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TRADE IN SERVICES IN THE BALTIC STATES: EVOLUTION AND FUTURE PROSPECTS

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Abstract. Trade in services in the Baltic States has traditionally been overlooked. The main objective of this article is to assess the current situation and the future prospects of trade in those services used as intermediate inputs using data from the World Input-Output Database. Unlike previous works we do not only analyze direct trade but also indirect trade, that is, the trade in intermediate services contained in goods. The results show that although traditional services reported major shares in the total volume of intermediate services exports in the Baltic States, other categories of more knowledge-intensive services are gaining importance.

Keywords: direct trade, indirect trade, intermediate services, Baltic States, input-output tables.

JEL Classification: C67, F14, O57.

Introduction

In its report entitled "Promoting Trade in Services: Experience of the Baltic States" the OECD (2004: 12) stated that "The Baltic states' experience in developing the service economy and in promoting their trade in services suggests useful lessons for other countries". Goswami *et al.* (2011) have recently surveyed the literature on the explanatory factors for service exports underlying the importance of electronic infrastructure, higher education and institutional environment. As can be noted, many of these factors are closely related to the creation of "real" knowledge-based economies (Melnikas 2008) and more generally to the transition from the efficiency-driven stage to the innovation-driven stage of development. But there are also other determinants such as geography. In words of Hacker and

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Einarsson (2003: 15), the Baltic States are "sandwiched between three major economic areas" and this is a critical advantage.

Most of empirical articles on trade patterns in the Baltic States have focused on trade in goods (Bernatonyte 2012; Bernatonyte, Normantiene 2009; Bruneckiene, Paltanaviciene 2012; Saboniene 2009) while very few studies analyze trade in services (Aidukienė, Kazlauskienė 2012; Langviniene, Sekliuckiene 2012). However, the globalization of value chains has caused many service inputs to be provided on a global basis. As Antràs and Helpman put it in their seminal paper on global sourcing (Antràs, Helpman 2004) one of the expected results of the increasing trade liberalization is the reduction in the costs of foreign sourcing, and as a consequence, the rise in the fraction of firms that import intermediate inputs. This article contributes to the extant literature by providing empirical evidence on the situation and future prospects of trade in intermediate services in the Baltic States. We focus rather than on the whole service sector on the different service industries. Moreover, unlike previous works, we do not only analyze direct trade but also indirect trade, that is, the trade in intermediate services contained in goods. This allows us to capture the incorporation of service content by means of net trade in those services used as intermediate inputs in the production processes.

The article is organized as follows. First, we link our article to the stream of the literature analyzing the role of intermediate services in global value chains and the benefits of growth in trade flows in intermediate services. The second section describes the methodology and presents the data. Then, the third section discusses the empirical results. The final section concludes with the main findings and suggestions for further research.

1. Trade in intermediate services and growth: a review of the literature

The flourishing literature on global value chains highlights the positive impact of changes in internalization patterns over time. Moreover, recent studies on intra-industry trade in goods have shown a dramatic increase in trade in intermediate inputs (Bernatonyte 2012; Bernatonyte, Normantiene 2007; Fainštein, Netšunajev 2011). Although most empirical works have focused on manufacturing, recent studies such as that conducted by Backer and Miroudot (2013) point out that not only the use but also the production of services is becoming global. As a result rising attention has recently being directed towards the role played by trade in intermediate services in domestic growth as many benefits of service liberalization and opening "derive not from seeking better market access abroad, but from the increased competitiveness and efficiency of the domestic market" (Cattaneo *et al.* 2010: 6).

Table 1 shows the role of intermediate services in global value chains and trade patterns. For one part it illustrates the possible sourcing strategy of intermediate services and the related GATS mode[1] and statistical framework to measure. For the other part, it shows how services value added is exported in goods or services.

[1] The GATS distinguishes four modes of supplying services: cross-border supply, consumption abroad, commercial presence and presence of natural persons, which are called modes 1, 2, 3 and four, respectively.

Table 1. The role of intermediate services in global value chains and trade patterns

Service origin	Sector	Sourcing strategy	GATS mode	Statistics	Trade flows
Domestic	Manufacturing	Intermediate services owned by others	Mode 2	Balance of payments	Domestic service content of goods exports
		Domestic sourcing of intermediate services	Mode 3	Foreign affiliates statistics	Domestic service content of goods exports
Foreign		Offshoring of intermediate services	Mode 1	Balance of payments	Imported service content of goods exports
Domestic	Services	Domestic sourcing of intermediate services	Mode 3	Foreign affiliates statistics	Domestic service content of services exports
Foreign		Offshoring of intermediate services	Mode 1	Balance of payments	Imported service content of services exports

Source: Adapted from Lanz and Maurer (2015: 6).

