation industry (**Table A 8**).

Altogether, these findings suggest that trading services is even costlier than trading goods: on the one hand, services might require a more selective production process; on the other hand, higher costs might arise due to lower tradability of services and lack of infrastructure (e.g IT, communication). The presence of bi-traders might indicate that by bundling goods and services, selling on foreign markets becomes more affordable for firms present in non-service industries.

5.2 TRADED VALUE

Although trader status is defined based on involvement in exporting or importing at some certain threshold, to get a sense of the magnitude of trade at the firm level, in this section the analysis is further developed by looking at the traded value of firms. On average, for each year, the largest services export values are due to bi-exporters, but firms doing both types of exports still have their major part of export revenues stemming from goods' exports (**Figure 3**). With the crisis, there was a drop in traded value for each type of trade by firm, however, in the past three years average export values increased to before-the-crisis levels, or in the case of services, they even exceeded those (**Figure A 6**). On the import side, average values are around half of export values, for all types of traders (Figure A 7). With the crisis, there is a clear decreasing pattern for average import values for all categories of firms, somewhat less pronounced for those involved in services. In the past two years, the services trade of bi-traders increased to higher average level than before the crisis.

Figure 3
Average exports by industry
(million euros, current prices, period 2006-2014)



Source: Own calculations.

Export value breakdown by industry (**Table 6**) for the last available year in the dataset shows that the bulk of services export of exporters-only is attributable to the transportation and storage industry (33 percent), wholesale and retail trade (23 percent), electricity supply (20 percent) and information and communication (12 percent). The total services export of bi-exporters is almost twice as large as pure services exporters' traded value and it is mostly determined by the traded value of manufacturing (67 percent), transportation and storage (21 percent) and wholesale and retail trade (7 percent). Overall, around 70 percent of total goods trade and 64 percent of total services trade is attributable to bi-exporters in 2014.

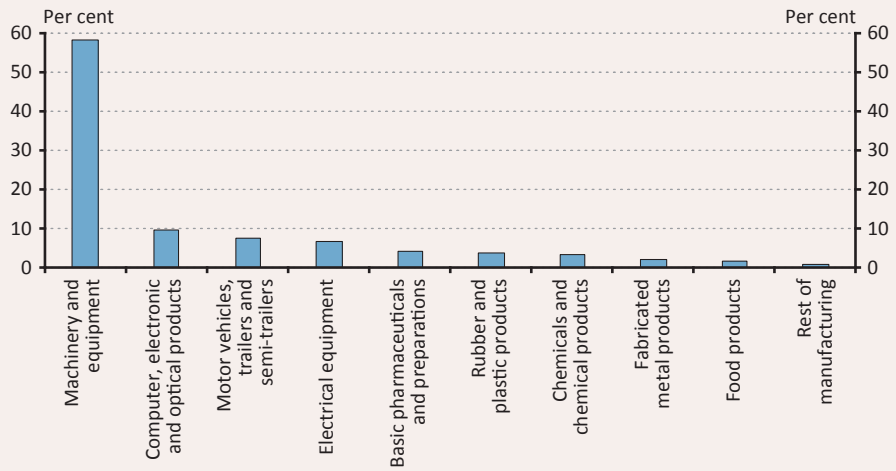
Table 6
Distribution of exported value by industry in 2014

Section	Industry	Goods export		Services export	
		G	G&S	S	G&S
A	Agriculture, forestry and fishing	1.64	0.25	0.00	0.21
B	Mining	0.10	0.03	0.07	0.32
C	Manufacturing	75.89	89.85	1.73	67.27
D	Electricity, gas, steam and air cond. supply	0.00	0.43	19.68	0.10
E	Water supply, sewerage	0.63	0.00	0.02	0.00
F	Construction	0.32	0.16	1.13	0.18
G	Wholesale and retail trade, repair of motorvehicles	17.85	7.89	22.79	7.40
H	Transportation and storage	0.38	1.00	32.91	20.99
I	Accommodation and food service activities	0.03	0.00	0.07	0.00
J	Information and communication	0.04	0.01	11.57	1.56
K	Financial and insurance activities	0.15	0.00	5.59	0.28
L	Real estate activities	2.20	0.00	0.08	0.00
M	Professional, scientific and technical activites	0.40	0.32	3.63	1.33
N-S	Public administration and other services	0.36	0.06	0.75	0.34
Total value (million euro)		**16,216**	**35,835**	**3,947**	**7,227**

Note: G denotes goods-only exporters, S denotes services-only exporter whereas G&S denotes bi-exporters.
Source: Own calculations.

Further exploration of the manufacturing sector (**Figure 4**) shows that the total exported value in services comes from machinery and equipment (58 percent), computer (10 percent) and motor vehicle producers (7 percent).

Figure 4
Distribution of services export value in the manufacturing
(2014)



Source: Own calculations.

For the same year, services import is rather due to transportation and storage (29 percent), wholesale and retail (21 percent) and financial and insurance (16 percent) industries. In addition, almost 70 percent of services import value of bi-importers comes from manufacturing, followed by transportation and storage and wholesale and retail (**Table A 10**). Again, a closer look at manufacturing without treating bi-importers and service-only importers separately reveals that the bulk of total services import value in manufacturing (**Figure A 9**) is due to machinery and equipment (37 percent), motor vehicles (22 percent) and computer and electronic producers (8 percent).

5.3 TRADE CONCENTRATION

Another important aspect of traded value is the concentration by types of traders. I measure trade concentration by comparing the trade value of top 5, 10 etc. firms in a given year to the total trade value in that year. Trade value concentration for the last year in the analysis is given in **Table 7** for exports and **Table 8** for imports, whereas for the whole period of study in **Table A 11** and **Table A 12**. The bulk of exported value is due to a few firms and services exporting is even more concentrated than goods exporting. However, considering their total export, bi-exporters' traded value is the most concentrated.

Table 7
Concentration of export values
(2014)

	TOP5	TOP10	TOP20	TOP50	TOP100	Nr. of firms
Goods exporter	12.45%	18.20%	24.81%	35.37%	45.42%	3,098
Services exporter	32.83%	46.36%	58.40%	72.94%	83.33%	464
Goods and services exp.	39.12%	49.91%	63.89%	82.00%	92.78%	272

Note: The percentage in the first row and first column should be interpreted as the share of sum of the exported value by the top 5 exporters relative to all goods export. This is calculated for top 10, top 20, top 50 and top 100 firms within their trader category.
Source: Own calculations.

By comparing **Table 7** and **Table 8**, one can notice that goods exporting is more concentrated than importing, with goods and services exporting being the most concentrated for trading firms. In the past years, the concentration of services and goods and services exports, both for exporting and importing rather increased.

Comparable results for services exporting and importing are provided by Federico and Tosti (2013) for Italian trading firms: for their sample, exporting and importing of services are less concentrated than for Hungarian firms but they do not provide comparable evidence for goods traders.

Table 8
Concentration of import values
(2014)

	TOP5	TOP10	TOP20	TOP50	TOP100	Nr. of firms
Goods importer	8.85%	13.13%	17.10%	24.09%	31.89%	4,270
Services importer	30.97%	44.65%	57.83%	74.23%	84.80%	401
Goods and services imp.	32.03%	43.59%	54.46%	72.64%	83.90%	512

Note: The percentage in the first row and first column should be interpreted as the share of sum of the exported value by the top 5 exporters relative to all goods export. This is calculated for top 10, top 20, top 50 and top 100 firms within their trader category.
Source: Own calculations.

6 Characteristics of service trader firms

6.1 ARE THEY BETTER THAN NON-TRADERS OR GOODS TRADERS?

I continue the analysis by looking at the relation between trader status and firm level characteristics. Earlier papers suggested that goods exporters outperform non-exporters (Bernard and Jensen, 1999; Hansen, 2010; de Loecker, 2007; van Biesebroeck, 2003) across a wide set of performance measures: they are larger in terms of employment, invest more, have higher capital and generate more value added. Services exporters are even better than goods exporters in the UK and Belgium (Breinlich and Criscuolo, 2012, Ariu, 2012).

Following Bernard and Jensen (1999), in the first step, I regress the firm level characteristics of interest on exporter and separately on importer status. **Table 9** reports the conditional difference between non-traders and different types of traders in various firm level performance measures. Even after controlling for the usual past firm level characteristics, differences between goods, services and goods and services traders relative to non-traders are present in various dimensions. Bi-exporters exhibit the largest difference compared to non-exporters in size. There is also a positive difference in average wage compared to non-exporters. Services and goods and services exporters are rather foreign owned. Considering their productivity, services exporters have higher labor and total factor productivity thus they outperform goods-only or goods and services exporters. The estimated coefficients are quite similar for importers as well (**Table A 13**), thus for both exporting and importing, services traders have different characteristics from goods traders. Similar patterns are documented using Belgian data for the sample period 2000-2005 by Ariu (2012).

In the next step, I look at the differences in trader characteristics for some industries which have the highest share of services trade in the sample. Beside manufacturing which surprisingly contains some firms involved in services trade, the typical service sectors are considered such as transportation and storage, information and communication, financial and insurance activities and professional, scientific and technical activities. In manufacturing, the information and communication, financial and insurance and professional and scientific service provider industries goods and services exporters invest more in comparison with the overall sample. In the information and communication, financial and insurance sector services exporters have higher TFP both on the importing and exporting side. Firms involved in services from the manufacturing sector also have higher employment and productivity than firms from the overall sample (**Table A 16, Table A 17**).

Further on, in estimating the effect of exporting on different firm level characteristics, I differentiate between small and medium enterprises (SMEs) and large firms. As Cernat et al. (2014) point out, SMEs play and important role in the European Union's trade, however we don't know anything about them in the service trade dimension. Services and bi-exporter SMEs offer significantly higher wages than goods exporters and they have also higher labor and total factor productivity. Apparently, in case of large firms, there is significant difference in wage, investment, labor productivity and TFP between non-traders and only bi-traders (**Table A 18**). Similar patterns prevail for importing SMEs and large firms as well (**Table A 19**).

An important take-away from this part of the analysis is that services are correlated with higher productivity and increased employment and manufacturing firms engaged also in service trade are more productive. These results corroborate earlier findings and point to the important economic contributions of services (Quarterly Report on Euro Area No 2, 2015; Crozet and Milet, 2015; Lodefalk, 2013).

Table 9
Exporter characteristics

	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
VARIABLES	**Employment**		**Wage**		**Capital**		**Investment**		**Foreign ownership**		**Labor productivity**		**TFP**	
	without controls	**with controls**	**without controls**	**with controls**	**without controls**	**with controls**	**without controls**	**with controls**	**without controls**	**with controls**	**without controls**	**with controls**	**without controls**	**with controls**
Goods exporter	2.356***	0.156***	0.902***	–0.176***	3.665***	0.0156***	3.404***	0.664***	0.312***	0.0368***	1.154***	0.0880***	1.391***	0.143***
	(0.0211)	(0.00396)	(0.00819)	(0.00841)	(0.0309)	(0.00602)	(0.0306)	(0.0183)	(0.00718)	(0.00165)	(0.0115)	(0.00751)	(0.0117)	(0.00723)
Services exporter	2.317***	0.143***	1.521***	0.229***	3.020***	–0.0907***	2.860***	0.160***	0.480***	0.0511***	1.650***	0.310***	1.987***	0.370***
	(0.0508)	(0.0109)	(0.0247)	(0.0232)	(0.0825)	(0.0170)	(0.0792)	(0.0496)	(0.0158)	(0.00441)	(0.0361)	(0.0196)	(0.0367)	(0.0197)
Goods and services exp.	4.294***	0.270***	1.598***	–0.296***	6.198***	–0.112***	6.054***	1.095***	0.715***	0.0902***	1.851***	0.102***	2.543***	0.250***
	(0.0849)	(0.0131)	(0.0281)	(0.0351)	(0.120)	(0.0148)	(0.119)	(0.0547)	(0.0179)	(0.00466)	(0.0410)	(0.0243)	(0.0472)	(0.0246)
Constant	2.602***	–0.321***	7.951***	4.512***	12.16***	–0.437***	10.81***	1.037***	0.684***	0.0708***	8.883***	2.956***	7.870***	2.817***
	(0.141)	(0.0481)	(0.0886)	(0.120)	(0.229)	(0.0792)	(0.280)	(0.201)	(0.0341)	(0.00638)	(0.137)	(0.0717)	(0.121)	(0.0731)
Industry	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	2,357,054	993,337	2,213,530	977,872	1,881,347	976,742	1,552,629	796,968	2,357,054	993,337	1,956,169	934,187	1,598,164	918,359
Observations	0.148	0.857	0.033	0.241	0.145	0.869	0.097	0.401	0.071	0.788	0.083	0.472	0.115	0.506

*Note: ***-significant at 1%, **-significant at 5%, *-significant at 10%. Standard errors are clustered at the firm level. Capital and investment are in real values. Except for foreign ownership, dependent variables are in log. Wage is defined as total payroll over employment. Labor productivity is defined as real value added over employment. Industry refers to 2-digit NACE code. TFP in column (7) has been estimated using the Levinson and Petrin (2003) procedure. Controls are past (t-1) employment, capital, investment, foreign ownership, labor productivity and TFP. Reference group is non-exporters.*

Source: Own calculations.

Table 10
Ex-ante exporter characteristics

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(11)	(12)	(13)	(14)
	Employment		Wage		Capital		Investment		Labor productivity		TFP	
	SHORT	MEDIUM	SHORT	MEDIUM	SHORT	MEDIUM	SHORT	MEDIUM	SHORT	MEDIUM	SHORT	MEDIUM
Goods exporter	0.150***	0.100***	0.167***	0.126***	0.0585***	0.0814***	0.147***	0.138***	0.0125*	0.0285***	0.0586***	0.0514***
	(0.00438)	(0.00310)	(0.00535)	(0.00399)	(0.00734)	(0.00511)	(0.0192)	(0.00963)	(0.00683)	(0.00369)	(0.00668)	(0.00350)
Services exporter	0.166***	0.113***	0.193***	0.149***	0.0297	0.0460***	0.129**	0.108***	0.0752***	0.0397***	0.121***	0.0722***
	(0.0125)	(0.00899)	(0.0146)	(0.00897)	(0.0239)	(0.0153)	(0.0504)	(0.0249)	(0.0161)	(0.00955)	(0.0160)	(0.00955)
Goods and services exp.	0.248***	0.163***	0.228***	0.171***	–0.0431***	0.0529***	0.229***	0.165***	–0.0502***	–0.00620	0.0722***	0.0591***
	(0.0117)	(0.00881)	(0.0102)	(0.00883)	(0.0161)	(0.0138)	(0.0409)	(0.0234)	(0.0150)	(0.00903)	(0.0156)	(0.00918)
Constant	0.0898	–0.0355	0.329***	0.0997	–0.0373	0.0645*	0.729**	0.117	0.634***	0.193***	0.670***	0.171***
	(0.0576)	(0.0497)	(0.0516)	(0.0736)	(0.0967)	(0.0338)	(0.335)	(0.0959)	(0.0981)	(0.0210)	(0.102)	(0.0249)
Industry	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	0.029	0.086	0.014	0.033	0.010	0.028	0.006	0.017	0.015	0.048	0.016	0.049
Observations	597,645	239,145	587,264	233,024	577,278	224,237	409,850	157,431	545,001	213,334	526,267	200,422

*Note: ***-significant at 1%, **-significant at 5%, *-significant at 10%. Standard errors are clustered at the firm level. Capital and investment are in real values. Except for foreign ownership, dependent variables are in log. Wage is defined as total payroll over employment. Labor productivity is defined as real value added over employment. Industry refers to 2-digit NACE code. TFP in column (7) has been estimated using the Levinson and Petrin (2003) procedure. Controls are past (t-1) employment, capital, investment, foreign ownership, labor productivity and TFP. Reference group is non-exporters. Short refers to performance 1 year before entry, whereas medium refers to the annual average change over the 5 years before entry.*

Source: Own calculations.

Table 11
Ex-post exporter characteristics

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(11)	(12)	(13)	(14)
	Employment		Wage		Capital		Investment		Labor productivity		TFP	
	SHORT	MEDIUM	SHORT	MEDIUM	SHORT	MEDIUM	SHORT	MEDIUM	SHORT	MEDIUM	SHORT	MEDIUM
Goods exporter	0.135***	0.0778***	0.128***	0.0837***	0.0265***	0.0490***	0.103***	0.0942***	–0.0257***	–0.00469	0.0195***	0.0198***
	(0.00424)	(0.00444)	(0.00551)	(0.00601)	(0.00641)	(0.00555)	(0.0164)	(0.0104)	(0.00595)	(0.00389)	(0.00581)	(0.00390)
Services exporter	0.113***	0.0393***	0.117***	0.0469***	–0.0333*	–0.0334*	0.0853*	0.0330	0.0115	0.00301	0.0533***	0.0262**
	(0.0126)	(0.0131)	(0.0158)	(0.0171)	(0.0195)	(0.0180)	(0.0437)	(0.0265)	(0.0153)	(0.0106)	(0.0150)	(0.0112)
Goods and services exp.	0.246***	0.126***	0.188***	0.122***	–0.0755***	0.00861	0.161***	0.0920***	–0.0795***	–0.0263**	0.0230	0.0282**
	(0.0106)	(0.0156)	(0.00935)	(0.0154)	(0.0148)	(0.0171)	(0.0367)	(0.0277)	(0.0157)	(0.0129)	(0.0158)	(0.0129)
Constant	0.0473	0.0125	0.202***	0.142**	–0.0912	0.0588*	0.656*	0.151	0.487***	0.163***	0.564***	0.188***
	(0.0508)	(0.0374)	(0.0488)	(0.0575)	(0.0769)	(0.0304)	(0.352)	(0.110)	(0.0803)	(0.0273)	(0.0839)	(0.0282)
Industry	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	0.031	0.092	0.012	0.032	0.012	0.031	0.008	0.026	0.014	0.053	0.013	0.050
Observations	775,759	249,654	759,013	240,511	747,774	231,953	520,639	161,133	695,795	217,712	671,159	203,369

*Note: ***-significant at 1%, **-significant at 5%, *-significant at 10%. Standard errors are clustered at the firm level. Capital and investment are in real values. Except for foreign ownership, dependent variables are in log. Wage is defined as total payroll over employment. Labor productivity is defined as real value added over employment. Industry refers to 2-digit NACE code. TFP in column (7) has been estimated using the Levinson and Petrin (2003) procedure. Controls are past (t-1) employment, capital, investment, foreign ownership, labor productivity and TFP. Reference group is non-exporters. Short refers to performance 1 year before entry, whereas medium refers to the annual average change over the 5 years before entry.*

Source: Own calculations.

6.2 EX-ANTE SERVICE TRADER CHARACTERISTICS

In this part I analyze the differences in productivity measures between those firms that become traders at some later point in time and those that did not. If there is evidence on future traders being better in various characteristics before trading, then it can be interpreted as self-selection of better firms into trading. I estimate the effect for two time horizons, one year (short term) and five years (medium term) prior trading.

Before entering new markets, firm are likely to face additional costs like searching for new trade partners, finding the right inputs for production (Kraay et al., 2002) or investing in new assets like softwares or machinery for which they should be able to cover the costs (Castellani et al., 2008).

Results in **Table 10** show that services exporters did grow relatively faster in labor productivity and TFP already before starting to trade, both on the short and medium term. Services exporters and bi-exporters have a relatively higher growth in wages before exporting and they increase their capital and investments relative to non-traders, but the effect is slightly larger for goods exporters. A very similar pattern can be identified for importers as well before they start to trade (**Table A 14**).

These results have already been widely confirmed (see for eg. Bernard and Jensen, 1999, Muuls and Pisu, 2007 and Castellani et al, 2008) for goods traders and most likely the above-mentioned mechanisms play a role in case of services traders or bi-traders as well.

6.3 EX-POST SERVICE TRADER CHARACTERISTICS

It is plausible to think that after starting to trade, firms have to improve further in various characteristics. Gains from trade might accrue on the short (one year) or medium (five years) term and they would certainly be related to factors determining the new market like size, taste, quality or market competition to which firms have to adapt gradually. This section explores the effect of trading a few years after firms get involved in services, services or goods or only goods trade.

Results in **Table 11** show that trader firms grow faster after they start exporting or importing, both on the short and medium term. Relative to non-traders, service traders grow faster in TFP, outperforming goods exporters. Bi-exporters have the most positive change relative to non-traders in employment and average wages. Again, importers have very similar characteristics ex-post, summarized in **Table A 15**.

These findings suggest that firms develop further after they start to trade and whenever implied in services, they grow relatively faster in productivity.

7 Dynamic analysis: becoming a trader, switching, survival

The aim of this chapter is to deeper understand trading activity by looking at the dynamics of traders and changes in traded value of goods and services exporters and importers. In addition, trade dynamics is explored in relation with firm level characteristics, documenting the characteristics of entrants, exitors and continuing goods and service traders and the survival probabilities of different types of exporters and importers.

7.1 DECISION TO TRADE AND CHANGES IN TRADER STATUS

In the first step, I turn to the analysis of trade participation and look at earlier firm level characteristics and trader status that might explain the decision to enter foreign markets through exporting or importing in goods, services or both. Estimation results summarized in **Table 12** show that ex-ante larger firms are more likely to become services exporters than bi-exporters or goods-only exporters.

Higher labor productivity also predicts higher likelihood of getting involved in services exporting. Those firms which invested more at some earlier time are also more likely to become services or goods and services exporters.

Results also suggest interesting patterns about switching trader status: earlier trader status is positively correlated with actual trader status. Goods exporters are likely to stay in goods exporting, but goods exporter status is also positively correlated with future goods and services exporter status. Services exporters are likely to continue their activity as services exporters or services and goods exporters. Patterns regarding switching status are quite similar for importers as well. However, importing firms of higher past size and labor productivity are more likely to be involved in goods and services or service-only trading.

According to Crozet and Milet (2015), in the past years, approximately 70 percent of French manufacturing firms offered services. Consequently, they became more profitable and significantly extended their product portfolio. Beside that, services improve export performance, those manufacturing firms which offer services in addition to goods become the largest exporters (Lodefalk, 2015) and in many cases, services offer survival and further expansion possibilities (better educated employees, higher sales) to firms (Bernard et al., 2016).

There are various explanations for bundling goods and services in firm production and trade. On the one hand, services are indispensable inputs in production (e.g. business services, transportation or logistics). Services can contribute to more efficient production and moving up along the value chain (Passadilla and Wirjo, 2014). On the other hand, services can be attached to final products in the form of maintenance and repair services which can lead to long term product and firm specific relationships between producer and consumer.

Table 12
Ex-ante trader performance/status and decision to trade

VARIABLES	EXPORTER			IMPORTER		
	Goods	Services	Goods and services	Goods	Services	Goods and services
$Size_{t-1}$	0.667***	1.024***	0.845***	0.639***	0.936***	1.052***
	(0.0699)	(0.112)	(0.251)	(0.0778)	(0.135)	(0.162)
$Capital_{t-1}$	–0.0712**	–0.346***	–0.219**	–0.113***	–0.334***	–0.151*
	(0.0306)	(0.0533)	(0.103)	(0.0310)	(0.0631)	(0.0825)
$Investment_{t-1}$	0.161***	0.169***	0.234***	0.203***	0.186***	0.122**
	(0.0166)	(0.0360)	(0.0616)	(0.0161)	(0.0419)	(0.0584)
$Foreign\ ownership_{t-1}$	0.633***	1.541***	0.865***	1.057***	1.622***	1.360***
	(0.0786)	(0.133)	(0.160)	(0.0878)	(0.162)	(0.159)
$Labor\ productivity_{t-1}$	0.912***	1.359***	1.149**	0.889***	1.061***	1.356***
	(0.144)	(0.225)	(0.562)	(0.165)	(0.277)	(0.325)
TFP_{t-1}	–0.354**	–0.433*	–0.658	–0.326**	–0.242	–0.751**
	(0.141)	(0.222)	(0.556)	(0.162)	(0.275)	(0.323)
$Goods\ exporter_{t-1}$	7.456***	–3.218***	4.260***			
	(0.0720)	(0.778)	(0.446)			
$Services\ exporter_{t-1}$	–3.952***	7.848***	4.243***			
	(1.075)	(0.173)	(0.519)			
$Goods\ and\ services\ exporter_{t-1}$	–2.063***	–1.127**	10.58***			
	(0.267)	(0.513)	(0.456)			
$Goods\ importer_{t-1}$				7.995***	–1.988***	3.627***
				(0.0721)	(0.470)	(0.373)
$Services\ importer_{t-1}$				0	8.222***	3.621***
				(0)	(0.219)	(0.564)
$Goods\ and\ services\ importer_{t-1}$				–2.582***	–1.837***	10.44***
				(0.254)	(0.557)	(0.408)
Constant	–15.73***	–19.07***	–16.18***	–15.07***	–17.14***	–18.51***
	(1.187)	(1.135)	(1.550)	(1.776)	(1.026)	(1.274)
Observations	967,218	855,120	741,156	981,332	870,923	829,196
Pseudo R-squared	0.914	0.914	0.914	0.914	0.914	0.914

*Note: ***-significant at 1%, **-significant at 5%, *-significant at 10%. Standard errors are clustered at the firm level. Capital and investment are in real values. Except for foreign ownership, independent variables are in log. Labor productivity is defined as real value added over employment. Industry refers to 2-digit NACE code. TFP has been estimated using the Levinsohn and Petrin (2003) procedure.*

Source: Own calculations.

7.2 TRADER AND TRADED VALUE DYNAMICS

In the following tables, I document the changes in extensive and intensive margins of trade for the studied period. To avoid using too many categories of firms, especially in the case of entry and exit, I group firms by services and goods exporting (importing).

The extensive margin refers to the number of trading firms, whereas the intensive margin indicates traded value. **Table 13** shows that with the crisis, there was an adjustment in goods export at the extensive margin. The number of goods exporters has increased ever since the trade collapse, reaching higher numbers than in 2007. On the services side, there was also a drop in the number of services exporters with the crisis, however,

their number is also larger by the end of the period, compared to 2007. On average, services exporting seems to be a riskier activity than goods exporting since a smaller share of firms survive. Services exporting is more often only a temporary activity (occasional exporters) but their share was decreasing in the past three years. In fact, it has been already shown that a large share of Hungarian goods trade flows represents instable trade relationships (Békés and Muraközy, 2012) and a similar pattern can be documented for services trade as well.

Table 13
Exporter dynamics
(extensive margin)

	Exports									
	Goods					Services				
	Total	Entrant	Survivor	Exitor	Exporter (t)	Total	Entrant	Survivor	Exitor	Exporter (t)
2007	2,436	5%	71%	1%	23%	502	7%	54%	2%	37%
2008	2,421	5%	64%	1%	29%	644	13%	45%	2%	40%
2009	2,145	6%	67%	1%	26%	639	8%	58%	1%	33%
2010	2,275	6%	60%	1%	32%	668	8%	54%	3%	35%
2011	2,679	6%	64%	1%	28%	663	4%	56%	7%	32%
2012	3,185	6%	62%	1%	30%	660	6%	60%	2%	32%
2013	3,268	5%	72%	1%	22%	717	8%	61%	1%	30%
Average	**2,630**	**6%**	**66%**	**1%**	**27%**	**642**	**8%**	**56%**	**3%**	**34%**

Note: Entrant firms did not participate in trade at time t-1, but they export in t and t+1. Survivor firms trade at time t-1, t and t+1. A firm is considered exitor if it had positive export sales in t-1 and t, but not at time t+1. The 6th and 11th columns of the above table refer to those firms which export only in the given year (occasional exporters).