Concerning the sourcing strategy, intermediate services used in the production process of manufacturing firms can come in three different forms: intermediate services owned by others (GATS mode 2, consumption abroad), domestic sourcing (GATS mode 3, commercial presence) and intermediate services offshoring (GATS mode 1, cross-border supply). In the case of the production process of service firms the first option is excluded. In all cases statistical information is obtained from the balance of payments excepting the case of GATS mode 3, where information is obtained from the sales of foreign affiliates. In terms of exports, the development of statistics that capture not only trade but also trade in value added allows to assess the increasing share of services in exports of both goods and services. The availability of harmonized input-output tables can also be a very useful instrument to assess the position of services in production processes and in international trade (Lanz, Maurer 2015).

It is necessary to bear in mind that growth in trade in intermediate services is not just a mere consequence of globalization of value chains but it is expected to generate very positive impacts on the economies. In this line various theoretical works provide support for the positive effect that the use of better intermediate services thanks to liberalization (in particular business services) can have on the rest of industries and, in general, on economic growth (Ethier 1982; Grossman, Helpman 1991; Markusen 1989). Ethier (1982) states that, in general, a country tends to import those products which make more intensive use of its relatively scarce factors although a higher variety of intermediate inputs thanks to trade can result in higher productivity of user industries. In the case of "new member" countries, as many business services are knowledge intensive, their production can be relatively scarce in a first stage and international trade can serve as a vehicle to transfer science and technology. In this sense Grossman and Helpman (1991) note that innovation resulting from technological and knowledge flows from abroad are related to the extent of international

trade. Starting from the work of Ethier (1982), Markusen (1989) develops a model to analyze trade in business services. He concludes that free trade in business services is superior to free trade in goods as domestic and foreign specialized intermediate business services complement in final production. In brief, all these theoretical models sustain that greater openness and liberalization reforms of trade in business services can positively affect productivity of firms, and as a consequence, foster growth.

From an empirical point of view, part of the literature dealing with the positive effects of services liberalization has examined the effects of the World Trade Organization (WTO) accession. Taking as an example one of the most recent accessions, that of the Russian Federation, what recent studies conclude (Camacho *et al.* 2013; Jensen *et al.* 2007; Rutherford, Tarr 2010) is that the major gains from the country's WTO accession will derive from the liberalization of trade in business services as they are classified among the service industries with highest trade potential (Knobel 2012). In addition, not only firms will benefit from the liberalization process: the estimations of Rutherford and Tarr (2008) show that in the medium term Russian households will also benefit from the liberalization of barriers against foreign direct investment in services. Regarding the Baltic States, Estonia and Latvia have been members of the World Trade Organization (WTO) since 1999 and Lithuania since 2001. Moreover, in 2004 they accessed the European Union. Their commitments under the GATS are quite extensive and the obligations imposed by the EU *acquis communautaire* have led to the implementation of a wide range of changes that, in many cases, have been trade-enhancing (Vilpišauskas 2005).

Existing evidence from firm-level data for post-soviet countries confirm the positive role of the liberalization of trade in services on the productivity of manufacturing firms (Arnold *et al.* 2011; Javorcik 2004). Arnold *et al.* (2011) focus on Czech manufacturing firms, finding a positive relationship between foreign investment in services and productivity. Javorcik (2004) estimates the impact of foreign direct investment in services using firm level data for Lithuania, obtaining a positive effect on the productivity of supplier industries. Some studies also find an additional positive effect of export activity on innovation. For instance, Masso and Vahter (2012) find a positive relationship between export growth and process innovation in Estonian service firms.

As was mentioned in the introduction, in this article we examine the situation and future prospects of trade in intermediate services. For doing so we first compare the recent evolution of trade in intermediate goods and in intermediate services. Next, we compute some traditional indicators on international trade which measure, respectively, internal specialization and external comparative advantage in intermediate services. Finally, and given the increasing amount of services embodied in goods, we estimate the service content of net trade in intermediate services in order to compare the intensity in the use of services across countries. The next section describes in more detail the methodology and the data employed.

2. Methodology and data

An indicator commonly used to assess the existence of comparative advantage is the normalized trade balance (NTB). It is computed as the ratio of exports less imports divided by total trade:

$$NTB_i^c = \frac{\left(x_i^c - m_i^c\right)}{\left(x_i^c + m_i^c\right)}, \quad (1)$$

where x_i^c are the exports of intermediate inputs of the service industry i in country c and m_i^c are the imports of intermediate inputs of the service industry i in country c. It ranges between –1 and 1 and can be compared across industries and across countries. A country has a comparative advantage in a particular service industry if the value of the indicator is positive. On the contrary, when the indicator is negative this indicates that a comparative disadvantage exists.