Source: Own calculations.

With the crisis, the share of services entrants was larger than the share of goods entrants, pointing to the fact that firms might have chosen to enter services trade to replace or complement goods' trade.

On the importing side, there was also a minor adjustment on the extensive margin in the crisis period for goods traders and an increase in the number of services importers (**Table 14**). On average, services importing is slightly more persistent than goods importing and services importers are also much less likely to be only temporary traders.

Table 14
Importer dynamics
(extensive margin)

	Imports									
	Goods					Services				
	Total	Entrant	Survivor	Exitor	Importer (t)	Total	Entrant	Survivor	Exitor	Importer (t)
2007	4,138	2%	64%	1%	33%	617	6%	57%	2%	36%
2008	3,651	2%	73%	1%	24%	732	10%	52%	1%	38%
2009	3,214	4%	72%	1%	24%	752	5%	61%	1%	34%
2010	3,237	4%	67%	1%	29%	795	6%	57%	2%	35%
2011	3,655	5%	67%	1%	27%	787	3%	61%	5%	32%
2012	4,186	5%	64%	1%	31%	827	6%	62%	0%	31%
2013	4,362	5%	71%	1%	23%	898	8%	64%	1%	28%
Average	**3,778**	**4%**	**68%**	**1%**	**27%**	**773**	**6%**	**59%**	**2%**	**33%**

Note: Entrant firms did not participate in trade at time t-1, but they import in t and t+1. Survivor firms trade at time t-1, t and t+1. A firm is considered exitor if it had positive import sales in t-1 and t, but not at time t+1. The 6th and 11th columns of the above table refer to those firms which import only in the given year (occasional importers).

Source: Own calculations.

Turning to the adjustments on the intensive margin, figures show the following: both goods and services exports dropped with the crisis but recovered afterwards and grew ever since (**Table 15**). The bulk of traded value is by large due to survivor firms, both for services and goods traders. On average, there is a slightly larger share of occasional services exporters compared to goods exporters.

Table 15
Export value dynamics
(intensive margin)

	Exports									
	Goods					Services				
	Total	Entrant	Survivor	Exitor	Exporter (t)	Total	Entrant	Survivor	Exitor	Exporter (t)
2007	45,712	1%	90%	0%	9%	7,140	4%	79%	1%	15%
2008	46,668	1%	88%	0%	11%	7,466	3%	69%	1%	26%
2009	34,411	1%	91%	0%	8%	5,131	5%	69%	0%	26%
2010	42,184	1%	85%	0%	14%	6,934	3%	83%	0%	13%
2011	48,930	1%	86%	0%	14%	8,894	2%	84%	1%	13%
2012	50,386	0%	90%	0%	10%	9,736	2%	82%	0%	16%
2013	49,692	1%	92%	0%	8%	10,301	3%	84%	2%	11%
Average	**45,426**	**1%**	**89%**	**0%**	**11%**	**7,943**	**3%**	**79%**	**1%**	**17%**

Note: Trade value is expressed in million euros. Entrant firms did not participate in trade at time t-1, but they export in t and t+1. Survivor firms trade at time t-1, t and t+1. A firm is considered exitor if it had positive export sales in t-1 and t, but not at time t+1. The 6th and 11th columns of the above table refer to those firms which export only in the given year (occasional exporters).

Source: Own calculations.

Similar to export value dynamics, on the importing side there was a constant increase in services trade value since the crisis and this is mostly due to surviving firms, whereas goods imports slightly decreased in the last year (**Table 16**). At least on the intensive margin, entrants and exitors have a minor role.

Table 16
Import value dynamics
(intensive margin)

	Imports									
	Goods					Services				
	Total	Entrant	Survivor	Exitor	Importer (t)	Total	Entrant	Survivor	Exitor	Importer (t)
2007	45929	1%	86%	0%	13%	7,339	3%	84%	1%	13%
2008	46573	1%	88%	0%	11%	8,545	2%	74%	0%	24%
2009	34246	1%	89%	0%	10%	6,448	3%	75%	0%	22%
2010	41061	0%	86%	0%	14%	7,640	2%	86%	0%	12%
2011	47459	0%	84%	0%	15%	9,267	1%	87%	0%	11%
2012	50278	0%	87%	0%	12%	10,164	2%	84%	1%	13%
2013	48970	1%	91%	0%	9%	10,249	2%	91%	0%	7%
Average	**44931**	**1%**	**87%**	**0%**	**12%**	**8,522**	**2%**	**83%**	**0%**	**14%**

Note: Trade value is expressed in million euros. Entrant firms did not participate in trade at time t-1, but they import in t and t+1. Survivor firms trade at time t-1, t and t+1. A firm is considered exitor if it had positive import sales in t-1 and t, but not at time t+1. The 6th and 11th columns of the above table refer to those firms which import only in the given year (occasional importers).

Source: Own calculations.

7.3 TRADE DYNAMICS AND FIRM PERFORMANCE

Earlier sections showed that service trade participation is more selective than trade in goods and once present on international markets, firms can fall out or survive just for one period. Given that trader status throughout the analysis is defined based on the extensive margin, the fact that there is a larger share of entrants, exitors and occasional traders in services and goods exports, might give misleading results.

Table 17
Short run dynamics and exporter performance

VARIABLES	(1)	(2)	(3)	(4)	(6)	(7)
	Employment	Wage	Capital	Investment	Labor productivity	TFP
Entry goods	0.132***	0.157***	0.0816***	0.115*	–0.0180	0.0142
	(0.0120)	(0.0141)	(0.0227)	(0.0660)	(0.0213)	(0.0204)
Exit goods	–0.321***	–0.605***	–0.0968	–0.207	–0.341***	–0.375***
	(0.0723)	(0.130)	(0.0674)	(0.221)	(0.110)	(0.112)
Continue goods	0.149***	0.141***	0.0194***	0.109***	–0.0256***	0.0241***
	(0.00400)	(0.00470)	(0.00640)	(0.0162)	(0.00574)	(0.00565)
Entry services	0.111***	0.148***	0.0120	0.0919	0.0252	0.0460
	(0.0194)	(0.0218)	(0.0404)	(0.120)	(0.0347)	(0.0349)
Exit services	–0.136*	–0.165	–0.189**	0.195	–0.0210	–0.0147
	(0.0785)	(0.108)	(0.0785)	(0.230)	(0.0882)	(0.0850)
Continue services	0.126***	0.107***	–0.0646***	0.0580*	–0.0188	0.0361***
	(0.00897)	(0.00845)	(0.0140)	(0.0309)	(0.0118)	(0.0117)
Constant	0.0429	0.191***	–0.0982	0.651*	0.480***	0.559***
	(0.0513)	(0.0497)	(0.0773)	(0.353)	(0.0797)	(0.0829)
R-squared	0.031	0.012	0.012	0.008	0.014	0.013
Observations	775,759	759,013	747,774	520,639	695,795	671,159

*Note: ***-significant at 1%. **-significant at 5%. *-significant at 10%. Standard errors are clustered at the firm level. Capital and investment are in real values. Except for foreign ownership, dependent variables are in log. Labor productivity is defined as real value added over employment. TFP in column (7) has been estimated using the Levinson and Petrin (2003) procedure. Industry at 2-digit NACE code and years are contolled for in each regression. Additional controls are past (t-1) employment, capital, investment, foreign ownership, labor productivity and TPF. Change in firm level characteristics on the short term is for the period X_{t+1}-X_t, where X is the outcome variable of interest.*

Source: Own calculations.

In this part of the analysis, based on the definitions of the earlier section, I further categorize trader firms into entrants, exitors and continuing traders. I re-estimate a modified version of regression (3) which accounts for firm dynamics, trying to answer how firm dynamics is related to future firm performance. The results are given in **Table 17** for the short run (one year) and in **Table 18** for the medium run (five years) for exporters and in **Table A 20** and **Table A 21** for importers.

Services entrants show important improvements in employment and wages when they enter. Goods entrants in addition increase their capital on the short run. Exitors, as expected, usually face a worsening of their charactertics whereas among continuing traders, services exporters show a more pronounced increase in total factor productivity. The effect of entering, exiting or continuing trade does not wanish over a longer period of time. On the medium run, both continuing services and goods exporters grow in employment, wages and TFP, however, services traders have on average a larger positive change in productivity.

On the importing side, both services and goods entrants grow in employment, wage and total factor productivity, however, the growth is more pronounced for goods importers. This holds also when comparing continuing goods and services importers. Continuing services traders grow faster than continuing goods traders in employment, wages, investment and TFP on the medium run.

Table 18
Medium run dynamics and exporter performance

VARIABLES	(1) Employment	(2) Wage	(3) Capital	(4) Investment	(6) Labor productivity	(7) TFP
Entry goods	0.0633***	0.0752***	0.0668***	0.0893***	–0.0119	0.000394
	(0.0112)	(0.0154)	(0.0157)	(0.0326)	(0.0125)	(0.0126)
Exit goods	–0.0219	0.0461	–0.0204	0.0258	–0.0540	–0.0628
	(0.0522)	(0.0503)	(0.0428)	(0.0917)	(0.0393)	(0.0417)
Continue goods	0.0848***	0.0875***	0.0489***	0.0955***	–0.00516	0.0225***
	(0.00466)	(0.00634)	(0.00586)	(0.0108)	(0.00405)	(0.00408)
Entry services	0.0282	0.0393*	0.00992	0.103*	–0.0453*	–0.0352
	(0.0202)	(0.0229)	(0.0291)	(0.0531)	(0.0243)	(0.0233)
Exit services	–0.0412	–0.0698	–0.103	–0.188	–0.00313	0.00294
	(0.100)	(0.133)	(0.0833)	(0.124)	(0.0518)	(0.0629)
Continue services	0.0475***	0.0467***	–0.0437***	0.0141	–0.00165	0.0281***
	(0.0115)	(0.0143)	(0.0149)	(0.0221)	(0.00930)	(0.00970)
Constant	0.0107	0.141**	0.0575*	0.145	0.163***	0.188***
	(0.0375)	(0.0576)	(0.0303)	(0.110)	(0.0272)	(0.0282)
R–squared	0.092	0.032	0.031	0.026	0.053	0.050
Observations	249,654	240,511	231,953	161,133	217,712	203,369

*Note: ***-significant at 1%. **-significant at 5%. *-significant at 10%. Standard errors are clustered at the firm level. Capital and investment are in real values. Except for foreign ownership. dependent variables are in log. Labor productivity is defined as real value added over employment. TFP in column (7) has been estimated using the Levinson and Petrin (2003) procedure. Industry at 2-digit NACE code and years are contolled for in each regression. Additional controls are past (t-1) employment, capital, investment, foreign ownership, labor productivity and TPF. Change in firm level characteristics on the medium term is for the period Xt+5-Xt, where X is the outcome variable of interest.*

Source: Own calculations.

7.4 TRADER STATUS AND FIRM SURVIVAL

In the last section, I provide evidence on the relationship between exporting or importing and firm survival. A firm is considered survivor if it is present in the database in *t-1* and *t*, i.e. submits its financial reports in both years. The effect of exporting is negative, goods, services and goods and services trading all decrease the probability of firm survival (**Table 19**).

Altogether, these results might indicate that exporting and importing is a riskier business and does not necessarily help firms survive.

Table 19
Exporting, importing and firm survival

VARIABLES	(1)	(2)
	$Exporter_{t-1}$	$Importer_{t-1}$
Goods	–0.623***	–0.654***
	(0.0109)	(0.00922)
Services	–0.783***	–0.835***
	(0.0250)	(0.0286)
Goods and services	–0.479***	–0.637***
	(0.0348)	(0.0249)
$Size_{t-1}$	0.00695***	0.000520
	(0.00226)	(0.00225)
$Capital_{t-1}$	0.0351***	0.0390***
	(0.00103)	(0.00103)
$Investment_{t-1}$	–0.0198***	–0.0192***
	(0.000711)	(0.000711)
$Foreign\ ownership_{t-1}$	–0.287***	–0.241***
	(0.00640)	(0.00653)
$Labor\ productivity_{t-1}$	–0.0102**	–0.0313***
	(0.00444)	(0.00445)
TFP_{t-1}	0.0571***	0.0830***
	(0.00429)	(0.00431)
Constant	0.0739***	0.0323***
	(0.00894)	(0.00900)
Pseudo R-squared	0.00912	0.00912
Observations	1,096,488	1,096,488

*Note: ***-significant at 1%. **-significant at 5%. *-significant at 10%. Standard errors are clustered at the firm level. Capital and investment are in real values. Except for foreign ownership. dependent variables are in log. Labor productivity is defined as real value added over employment. TFP has been estimated using the Levinson and Petrin (2003) procedure. Industry at 2-digit NACE code and years are contolled for in each regression. Firm is a survivor if it survives form t-1 to t.*

Source: Own calculations.

Bernard and Jensen (1999) find that among two identical firms, the exporter is more likely to survive by 10 percent. The estimation results on Hungarian data are different, however, it is plausible to think that various other factors play a role in firm survival.