Another widely used method of measuring a country's comparative advantage is to compute the Balassa index of revealed comparative advantage (RCA) (Balassa 1965). It compares the relative share of an industry in the total exports of a country with the relative share of that industry in the exports of the area of reference. In our case the area of reference is the Euro area (EU-17)[2] and the RCA is calculated as follows[3]:

$$RCA_i^c = \frac{\left(x_i^c / X^c\right)}{\left(x_i^{EU17} / X^{EU17}\right)}, \quad (2)$$

where x_i^c are the exports of intermediate inputs of the service industry i in country c, X^c are the total service intermediate inputs exports in country c, x_i^{EU17} are the exports of intermediate inputs of the service industry i in the EU-17 and X^{EU17} are the total service intermediate inputs exports in the EU-17. A value higher than 1 indicates the existence of comparative advantage.

If the NTB is positive, the country specializes in that service industry assuming that it has a comparative advantage in that industry. That is, whereas the NTB estimates the "internal" specialization, the RCA estimates the "external" comparative advantage in the intermediate services exports market.

To better understand the role played by trade in intermediate services in the domestic economies, we estimate indirect trade in services as follows: let TS_t^c be the total service content of net trade in intermediate services in country c in period t. The service content of net trade in intermediate services incorporated in the production system is the sum of the direct (DTS_t^c) and the indirect (ITS_t^c) net trade in intermediate services (Kiyota 2005):

$$TS_t^c = DTS_t^c + ITS_t^c . \quad (3)$$

[2] Latvia entered the Euro area on January 2014. As our data refer to 2011, we use the countries which were members that year (EU-17).

[3] Different works have tried to improve this index (De Benedictis, Tamberi 2001; Laursen 2015; Moenius 2006; Proudman, Redding 2000; Vollrath 1991 or Yu *et al.* 2009). However, given the easy interpretation of its results, we employ the original index elaborated by Balassa (1965).

Direct net trade is obtained as exports minus imports of intermediate services:

$$DTS_t^c = \hat{\alpha} X_t^c - \hat{\alpha} M_t^c . \quad (4)$$

While indirect net trade is obtained as follows:

$$ITS_t^c = (\hat{\alpha} B_t^c \cdot \hat{\beta} X_t^c) - (\hat{\alpha} B_t^c \cdot \hat{\beta} M_t^c), \quad (5)$$

where $\hat{\alpha}$ is a diagonal matrix which takes the value 1 for service industries and 0 otherwise, $\hat{\beta}$ is a diagonal matrix which takes the value 1 for industries other than service industries and 0 otherwise, B_t^c is the Leontief inverse matrix, X_t^c is a column vector of exports and M_t^c is a column vector of imports. To make comparisons across countries we divide the total content of net trade in intermediate services by total service output. This way we can assess whether one country is a more intensive user of services than other.

In this article we employ data from the World Input-Output Database (WIOD) although we also examine some data from the "Trade in Value-Added and Global Value Chains" statistical profiles published by the WTO (WTO 2016). These profiles include insights on the impact of the service industry on trade including trade in intermediate services. The definition applied in the profile combines both "Other business services" and "Information and communication technology (ICT) services" [4]. As for the WIOD, we use the national input-output tables for Estonia, Latvia and Lithuania and part of the world input-output table to construct the table for the Euro area. All tables refer to 2011. The tables were released in November 2013. Availability of input-output tables for the three Baltic States provides a unique opportunity to compare these countries with the Euro area. Countries were asked to supply data which adhered to the third revision of the International Standard Industrial Classification (ISIC, Rev. 3). All the symmetric tables present a square industry-by-industry configuration. A total of 33 industries are covered, 15 out of them service industries.

3. Results

First we examine the evolution of trade in intermediate merchandises and intermediate services in the Baltic States and move subsequently to a more specific analysis of trade in intermediate services by examining its structure and specialization and the total service content of net trade in intermediate services. Table 2 presents the value in billion dollars and the share in total in 2014 as well as the annual percentage change over the period 2005–2014 for trade in intermediate merchandises and services.