8 Conclusions

The aim of this paper was to provide new evidence on service trader characteristics, in comparison with goods traders, using a unique firm level database of services and goods exporters and importers for Hungarian firms. In this sense, this is the first study to use data for a country from the Central European Region for goods and services exporters and importers. Similar to other European countries, Hungary has a growing share of services in total trade. Mapping world level trends in the evolution of international trade in the past years, the growth of services was more pronounced and more persistent in Hungary in comparison with goods, thus services might represent new alternatives for trade diversification and growth.

Results show that services trade is even more concentrated than goods trade and the very few service traders which are present in all sectors of the economy are larger in terms of employment, give higher wages and have higher labor and total factor productivity in comparison with goods traders. Better firm characteristics might be needed due to the inherently different characteristics of services from goods: they are indivisible and intangible and these characteristics might result in higher trading costs. The effect of exporting slightly differs by industry and is more pronounced for SMEs than for large companies. Moreover, trading firms grow further in productivity both on the short and medium run. Earlier services exporter status is positively correlated with future services exporter status and goods and services exporter status indicating that firms are willing to diversify their export portfolio in the goods-services dimension and not only in product/service type and destination country. However, services exporting does not increase the probability of firm survival. Most of the findings prevail for importing as well.

Overall, from this analysis one might conclude that it is worth for firms trading in services for at least three reasons. First, traders in services are larger than goods traders and getting involved in services might ensure higher employment. Second, services exporting makes firms more productive on the short and medium run. Third, not only service sector firms, but also firms from the manufacturing industry are involved in services and this might represent new ways for diversification and boosting overall export sales. Altogether, getting involved in services trade might represent new growth opportunities for firms.

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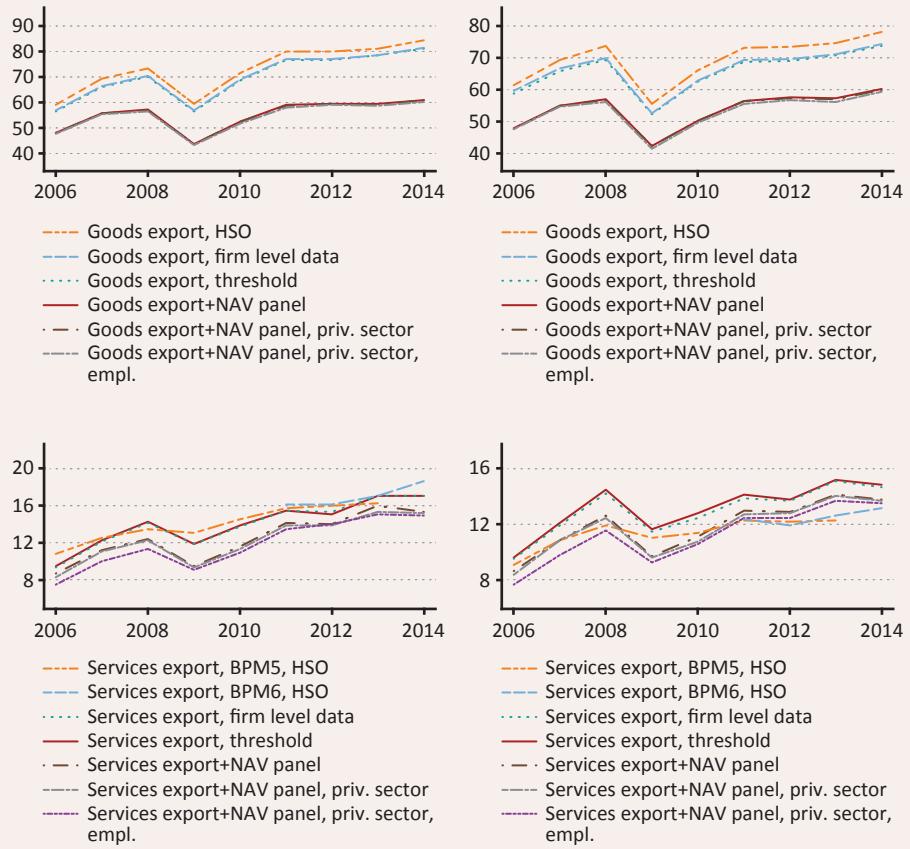
Appendix

Table A 1 Services trade according to BPM5
Main service types by BPM5
Tourism
Transport
Communication
Construction and repair
Insurance
Financial services
Computer and information
Royalties and license
Other business services
Personal, cultural and recreational services
Government services, not included elsewhere
Source: HSO.

Table A 2 List of variables used in the analysis	
Variable	Definition
Employment	Number of employees.
Wage	Average wage at the firm level: total wage bill divided by the number of employees.
Capital	Fixed assets and immaterial goods. In real terms.
Investment	Capital accumulation corrected for depreciation. In real terms.
Foreign ownership	The dummy variable takes the value 1, if more than 50 percent of the firm is owned by foreigners.
Labor productivity	Value added per worker. The difference between sales and intermediate inputs, divided by the number of employees. In real terms.
TFP	Estimated using Levinsohn and Petrin's (2003) semi-parametric production function algorithm.

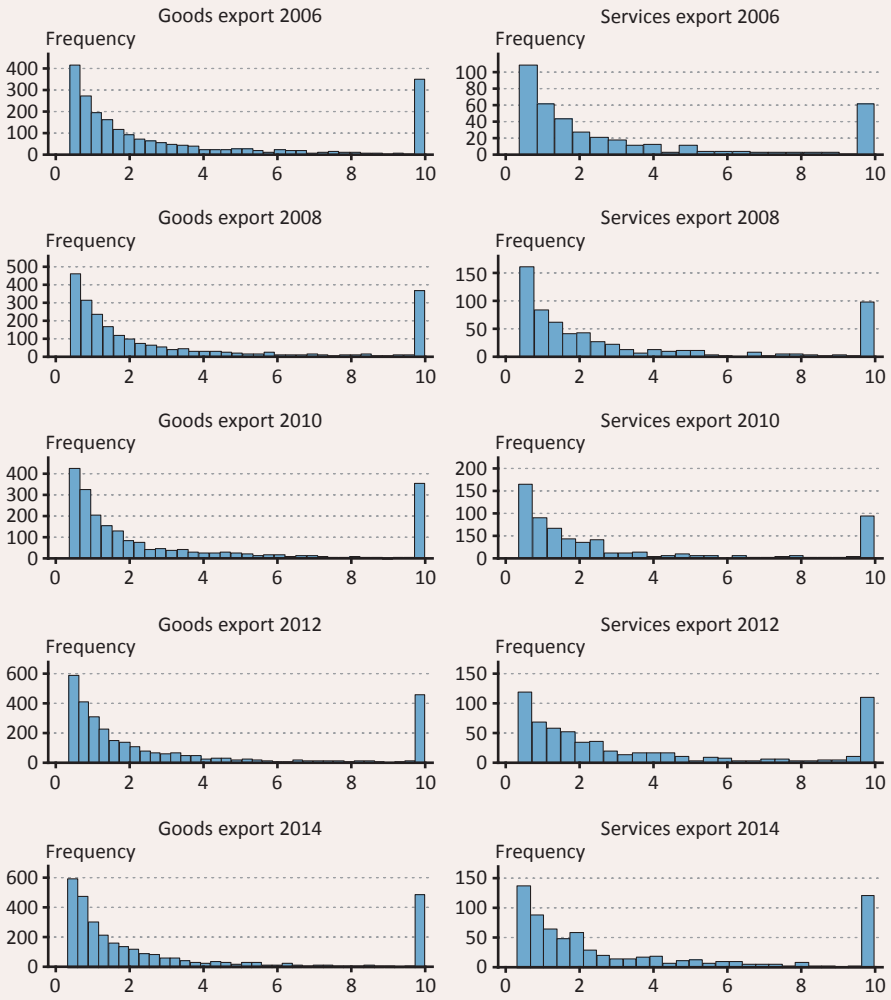
Figure A 1
Data and sample
(billion euros, current prices)



Note: Goods/services export/import HSO stands for the official numbers published by the Hungarian Statistical Office. For services, the HSO publishes data series based on two methodologies, BPM5 and BPM6 since 2013. Firm level data is collected according to BPM5 for all years. Firm level trade data is aggregated from the trade databases. To have a comparable threshold, only yearly firm level exports/imports above 100 million HUF (322,581 EUR on 2015 exchange rate) are considered for the analysis. The trade databases are merged with the NAV panel, keeping only those firms which belong to the private sector and reported employment.

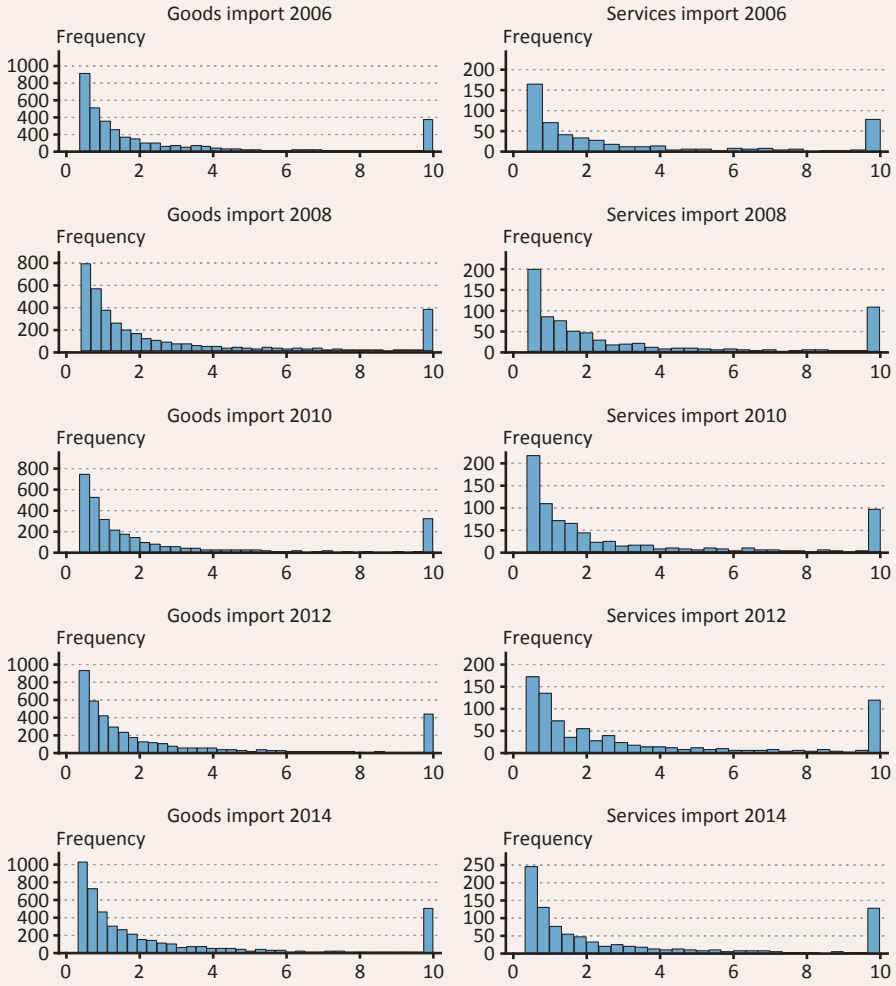
Source: Own calculations.

Figure A 2
Distribution of export values in the sample
(million euros, current prices)



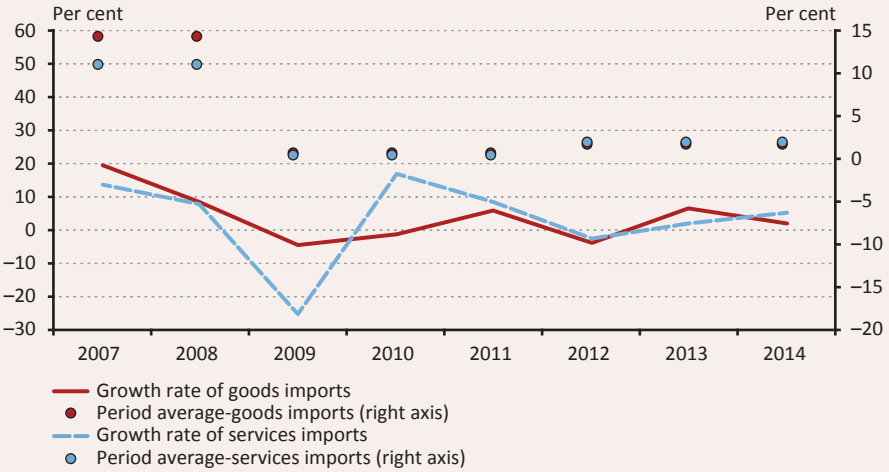
Note: Export values above 10 millions are coded in one bin.
Source: Own calculations.

Figure A 3
Distribution of import values in the sample
(million euros, current prices)



Note: Import values above 10 millions are coded in one bin.
Source: Own calculations.

Figure A 4
Hungarian imports of goods and services
(year on year percentage changes)



Note: Average growth rates are calculated for three periods: pre-crisis (2007-2008), crisis (2009-2011) and post-crisis (2012-2014).
Source: Eurostat.

Figure A 5
Services imports as a share of total imports
(%)

Note: Countries in the region group are the following: Czech Republic, Poland, Slovenia, Slovakia.
Source: Eurostat, WTO.

Table A 3
Share of exporters by yearly breakdown in the sample

Year	Goods exporter	Services exporter	Goods and services exporter
2006	0.91	0.12	0.05
2007	0.93	0.14	0.07
2008	0.88	0.18	0.07
2009	0.75	0.17	0.08
2010	0.77	0.17	0.08
2011	0.89	0.16	0.08
2012	1.07	0.16	0.08
2013	1.10	0.17	0.10
2014	1.16	0.17	0.10

Note: The shares add up to 100 by year together with the share of non-exporters.
Source: Own calculations.

Table A 4
Share of importers by yearly breakdown in the sample

Year	Goods importer	Services importer	Goods and services importer
2006	1.38	0.10	0.13
2007	1.54	0.11	0.14
2008	1.27	0.13	0.16
2009	1.08	0.13	0.16
2010	1.05	0.13	0.17
2011	1.16	0.12	0.16
2012	1.35	0.13	0.17
2013	1.42	0.15	0.18
2014	1.59	0.15	0.19

Note: The shares add up to 100 by year together with the share of non-importers.
Source: Own calculations.

Table A 5
Share of importers by industry
(2006-2014)

Section	Industry	Goods importer	Services importer	Goods and services importer	Non-importer
A	Agriculture, forestry and fishing	0.72	0.01	0.03	99.24
B	Mining	1.04	0.25	0.76	97.95
C	Manufacturing	4.40	0.02	0.94	94.64
D	Electricity, gas, steam and air cond. supply	4.21	2.23	3.24	90.32
E	Water supply, sewerage	0.90	0.21	0.07	98.83
F	Construction	0.21	0.05	0.03	99.71
G	Wholesale and retail trade, repair of motorvehicles	3.04	0.06	0.18	96.73
H	Transportation and storage	0.26	1.34	0.14	98.25
I	Accommodation and food service activities	0.04	0.02	0.02	99.93
J	Information and communication	0.14	0.24	0.09	99.53
K	Financial and insurance activities	0.13	0.62	0.02	99.23
L	Real estate activities	0.23	0.06	0.01	99.70
M	Professional, scientific and technical activites	0.15	0.13	0.02	99.70
N-S	Public administration and other services	0.09	0.03	0.01	99.86
Average		**1.11**	**0.38**	**0.40**	**98.12**

Source: Own calculations.

Table A 6
Number of firms by industry and year

Section	Title	2006	2007	2008	2009	2010	2011	2012	2013	2014
A	Agriculture, forestry and fishing	7,737	7,705	7,330	7,408	7,351	7,423	7,544	7,662	7,644
B	Mining	305	301	328	336	311	307	309	292	287
C	Manufacturing	25,510	25,697	25,999	25,619	25,672	25,972	25,321	24,754	24,442
D	Electricity, gas, steam and air cond. supply	231	263	291	301	321	346	355	390	374
E	Water supply, sewerage	869	890	960	942	1,011	1,030	1,058	1,011	1,009
F	Construction	27,932	28,359	29,492	28,864	28,645	28,487	27,219	26,457	26,323
G	Wholesale and retail trade, repair of motorvehicles	62,646	64,145	65,155	65,970	67,048	68,836	67,487	67,803	66,071
H	Transportation and storage	8,964	9,365	9,864	9,861	10,019	10,370	10,325	10,263	10,102
I	Accommodation and food service activities	12,497	12,766	13,409	14,079	14,536	15,100	14,831	14,418	14,119
J	Information and communication	10,955	10,996	11,549	11,702	12,188	12,837	13,172	13,060	12,797
K	Financial and insurance activities	3,705	4,132	5,429	5,886	6,495	6,975	7,004	6,691	6,335
L	Real estate activities	12,627	14,188	16,058	16,153	15,957	15,878	15,899	15,428	15,028
M	Professional, scientific and technical activites	26,574	27,701	31,466	32,643	35,515	38,342	40,957	41,477	40,999
N-S	Public administration and other services	38,209	38,857	38404	39,732	41,102	43,389	43,967	43,458	42,269
Total observations		**238,761**	**245,365**	**255,734**	**259,496**	**2661,71**	**275,292**	**2754,48**	**273,164**	**267,799**

Source: Own calculations.

Table A 7
Share of exporting firms by industry and year
(%)

Section	2006			2007			2008			2009			2010			2011			2012			2013			2014		
	G	S	G&S	G	S	G&S	G	S	G&S	G	S	G&S	G	S	G&S	G	S	G&S	G	S	G&S	G	S	G&S	G	S	G&S
A	0.78	0.00	0.03	1.08	0.00	0.04	1.51	0.00	0.03	1.39	0.00	0.04	1.62	0.00	0.07	1.99	0.01	0.03	2.28	0.01	0.04	2.08	0.01	0.03	2.15	0.00	0.04
B	3.61	0.00	0.00	2.99	0.00	0.00	1.52	0.30	0.00	2.08	0.30	0.00	1.61	0.64	0.64	2.93	0.00	0.65	2.91	0.00	0.97	3.42	0.00	1.37	3.83	0.35	1.05
C	5.14	0.05	0.27	5.25	0.06	0.32	4.62	0.08	0.37	4.12	0.06	0.37	4.36	0.10	0.42	4.77	0.07	0.49	5.86	0.06	0.53	6.09	0.06	0.61	6.41	0.06	0.63
D	2.60	0.87	1.30	4.18	0.76	1.14	4.12	0.00	1.03	2.33	0.33	1.00	1.87	0.31	1.25	0.87	1.73	0.29	0.85	1.13	0.56	0.26	1.79	0.51	0.00	2.41	0.53
E	0.92	0.00	0.12	1.35	0.00	0.00	1.15	0.00	0.10	0.53	0.00	0.11	1.48	0.20	0.10	2.04	0.00	0.10	2.27	0.00	0.09	2.37	0.00	0.00	2.58	0.10	0.00
F	0.05	0.07	0.01	0.05	0.08	0.01	0.04	0.12	0.02	0.05	0.10	0.01	0.05	0.09	0.01	0.08	0.08	0.01	0.08	0.09	0.01	0.06	0.06	0.01	0.06	0.07	0.01
G	1.11	0.08	0.07	1.14	0.09	0.08	1.24	0.10	0.07	1.03	0.11	0.11	1.03	0.09	0.11	1.29	0.08	0.11	1.60	0.08	0.10	1.70	0.09	0.12	1.78	0.09	0.12
H	0.10	1.09	0.04	0.11	1.25	0.07	0.21	1.86	0.07	0.11	1.61	0.07	0.17	1.78	0.05	0.24	1.62	0.05	0.31	1.74	0.06	0.26	2.06	0.07	0.26	2.19	0.06
I	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.00	0.04	0.01	0.00
J	0.04	0.25	0.02	0.01	0.27	0.03	0.04	0.42	0.04	0.02	0.44	0.03	0.02	0.30	0.02	0.02	0.37	0.04	0.05	0.39	0.04	0.02	0.34	0.02	0.04	0.33	0.02
K	0.00	0.59	0.00	0.07	0.70	0.00	0.06	0.46	0.02	0.14	0.36	0.00	0.15	0.51	0.00	0.19	0.34	0.00	0.30	0.41	0.00	0.22	0.43	0.00	0.17	0.39	0.02
L	0.08	0.02	0.01	0.11	0.03	0.01	0.13	0.06	0.00	0.14	0.05	0.00	0.13	0.04	0.00	0.17	0.06	0.00	0.21	0.03	0.00	0.14	0.03	0.00	0.13	0.03	0.00
M	0.09	0.15	0.00	0.06	0.18	0.01	0.05	0.23	0.02	0.05	0.21	0.02	0.06	0.18	0.02	0.06	0.14	0.02	0.08	0.11	0.01	0.08	0.13	0.02	0.10	0.12	0.02
N-S	0.04	0.03	0.01	0.04	0.03	0.01	0.05	0.03	0.00	0.04	0.04	0.00	0.05	0.04	0.01	0.06	0.05	0.00	0.07	0.04	0.01	0.07	0.03	0.01	0.07	0.04	0.02

Note: The share of exporters adds up to 100 with those of non-exporters by industry and year.
Source: Own calculations.

Table A 8
Share of importing firms by industry and year
(%)

Section	2006			2007			2008			2009			2010			2011			2012			2013			2014		
	G	S	G&S	G	S	G&S	G	S	G&S	G	S	G&S	G	S	G&S	G	S	G&S	G	S	G&S	G	S	G&S	G	S	G&S
A	0.44	0.01	0.03	0.56	0.00	0.04	0.46	0.01	0.01	0.62	0.00	0.03	0.54	0.01	0.07	0.77	0.01	0.01	1.10	0.01	0.03	0.85	0.01	0.04	1.09	0.00	0.04
B	1.64	0.33	0.00	1.33	0.33	0.33	0.61	0.30	0.30	0.89	0.30	0.89	0.64	0.32	0.96	0.65	0.00	0.65	0.97	0.00	1.29	1.37	0.00	1.37	1.39	0.70	1.05
C	4.70	0.01	0.76	4.98	0.02	0.81	3.83	0.02	0.88	3.29	0.02	0.87	3.31	0.02	0.93	3.90	0.02	0.95	4.97	0.02	1.00	5.15	0.02	1.09	5.58	0.03	1.12
D	6.49	0.87	3.90	5.70	1.14	3.42	4.81	1.72	3.44	4.32	2.33	4.98	4.36	2.80	3.43	3.47	2.60	3.18	3.38	2.82	2.82	2.82	2.56	2.05	4.01	2.41	2.67
E	0.92	0.12	0.23	0.56	0.11	0.00	0.42	0.00	0.31	0.53	0.00	0.00	0.59	0.40	0.00	0.68	0.39	0.00	1.42	0.38	0.00	1.19	0.30	0.00	1.68	0.10	0.10
F	0.19	0.03	0.01	0.25	0.05	0.03	0.20	0.06	0.04	0.17	0.06	0.03	0.15	0.07	0.04	0.16	0.06	0.03	0.21	0.05	0.03	0.23	0.05	0.03	0.32	0.06	0.03
G	2.94	0.06	0.12	3.38	0.05	0.14	3.06	0.06	0.16	2.63	0.07	0.18	2.51	0.06	0.20	2.71	0.05	0.19	3.08	0.05	0.20	3.30	0.06	0.21	3.73	0.05	0.24
H	0.17	0.77	0.03	0.20	0.89	0.09	0.26	1.24	0.19	0.13	1.17	0.06	0.20	1.28	0.06	0.33	1.28	0.13	0.26	1.55	0.19	0.32	1.88	0.23	0.47	1.93	0.26
I	0.04	0.02	0.02	0.04	0.00	0.02	0.02	0.01	0.01	0.03	0.02	0.01	0.03	0.01	0.02	0.05	0.02	0.03	0.05	0.02	0.03	0.06	0.01	0.00	0.06	0.03	0.01
J	0.15	0.19	0.05	0.19	0.16	0.10	0.15	0.29	0.08	0.13	0.27	0.09	0.13	0.25	0.08	0.11	0.23	0.11	0.11	0.23	0.14	0.17	0.31	0.05	0.17	0.23	0.07
K	0.19	0.92	0.03	0.17	0.97	0.00	0.13	0.70	0.06	0.05	0.65	0.03	0.12	0.57	0.05	0.17	0.47	0.01	0.17	0.51	0.00	0.09	0.52	0.00	0.09	0.57	0.02
L	0.21	0.06	0.01	0.28	0.07	0.01	0.20	0.07	0.02	0.11	0.07	0.00	0.23	0.08	0.01	0.25	0.04	0.01	0.26	0.03	0.01	0.23	0.06	0.01	0.29	0.05	0.01
M	0.14	0.13	0.02	0.20	0.16	0.02	0.10	0.15	0.02	0.11	0.17	0.02	0.11	0.14	0.03	0.15	0.12	0.02	0.15	0.09	0.03	0.17	0.12	0.02	0.18	0.11	0.02
N-S	0.11	0.03	0.01	0.14	0.03	0.01	0.08	0.03	0.01	0.06	0.04	0.01	0.07	0.04	0.01	0.09	0.04	0.01	0.08	0.03	0.02	0.09	0.03	0.02	0.09	0.03	0.02

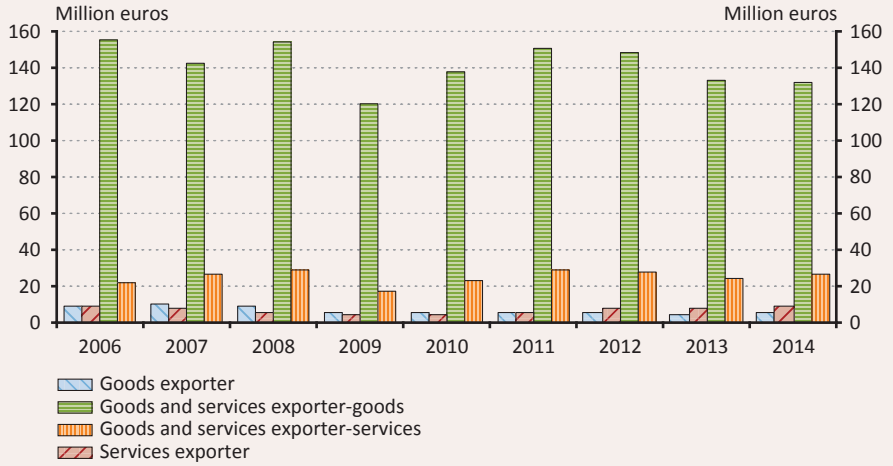
Note: The share of importers adds up to 100 with those of non-exporters by industry and year.
Source: Own calculations.

Table A 9
Share of importing firms in manufacturing by 2-digit NACE code in 2014

Division	Section C Manufacturing	Goods importer	Services importer	Goods and services importer	Total number of firms
10	Food products	5.15%	0.04%	0.99%	2,719
11	Beverages	2.15%	0.00%	0.92%	975
13	Textiles	7.44%	0.00%	0.60%	497
14	Wearing apparel	5.95%	0.00%	0.17%	1,143
15	Leather and related products	17.52%	0.00%	2.14%	234
16	Wood and products of wood	2.38%	0.00%	0.30%	1,680
17	Paper and paper products	14.33%	0.00%	2.29%	349
18	Printing and reproduction of recorded media	2.07%	0.00%	0.05%	1,832
19	Coke and refined petroleum products	11.11%	0.00%	22.22%	9
20	Chemicals and chemical products	12.61%	0.28%	3.64%	357
21	Basic pharmaceutical products and preparations	19.05%	0.00%	14.29%	63
22	Rubber and plastic products	12.95%	0.00%	2.49%	1,243
23	Other non-metallic mineral products	4.19%	0.10%	1.33%	1,049
24	Basic metals	18.24%	0.00%	2.35%	170
25	Fabricated metal products, except machinery and equipment	4.64%	0.02%	0.63%	4,591
26	Computer, electronic and optical products	9.08%	0.00%	3.52%	738
27	Electrical equipment	15.23%	0.00%	3.91%	486
28	Machinery and equipment	8.09%	0.00%	1.10%	1,546
29	Motor vehicles, trailers and semi-trailers	19.18%	0.00%	13.01%	292
30	Other transport equipment	5.60%	0.00%	4.00%	125
31	Furniture	2.50%	0.00%	0.15%	1,362
32	Other manufacturing	2.94%	0.00%	0.33%	1,224
33	Repair and installation of machinery and equipment	1.25%	0.17%	0.06%	1,757

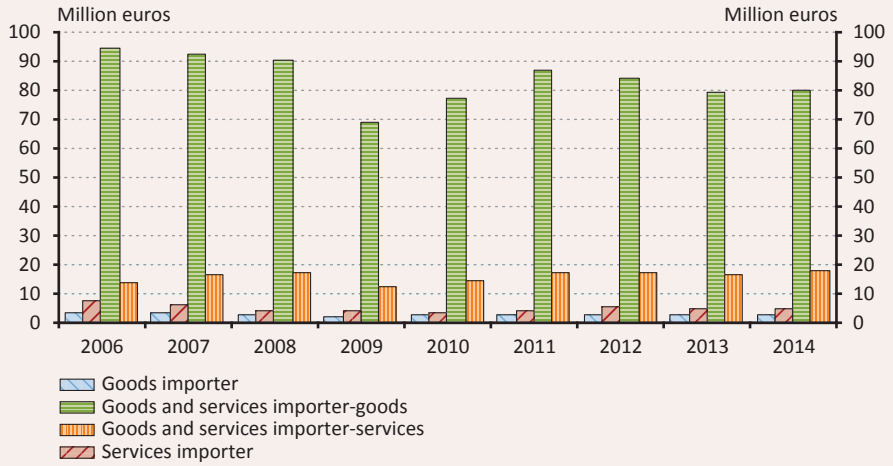
Source: Own calculations.

Figure A 6
Average exports
(million euros, current prices)



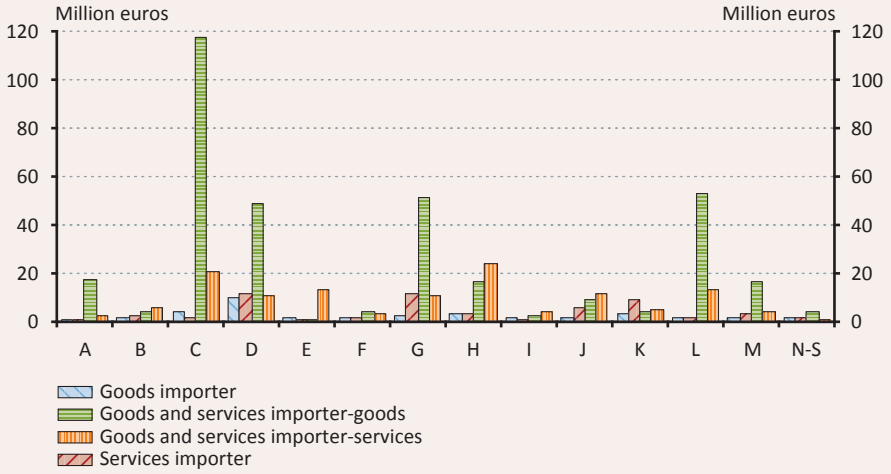
Source: Own calculations.

Figure A 7
Average imports
(million euros, current prices)



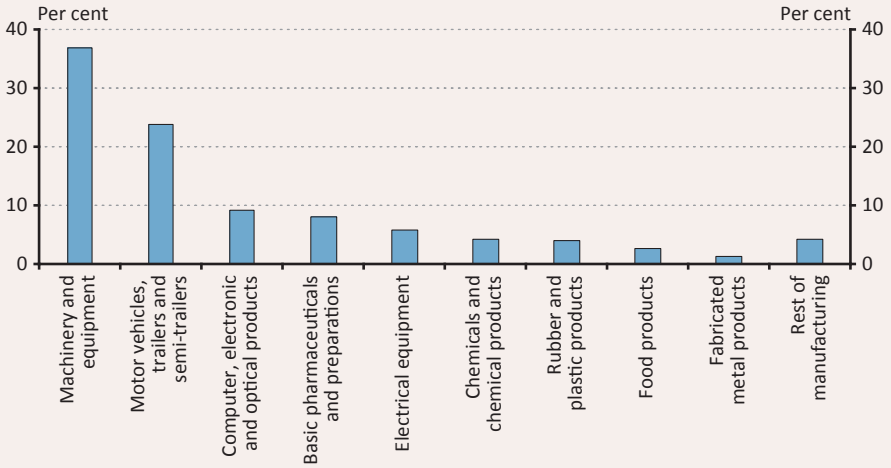
Source: Own calculations.

Figure A 8
Average imports by industry. 2006-2014
(million euros, current prices)



Source: Own calculations.

Figure A 9
Distribution of services import value in the manufacturing
(2014)



Source: Own calculations.

Table A 10
Distribution of imported value by industry in 2014

Section	Industry	Goods import		Services import	
		G	G&S	S	G&S
A	Agriculture, forestry and fishing	0.92	0.13	0.00	0.09
B	Mining	0.06	0.06	0.08	0.12
C	Manufacturing	37.43	77.18	1.19	68.87
D	Electricity, gas, steam and air cond. supply	0.36	1.63	15.95	4.60
E	Water supply, sewerage	0.28	0.00	0.03	0.03
F	Construction	1.15	0.15	0.82	0.36
G	Wholesale and retail trade, repair of motorvehicles	56.65	17.63	21.41	10.57
H	Transportation and storage	0.88	2.18	29.35	13.05
I	Accommodation and food service activities	0.08	0.01	0.28	0.02
J	Information and communication	0.19	0.09	8.92	1.26
K	Financial and insurance activities	0.05	0.00	16.48	0.15
L	Real estate activities	0.60	0.55	0.31	0.41
M	Professional, scientific and technical activites	0.72	0.17	4.12	0.34
N-S	Public administration and other services	0.64	0.23	1.08	0.13
Total value (million euro)		**12,026**	**40,870**	**1,858**	**9,182**

Note: G denotes goods-only importers, S denotes services-only importer whereas G&S denotes bi-importers.
Source: Own calculations.

Table A 11
Export concentration by year
(%)

2006						
	TOP5	**TOP10**	**TOP20**	**TOP50**	**TOP100**	**Nr. of firms**
Goods exporter	33.53%	38.49%	45.19%	56.19%	65.67%	2,171
Services exporter	45.84%	58.29%	70.46%	83.19%	91.19%	288
Goods and services exporter	45.81%	62.69%	83.78%	95.79%	99.62%	131
2007						
	TOP5	**TOP10**	**TOP20**	**TOP50**	**TOP100**	**Nr. of firms**
Goods exporter	33.43%	38.59%	44.92%	55.98%	65.11%	2,275
Services exporter	39.60%	51.54%	63.10%	76.62%	86.98%	341
Goods and services exporter	44.16%	58.29%	75.92%	92.04%	98.36%	161
2008						
	TOP5	**TOP10**	**TOP20**	**TOP50**	**TOP100**	**Nr. of firms**
Goods exporter	33.96%	39.08%	45.81%	64.82%	66.10%	2,246
Services exporter	27.58%	35.94%	46.54%	92.86%	76.81%	469
Goods and services exporter	43.11%	58.48%	76.74%	77.97%	98.41%	175
2009						
	TOP5	**TOP10**	**TOP20**	**TOP50**	**TOP100**	**Nr. of firms**
Goods exporter	10.68%	18.04%	27.90%	43.95%	56.63%	1,949
Services exporter	22.58%	31.17%	43.67%	61.42%	75.64%	443
Goods and services exporter	49.92%	60.99%	76.20%	91.83%	97.99%	196
2010						
	TOP5	**TOP10**	**TOP20**	**TOP50**	**TOP100**	**Nr. of firms**
Goods exporter	10.28%	17.00%	26.61%	41.64%	54.54%	2,060
Services exporter	14.18%	23.92%	37.12%	56.25%	73.22%	453
Goods and services exporter	47.41%	61.06%	74.47%	90.55%	97.23%	215
2011						
	TOP5	**TOP10**	**TOP20**	**TOP50**	**TOP100**	**Nr. of firms**
Goods exporter	12.50%	19.99%	28.60%	40.61%	51.36%	2,449
Services exporter	22.10%	32.11%	44.41%	62.33%	76.79%	433
Goods and services exporter	39.01%	52.43%	66.50%	86.09%	95.46%	230
2012						
	TOP5	**TOP10**	**TOP20**	**TOP50**	**TOP100**	**Nr. of firms**
Goods exporter	11.45%	17.93%	24.44%	35.29%	46.17%	2,952
Services exporter	28.28%	39.61%	52.91%	69.23%	81.14%	427
Goods and services exporter	37.68%	49.52%	64.67%	84.47%	95.03%	233
2013						
	TOP5	TOP10	TOP20	TOP50	TOP100	Nr. of firms
Goods exporter	12.61%	18.30%	23.99%	34.25%	44.01%	3,007
Services exporter	27.69%	40.76%	53.81%	70.52%	81.35%	456
Goods and services exporter	37.43%	48.16%	63.67%	83.31%	93.75%	261
2014						
	TOP5	**TOP10**	**TOP20**	**TOP50**	**TOP100**	**Nr. of firms**
Goods exporter	12.45%	18.20%	24.81%	35.37%	45.42%	3,098
Services exporter	32.83%	46.36%	58.40%	72.94%	83.33%	464
Goods and services exporter	39.12%	49.91%	63.89%	82.00%	92.78%	272

Note: The percentage in the first row and first column should be interpreted as the share of sum of the exported value by the top 5 exporters relative to all goods export. This is calculated for top 10, top 20, top 50 and top 100 firms within their trader category.

Source: Own calculations.

Table A 12
Import concentration by year
(%)

2006						
	TOP5	**TOP10**	**TOP20**	**TOP50**	**TOP100**	**Nr. of firms**
Goods importer	17.21%	21.55%	26.52%	35.12%	43.46%	3,301
Services importer	39.54%	57.78%	70.73%	85.82%	93.53%	231
Goods and services importer	38.63%	54.76%	69.39%	83.39%	92.50%	305
2007						
	TOP5	**TOP10**	**TOP20**	**TOP50**	**TOP100**	**Nr. of firms**
Goods importer	15.95%	20.11%	24.81%	33.01%	40.99%	3,784
Services importer	33.65%	53.15%	66.62%	80.68%	90.45%	263
Goods and services importer	37.45%	51.89%	64.53%	79.37%	89.63%	354
2008						
	TOP5	**TOP10**	**TOP20**	**TOP50**	**TOP100**	**Nr. of firms**
Goods importer	21.22%	26.76%	33.00%	43.91%	54.53%	3,247
Services importer	30.44%	39.74%	53.48%	73.29%	84.73%	328
Goods and services importer	39.09%	53.68%	53.48%	80.26%	89.58%	404
2009						
	TOP5	**TOP10**	**TOP20**	**TOP50**	**TOP100**	**Nr. of firms**
Goods importer	16.98%	26.50%	34.77%	46.89%	59.50%	2,810
Services importer	34.81%	44.36%	56.10%	72.41%	83.38%	348
Goods and services importer	38.80%	52.59%	63.10%	79.41%	88.89%	404
2010						
	TOP5	**TOP10**	**TOP20**	**TOP50**	**TOP100**	**Nr. of firms**
Goods importer	8.65%	12.93%	18.36%	27.70%	35.66%	2,795
Services importer	24.24%	35.17%	47.22%	66.36%	79.91%	353
Goods and services importer	38.29%	53.61%	62.35%	77.73%	88.01%	442
2011						
	TOP5	**TOP10**	**TOP20**	**TOP50**	**TOP100**	**Nr. of firms**
Goods importer	9.16%	13.18%	18.53%	26.98%	34.97%	3,205
Services importer	26.84%	41.60%	57.83%	72.39%	83.79%	337
Goods and services importer	32.42%	47.06%	58.92%	76.47%	87.38%	450
2012						
	TOP5	**TOP10**	**TOP20**	**TOP50**	**TOP100**	**Nr. of firms**
Goods importer	6.81%	10.01%	14.62%	22.68%	31.05%	3,709
Services importer	25.96%	42.32%	60.47%	77.14%	86.88%	350
Goods and services importer	32.62%	44.24%	56.03%	74.30%	86.07%	477
2013						
	TOP5	TOP10	TOP20	TOP50	TOP100	Nr. of firms
Goods importer	10.10%	13.43%	17.27%	24.44%	32.33%	3,879
Services importer	28.25%	43.19%	59.10%	75.54%	85.14%	415
Goods and services importer	33.96%	45.44%	57.97%	75.20%	85.64%	483
2014						
	TOP5	**TOP10**	**TOP20**	**TOP50**	**TOP100**	**Nr. of firms**
Goods importer	8.85%	13.13%	17.10%	24.09%	31.89%	4,270
Services importer	30.97%	44.65%	57.83%	74.23%	84.80%	401
Goods and services importer	32.03%	43.59%	54.46%	72.64%	83.90%	512

Note: The percentage in the first row and first column should be interpreted as the share of sum of the exported value by the top 5 exporters relative to all goods export. This is calculated for top 10, top 20, top 50 and top 100 firms within their trader category.

Source: Own calculations.

Table A 13
Importer characteristics

	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
VARIABLES	**Employment**		**Wage**		**Capital**		**Investment**		**Foreign ownership**		**Labor productivity**		**TFP**	
	without controls	**with controls**	**without controls**	**with controls**	**without controls**	**with controls**	**without controls**	**with controls**	**without controls**	**with controls**	**without controls**	**with controls**	**without controls**	**with controls**
Goods importer	2.043***	0.122***	1.064***	-0.00377	3.347***	0.0131**	3.102***	0.584***	0.304***	0.0418***	1.311***	0.182***	1.506***	0.242***
	(0.0163)	(0.00336)	(0.00816)	(0.00852)	(0.0249)	(0.00548)	(0.0241)	(0.0162)	(0.00615)	(0.00151)	(0.0103)	(0.00683)	(0.00999)	(0.00655)
Services importer	2.217***	0.132***	1.535***	0.228***	3.123***	-0.0776***	2.933***	0.205***	0.506***	0.0581***	1.782***	0.367***	2.130***	0.447***
	(0.0601)	(0.0126)	(0.0285)	(0.0264)	(0.0977)	(0.0210)	(0.0913)	(0.0561)	(0.0174)	(0.00523)	(0.0493)	(0.0238)	(0.0462)	(0.0239)
Goods and serv. imp.	4.161***	0.268***	1.609***	-0.246***	6.154***	-0.101***	6.003***	1.161***	0.777***	0.102***	1.841***	0.132***	2.478***	0.275***
	(0.0568)	(0.01000)	(0.0204)	(0.0253)	(0.0801)	(0.0112)	(0.0794)	(0.0425)	(0.0113)	(0.00359)	(0.0301)	(0.0193)	(0.0343)	(0.0197)
Constant	2.117***	-0.351***	7.636***	4.513***	11.33***	-0.432***	9.889***	0.899***	0.579***	0.0588***	8.476***	2.920***	7.366***	2.766***
	(0.139)	(0.0464)	(0.0889)	(0.121)	(0.214)	(0.0792)	(0.252)	(0.209)	(0.0319)	(0.00664)	(0.129)	(0.0732)	(0.113)	(0.0738)
Industry	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	2,357,054	993,337	2,213,530	977,872	1,881,347	976,742	1,552,629	796,968	2,357,054	993,337	1,956,169	934,187	1,598,164	918,359
Observations	0.160	0.857	0.038	0.241	0.153	0.869	0.106	0.402	0.087	0.788	0.091	0.473	0.128	0.506

*Note: ***-significant at 1%. **-significant at 5%. *-significant at 10%. Standard errors are clustered at the firm level. Capital and investment are in real values. Except for foreign ownership, dependent variables are in log. Wage is defined as total payroll over employment. Labor productivity is defined as real value added over employment. Industry refers to 2-digit NACE code. TFP in column (7) has been estimated using the Levinson and Petrin (2003) procedure. Controls are past (t-1) employment. capital. investment. foreign ownership. labor productivity and TPF. Reference group is the non-exporters.*

Source: Own calculations.

Table A 14
Ex-ante importer characteristics

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(11)	(12)	(13)	(14)
	Employment		Wage		Capital		Investment		Labor productivity		TFP	
	SHORT	MEDIUM	SHORT	MEDIUM	SHORT	MEDIUM	SHORT	MEDIUM	SHORT	MEDIUM	SHORT	MEDIUM
Goods importer	0.127***	0.0867***	0.158***	0.113***	0.0607***	0.0732***	0.153***	0.112***	0.0271***	0.0228***	0.0753***	0.0460***
	(0.00364)	(0.00270)	(0.00463)	(0.00350)	(0.00663)	(0.00496)	(0.0170)	(0.00916)	(0.00580)	(0.00339)	(0.00565)	(0.00330)
Services importer	0.150***	0.110***	0.179***	0.140***	0.0225	0.0585***	0.184***	0.133***	0.0730***	0.0345***	0.130***	0.0669***
	(0.0137)	(0.0101)	(0.0146)	(0.0115)	(0.0239)	(0.0173)	(0.0513)	(0.0271)	(0.0189)	(0.0123)	(0.0187)	(0.0128)
Goods and services imp.	0.240***	0.156***	0.228***	0.169***	-0.0542***	0.0446***	0.191***	0.144***	-0.0441***	0.000877	0.0738***	0.0608***
	(0.00915)	(0.00697)	(0.00940)	(0.00773)	(0.0134)	(0.0112)	(0.0348)	(0.0195)	(0.0136)	(0.00788)	(0.0140)	(0.00794)
Constant	-0.0355	-0.0433	0.0997	0.0911	0.0645*	0.0645*	0.117	0.112	0.193***	0.193***	0.171***	0.168***
	(0.0497)	(0.0494)	(0.0736)	(0.0735)	(0.0338)	(0.0345)	(0.0959)	(0.0953)	(0.0210)	(0.0190)	(0.0249)	(0.0230)
Industry	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	0.086	0.086	0.033	0.033	0.028	0.028	0.017	0.016	0.048	0.048	0.049	0.049
Observations	239,145	239,145	233,024	233,024	224,237	224,237	157,431	157,431	213,334	213,334	200,422	200,422

*Note: ***-significant at 1%. **-significant at 5%. *-significant at 10%. Standard errors are clustered at the firm level. Capital and investment are in real values. Except for foreign ownership, dependent variables are in log. Wage is defined as total payroll over employment. Labor productivity is defined as real value added over employment. Industry refers to 2-digit NACE code. TFP in column (7) has been estimated using the Levinson and Petrin (2003) procedure. Controls are past (t-1) employment. capital. investment. foreign ownership. labor productivity and TPF. Reference group is the non-exporters. Short refers to performance 1 year before entry, whereas medium refers to the annual average change over the 5 years before entry.*

Source: Own calculations.

Table A 15
Ex-post importer performance

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(11)	(12)	(13)	(14)
	Employment		Wage		Capital		Investment		Labor productivity		TFP	
	SHORT	MEDIUM	SHORT	MEDIUM	SHORT	MEDIUM	SHORT	MEDIUM	SHORT	MEDIUM	SHORT	MEDIUM
Goods importer	0.116***	0.0574***	0.129***	0.0691***	0.0247***	0.0347***	0.0810***	0.0354***	0.000634	0.00343	0.0445***	0.0237***
	(0.00349)	(0.00345)	(0.00463)	(0.00479)	(0.00581)	(0.00500)	(0.0149)	(0.00921)	(0.00512)	(0.00345)	(0.00499)	(0.00349)
Services importer	0.121***	0.0370**	0.141***	0.0534***	–0.0363*	–0.0296	0.0855*	0.0202	0.0209	0.0118	0.0765***	0.0381**
	(0.0144)	(0.0162)	(0.0174)	(0.0189)	(0.0217)	(0.0214)	(0.0479)	(0.0334)	(0.0178)	(0.0143)	(0.0175)	(0.0152)
Goods and services imp.	0.251***	0.144***	0.203***	0.138***	–0.0626***	0.00784	0.137***	0.0951***	–0.0662***	–0.0288***	0.0391***	0.0343***
	(0.00859)	(0.0111)	(0.00863)	(0.0118)	(0.0115)	(0.0131)	(0.0310)	(0.0213)	(0.0132)	(0.00932)	(0.0130)	(0.00936)
Constant	0.0259	0.000730	0.184***	0.130**	–0.0836	0.0573*	0.650*	0.148	0.491***	0.163***	0.559***	0.183***
	(0.0497)	(0.0365)	(0.0489)	(0.0567)	(0.0766)	(0.0308)	(0.353)	(0.108)	(0.0816)	(0.0275)	(0.0837)	(0.0280)
Industry	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	0.031	0.092	0.012	0.032	0.012	0.030	0.008	0.026	0.014	0.053	0.013	0.050
Observations	775,759	249,654	759,013	240,511	747,774	231,953	520,639	161,133	695,795	217,712	671,159	203,369

*Note: ***-significant at 1%. **-significant at 5%. *-significant at 10%. Standard errors are clustered at the firm level. Capital and investment are in real values. Except for foreign ownership, dependent variables are in log. Wage is defined as total payroll over employment. Labor productivity is defined as real value added over employment. Industry refers to 2-digit NACE code. TFP in column (7) has been estimated using the Levinson and Petrin (2003) procedure. Controls are past (t-1) employment. capital. investment. foreign ownership. labor productivity and TPF. Reference group is the non-exporters. Short refers to performance 1 year after entry, whereas medium refers to the annual average change over the 5 years after entry.*

Source: Own calculations.

Table A 16
Exporter characteristics in selected industries

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Employment	Wage	Capital	Investment	Foreign ownership	Labor productivity	TFP
MANUFACTURING							
Goods exporter	0.141***	–0.120***	0.00554	0.669***	0.0413***	0.0741***	0.114***
	(0.00677)	(0.0128)	(0.00973)	(0.0297)	(0.00285)	(0.0110)	(0.0107)
Services exporter	0.142**	0.387***	–0.293***	–0.461**	0.0267	0.305***	0.381***
	(0.0617)	(0.0803)	(0.0782)	(0.201)	(0.0188)	(0.0802)	(0.0779)
Goods and services exp.	0.222***	–0.292***	–0.137***	1.139***	0.0760***	0.122***	0.273***
	(0.0164)	(0.0373)	(0.0211)	(0.0657)	(0.00640)	(0.0247)	(0.0267)
TRANSPORTATION AND STORAGE							
Goods exporter	0.0934*	–0.169	0.113	0.537***	0.0203	0.142*	0.143*
	(0.0519)	(0.113)	(0.0742)	(0.172)	(0.0152)	(0.0818)	(0.0757)
Services exporter	0.0984***	0.200***	–0.0113	0.126	0.0428***	0.199***	0.231***
	(0.0159)	(0.0327)	(0.0249)	(0.0778)	(0.00744)	(0.0245)	(0.0242)
Goods and services exp.	0.279***	–0.146	–0.150	0.392	0.0681***	0.259	0.323
	(0.0439)	(0.0898)	(0.105)	(0.311)	(0.0162)	(0.253)	(0.228)
INFORMATION AND COMMUNICATION							
Goods exporter	0.173***	–0.254	0.182	0.195	–0.0131***	0.00364	0.0521
	(0.0519)	(0.298)	(0.194)	(0.646)	(0.00235)	(0.0714)	(0.0352)
Services exporter	0.175***	–0.0194	–0.0928	0.205	0.0653***	0.268***	0.321***
	(0.0507)	(0.0826)	(0.0681)	(0.142)	(0.0171)	(0.0800)	(0.0736)
Goods and services exp.	0.585***	–1.107***	–0.160	1.349***	0.0634	–0.247***	0.264***
	(0.0502)	(0.204)	(0.104)	(0.390)	(0.0452)	(0.0478)	(0.0466)
FINANCIAL AND INSURANCE ACTIVITES							
Goods exporter	0.0898	–0.402**	–0.0558	0.156	0.0436	0.100	0.155
	(0.0837)	(0.174)	(0.0899)	(0.354)	(0.0301)	(0.202)	(0.181)
Services exporter	0.115***	–0.197*	–0.150**	0.393*	0.0808***	0.340***	0.565***
	(0.0370)	(0.115)	(0.0703)	(0.226)	(0.0228)	(0.110)	(0.109)
Goods and services exp.							
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES							
Goods exporter	0.176***	–0.277**	0.0975*	0.996***	0.0496***	0.224***	0.227***
	(0.0411)	(0.109)	(0.0567)	(0.160)	(0.0149)	(0.0774)	(0.0721)
Services exporter	0.196***	–0.0165	–0.191***	0.178	0.0744***	0.244***	0.349***
	(0.0325)	(0.0727)	(0.0518)	(0.118)	(0.00981)	(0.0479)	(0.0489)
Goods and services exp.	0.374***	–0.503***	–0.0637	1.286***	0.125***	–0.0748	–0.0149
	(0.0602)	(0.162)	(0.0928)	(0.193)	(0.0107)	(0.0930)	(0.0859)

*Note: ***-significant at 1%. **-significant at 5%. *-significant at 10%. Standard errors are clustered at the firm level. Capital and investment are in real values. Except for foreign ownership, dependent variables are in log. Wage is defined as total payroll over employment. Labor productivity is defined as real value added over employment. Industry refers to 2-digit NACE code. TFP in column (7) has been estimated using the Levinson and Petrin (2003) procedure. Controls are past (t-1) employment. capital. investment. foreign ownership. labor productivity and TPF. Reference group is the non-exporters.*

Source: Own calculations.

Table A 17
Importer characteristics in selected industries

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Employment	Wage	Capital	Investment	Foreign ownership	Labor productivity	TFP
MANUFACTURING							
Goods importer	0.128***	-0.0811***	0.00935	0.710***	0.0394***	0.0910***	0.134***
	(0.00689)	(0.0138)	(0.0102)	(0.0319)	(0.00297)	(0.0115)	(0.0113)
Services importer	-0.114	0.336**	-0.124	-0.353	0.0404	0.648***	0.602***
	(0.106)	(0.151)	(0.116)	(0.616)	(0.0587)	(0.119)	(0.128)
Goods and services imp.	0.191***	-0.220***	-0.121***	1.250***	0.0810***	0.137***	0.274***
	(0.0144)	(0.0286)	(0.0173)	(0.0562)	(0.00567)	(0.0215)	(0.0232)
TRANSPORTATION AND STORAGE							
Goods importer	0.193***	0.0904	0.378***	1.216***	0.0352***	0.101	0.0878
	(0.0485)	(0.0584)	(0.102)	(0.180)	(0.0103)	(0.0743)	(0.0733)
Services importer	0.121***	0.228***	-0.0611**	-0.129	0.0390***	0.222***	0.283***
	(0.0175)	(0.0327)	(0.0282)	(0.0906)	(0.00787)	(0.0266)	(0.0273)
Goods and services imp.	0.195***	-0.0310	0.0179	0.589***	0.0514***	0.187	0.217*
	(0.0313)	(0.0787)	(0.0639)	(0.214)	(0.0199)	(0.122)	(0.117)
INFORMATION AND COMMUNICATION							
Goods importer	0.200***	0.00975	0.352**	0.576**	0.0257	0.232**	0.242**
	(0.0508)	(0.107)	(0.173)	(0.250)	(0.0267)	(0.110)	(0.107)
Services importer	0.0849*	-0.0364	-0.0360	0.477***	0.0701***	0.318***	0.371***
	(0.0504)	(0.0886)	(0.0914)	(0.148)	(0.0216)	(0.0870)	(0.0921)
Goods and services imp.	0.349***	-0.665***	-0.0971*	1.111***	0.0768***	-0.0432	0.260***
	(0.111)	(0.240)	(0.0574)	(0.318)	(0.0274)	(0.142)	(0.0812)
FINANCIAL AND INSURANCE ACTIVITES							
Goods importer	0.165*	-0.135	-0.0239	0.567**	0.0302	-0.0649	0.0908
	(0.0864)	(0.175)	(0.0658)	(0.286)	(0.0216)	(0.172)	(0.174)
Services importer	0.128***	-0.308***	-0.107	0.403*	0.0745***	0.334***	0.563***
	(0.0357)	(0.112)	(0.0872)	(0.212)	(0.0183)	(0.0936)	(0.0947)
Goods and services imp.	0.189**	-0.306	-0.272***	0.0651	0.129***	-0.515***	-0.140**
	(0.0758)	(0.232)	(0.0751)	(0.140)	(0.0147)	(0.0835)	(0.0694)
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES							
Goods importer	0.147***	-0.0870	0.175***	0.994***	0.0412***	0.304***	0.308***
	(0.0262)	(0.0600)	(0.0469)	(0.117)	(0.0139)	(0.0631)	(0.0584)
Services importer	0.185***	-0.00534	-0.214***	0.182	0.0835***	0.282***	0.373***
	(0.0360)	(0.0891)	(0.0635)	(0.133)	(0.0127)	(0.0556)	(0.0566)
Goods and services imp.	0.447***	-0.455***	-0.0156	1.475***	0.123***	-0.119	-0.0403
	(0.0691)	(0.146)	(0.0783)	(0.202)	(0.0125)	(0.0940)	(0.0908)

*Note: ***-significant at 1%. **-significant at 5%. *-significant at 10%. Standard errors are clustered at the firm level. Capital and investment are in real values. Except for foreign ownership, dependent variables are in log. Wage is defined as total payroll over employment. Labor productivity is defined as real value added over employment. Industry refers to 2-digit NACE code. TFP in column (7) has been estimated using the Levinson and Petrin (2003) procedure. Controls are past (t-1) employment. capital. investment. foreign ownership. labor productivity and TPF. Reference group is the non-importers.*

Source: Own calculations.

Table A 18
Exporter characteristics by firm size

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Employment		Wage		Capital		Investment		Foreign ownership		Labor productivity		TFP	
	SME	LARGE	SME	LARGE	SME	LARGE	SME	LARGE	SME	LARGE	SME	LARGE	SME	LARGE
Goods exporter	0.147***	–0.00793	–0.159***	0.0382	0.0197***	0.0569	0.646***	0.110	0.0351***	0.0246***	0.0998***	0.0348	0.151***	0.0176
	(0.00395)	(0.0301)	(0.00844)	(0.0509)	(0.00625)	(0.0412)	(0.0187)	(0.102)	(0.00170)	(0.00937)	(0.00768)	(0.0475)	(0.00740)	(0.0491)
Services exporter	0.134***	0.000621	0.254***	0.279***	–0.0886***	–0.0504	0.125**	0.0678	0.0514***	0.0147	0.314***	0.101	0.361***	0.141*
	(0.0108)	(0.0486)	(0.0229)	(0.0857)	(0.0177)	(0.0687)	(0.0507)	(0.148)	(0.00459)	(0.0152)	(0.0194)	(0.0809)	(0.0194)	(0.0840)
Goods and services exp.	0.132***	0.0646*	0.118***	0.234***	–0.0726**	0.0728	0.734***	0.279**	0.0807***	0.0399***	0.236***	0.143***	0.326***	0.149***
	(0.0217)	(0.0369)	(0.0397)	(0.0574)	(0.0296)	(0.0474)	(0.0950)	(0.113)	(0.00705)	(0.0129)	(0.0409)	(0.0518)	(0.0406)	(0.0537)
Constant	–0.370***	1.342***	4.630***	5.469***	–0.472***	0.913***	1.102***	0.477	0.0770***	0.00548	3.066***	1.887***	2.924***	2.349***
	(0.0501)	(0.252)	(0.124)	(0.236)	(0.0931)	(0.184)	(0.235)	(0.457)	(0.00714)	(0.0420)	(0.0682)	(0.324)	(0.0721)	(0.326)
Industry	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	0.847	0.917	0.239	0.728	0.865	0.963	0.386	0.777	0.781	0.920	0.468	0.916	0.496	0.920
Observations	990,337	3,000	974,873	2,999	973,746	2,996	794,169	2,799	990,337	3,000	931,214	2,973	915,393	2,966

*Note: ***-significant at 1%. **-significant at 5%. *-significant at 10%. Standard errors are clustered at the firm level. Capital and investment are in real values. Except for foreign ownership, dependent variables are in log. Wage is defined as total payroll over employment. Labor productivity is defined as real value added over employment. Industry refers to 2-digit NACE code. TFP in column (7) has been estimated using the Levinson and Petrin (2003) procedure. Controls are past (t-1) employment. capital. investment. foreign ownership. labor productivity and TPF. Reference group is the non-exporters.*

Source: Own calculations.

Table A 19
Importer characteristics by firm size

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Employment		Wage		Capital		Investment		Foreign ownership		Labor productivity		TFP	
	SME	LARGE	SME	LARGE	SME	LARGE	SME	LARGE	SME	LARGE	SME	LARGE	SME	LARGE
Goods importer	0.118***	-0.0512*	0.00499	0.0287	0.0143**	0.0432	0.578***	0.162*	0.0414***	0.0376***	0.191***	0.0213	0.251***	-0.0139
	(0.00335)	(0.0270)	(0.00858)	(0.0431)	(0.00559)	(0.0429)	(0.0165)	(0.0895)	(0.00154)	(0.0115)	(0.00692)	(0.0393)	(0.00664)	(0.0411)
Services importer	0.121***	-0.0239	0.267***	0.236**	-0.0779***	0.0225	0.161***	0.224	0.0565***	0.0633***	0.365***	0.127	0.430***	0.138
	(0.0126)	(0.0543)	(0.0263)	(0.0915)	(0.0214)	(0.115)	(0.0582)	(0.175)	(0.00546)	(0.0197)	(0.0237)	(0.0884)	(0.0238)	(0.0876)
Goods and services imp.	0.158***	0.0396	0.0828***	0.222***	-0.0801***	0.0878	0.901***	0.385***	0.102***	0.0603***	0.261***	0.106**	0.356***	0.102**
	(0.0135)	(0.0373)	(0.0272)	(0.0516)	(0.0178)	(0.0543)	(0.0640)	(0.106)	(0.00459)	(0.0153)	(0.0267)	(0.0488)	(0.0269)	(0.0511)
Constant	-0.397***	1.376***	4.621***	5.495***	-0.471***	0.981***	0.960***	0.653	0.0654***	0.0325	3.020***	1.868***	2.863***	2.339***
	(0.0484)	(0.257)	(0.127)	(0.241)	(0.0931)	(0.196)	(0.247)	(0.473)	(0.00732)	(0.0429)	(0.0716)	(0.328)	(0.0742)	(0.332)
Industry	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	0.847	0.917	0.239	0.725	0.865	0.963	0.386	0.778	0.781	0.921	0.469	0.916	0.497	0.920
Observations	990,337	3,000	974,873	2,999	973,746	2,996	794,169	2,799	990,337	3,000	931,214	2,973	915,393	2,966

*Note: ***-significant at 1%. **-significant at 5%. *-significant at 10%. Standard errors are clustered at the firm level. Capital and investment are in real values. Except for foreign ownership, dependent variables are in log. Wage is defined as total payroll over employment. Labor productivity is defined as real value added over employment. Industry refers to 2-digit NACE code. TFP in column (7) has been estimated using the Levinson and Petrin (2003) procedure. Controls are past (t-1) employment. capital. investment. foreign ownership. labor productivity and TPF. Reference group is the non-importers.*

Source: Own calculations.

Table A 20
Short run dynamics and importer performance

VARIABLES	(1) Employment	(2) Wage	(3) Capital	(4) Investment	(6) Labor productivity	(7) TFP
Entry goods	0.151***	0.201***	0.108***	0.0734	–0.00568	0.0392*
	(0.0126)	(0.0145)	(0.0253)	(0.0734)	(0.0234)	(0.0225)
Exit goods	–0.558***	–1.015***	–0.317***	–0.406	–0.0799	–0.178*
	(0.0897)	(0.154)	(0.0747)	(0.378)	(0.0974)	(0.0946)
Continue goods	0.123***	0.136***	0.0215***	0.0974***	–0.00232	0.0430***
	(0.00330)	(0.00417)	(0.00576)	(0.0145)	(0.00503)	(0.00490)
Entry services	0.126***	0.174***	0.0145	0.126	0.0517	0.0898**
	(0.0202)	(0.0231)	(0.0363)	(0.117)	(0.0417)	(0.0408)
Exit services	–0.0686	–0.174	–0.220**	–0.161	–0.0622	0.00349
	(0.0921)	(0.145)	(0.105)	(0.298)	(0.119)	(0.118)
Continue services	0.135***	0.1000***	–0.0695***	0.0614**	–0.0397***	0.0216*
	(0.00755)	(0.00731)	(0.0116)	(0.0277)	(0.0113)	(0.0112)
Constant	0.0209	0.168***	–0.0929	0.641*	0.482***	0.550***
	(0.0499)	(0.0498)	(0.0778)	(0.354)	(0.0811)	(0.0818)
R-squared	0.032	0.013	0.012	0.008	0.014	0.013
Observations	775,759	759,013	747,774	520,639	695,795	671,159

*Note: ***-significant at 1%. **-significant at 5%. *-significant at 10%. Standard errors are clustered at the firm level. Capital and investment are in real values. Except for foreign ownership, dependent variables are in log. Labor productivity is defined as real value added over employment. TFP in column (7) has been estimated using the Levinson and Petrin (2003) procedure. Industry at 2-digit NACE code and years are contolled for in each regression. Additional controls are past (t-1) employment, capital, investment, foreign ownership, labor productivity and TPF. Change in firm level characteristics on the medium term is for the period Xt+1-Xt, where X is the outcome variable of interest.*

Source: Own calculations.

Table A 21
Medium run dynamics and importer performance

VARIABLES	(1) Employment	(2) Wage	(3) Capital	(4) Investment	(6) Labor productivity	(7) TFP
Entry goods	0.0276	0.0383*	0.0146	–0.0202	0.0126	0.0220
	(0.0175)	(0.0223)	(0.0244)	(0.0512)	(0.0205)	(0.0195)
Exit goods	0.0843***	0.178***	0.0538	0.180	0.0937*	0.122**
	(0.0238)	(0.0561)	(0.0520)	(0.115)	(0.0566)	(0.0584)
Continue goods	0.0528***	0.0617***	0.0242***	0.0345***	0.00380	0.0219***
	(0.00406)	(0.00546)	(0.00558)	(0.0114)	(0.00412)	(0.00424)
Entry services	0.0184	0.0376	–0.0425	–0.0649	–0.0244	–0.00199
	(0.0296)	(0.0267)	(0.0367)	(0.0810)	(0.0281)	(0.0317)
Exit services	0.00233	–0.0965	–0.277	–0.269	–0.0576	–0.0160
	(0.0407)	(0.105)	(0.171)	(0.197)	(0.0788)	(0.0579)
Continue services	0.0679***	0.0663***	–0.0377**	0.0581**	–0.00906	0.0287**
	(0.0128)	(0.0141)	(0.0178)	(0.0255)	(0.0112)	(0.0118)
Constant	0.0398	0.172***	0.0673**	0.177	0.162***	0.197***
	(0.0368)	(0.0563)	(0.0309)	(0.109)	(0.0274)	(0.0276)
R–squared	0.090	0.032	0.030	0.026	0.053	0.050
Observations	249,654	240,511	231,953	161,133	217,712	203,369

*Note: ***-significant at 1%. **-significant at 5%. *-significant at 10%. Standard errors are clustered at the firm level. Capital and investment are in real values. Except for foreign ownership, dependent variables are in log. Labor productivity is defined as real value added over employment. TFP in column (7) has been estimated using the Levinson and Petrin (2003) procedure. Industry at 2-digit NACE code and years are contolled for in each regression. Additional controls are past (t-1) employment, capital, investment, foreign ownership, labor productivity and TPF. Change in firm level characteristics on the medium term is for the period Xt+5-Xt, where X is the outcome variable of interest.*

Source: Own calculations.

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