As can be seen, the share of intermediate commercial service exports is the most impressive in the case of Estonia, followed by Latvia and Lithuania. It is important to note that in the three countries the annual percentage change over the period 2005–2014 was substantially higher for exports in intermediate commercial services than for exports in

[4] Other business services include: (i) Research and development services, (ii) Professional and management consulting services, and (iii) Technical, trade-related, and other business services.
Information and communications technology (ICT) services cover: (i) Telecommunications services, (ii) Computer services, and (iii) Information services.

Table 2. Evolution of trade in intermediate merchandises and commercial services in the Baltic States, 2005–2014

	2014 (Billion $)	2014 (% in total)	Change 2005–2014 (annual % change)
Estonia			
Merchandise exports in intermediates	7.7	49.3	6.7
Merchandise imports in intermediates	8.5	49.6	6.0
Intermediate commercial service exports	1.8	26.9	14.1
Latvia			
Merchandise exports in intermediates	6.2	49.9	8.7
Merchandise imports in intermediates	5.7	39.5	6.4
Intermediate commercial service exports	1.2	22.8	13.3
Lithuania			
Merchandise exports in intermediates	12.2	45.8	12.7
Merchandise imports in intermediates	12.2	45.7	8.9
Intermediate commercial service exports	0.9	11.2	14.9

Source: WTO (2016).

intermediate merchandises. Again, the higher difference was found in the case of Estonia, where the pace of growth for exports in intermediate services more than doubled the pace of growth for exports in intermediate merchandises. This supports the findings of previous studies that obtain a quite high globalization level for the Baltic States, in particular for Estonia (Pekarskiene, Susniene 2011), and highlight the comparatively higher knowledge-intensity of Estonia in the transition region (EBRD 2012). In contrast, the lowest difference was reported by Lithuania where the difference in growth between intermediate merchandises and intermediate services exports was only of two percentage points. These data are in line with the degree of participation of the different Baltic States in global value chains (GVC): while Estonia and to a lesser extent Latvia show a GVC participation index above the average of the developed economies, the index for Lithuania is below the average (WTO 2016).

Focusing on intermediate services, Table 3 presents the sectoral structure, the NTB and the RCA of trade in intermediate services in the EU-17 and the Baltic States in 2011.

Taking the NTB, the straightforward conclusion is that, in contrast to the Euro area, the Baltic States are not specialized in trade in intermediate services. Two service industries play the leading role in the Euro area: renting of machinery and other business activities and financial intermediation. In contrast, in the Baltic States exports are mainly related to transport and wholesale trade. Auxiliary transport activities was by far the largest exporter service industry in Estonia and Latvia, representing almost 36% and 33%, respectively, of total exports of intermediate services. These percentages are quite similar to that shown by the industry of inland transport in Lithuania that accounted for almost 33% of Lithuanian intermediate services exports in 2011, partly as a result of the advantageous geographical location of the country. In addition to location, the existence of a well-developed transpor-

Table 3. Sectoral structure, normalized trade balance (NTB) and revealed comparative advantage (RCA) for trade in intermediate services in the Euro area and the Baltic States, 2011

Industry	Euro area		Estonia			Latvia			Lithuania		
	Structure	NTB	Structure	NTB	RCA	Structure	NTB	RCA	Structure	NTB	RCA
Sale, maintenance and repair of motor vehicles; retail sale of fuel	0.48	–0.72	0.34	–0.95	0.72	2.47	–0.69	5.19	5.27	–0.53	11.09
Wholesale trade	7.79	–0.10	6.44	–0.75	0.83	14.39	–0.56	1.85	21.52	–0.43	2.76
Retail trade	1.02	–0.63	0.67	–0.96	0.66	4.94	–0.81	4.87	7.49	–0.74	7.38
Hotels and restaurants	1.69	–0.35	0.39	–0.92	0.23	0.16	–0.97	0.09	0.26	–0.95	0.15
Inland transport	6.83	0.17	6.87	–0.58	1.00	22.05	–0.21	3.23	32.66	–0.19	4.78
Water transport	10.64	0.71	9.67	0.50	0.91	2.77	0.48	0.26	2.82	0.04	0.27
Air transport	6.02	0.34	3.24	0.75	0.54	3.05	–0.20	0.51	0.91	0.31	0.15
Other supporting and auxiliary transport activities; activities of travel agencies	6.05	0.09	35.72	0.13	5.90	32.99	0.14	5.45	17.47	–0.21	2.89
Post and telecommunications	3.13	–0.13	4.07	–0.64	1.30	2.42	–0.78	0.77	2.50	–0.78	0.80
Financial intermediation	20.72	0.18	7.13	–0.53	0.34	3.72	–0.85	0.18	0.71	–0.92	0.03
Real estate activities	0.43	–0.77	0.50	–0.99	1.16	1.32	–0.97	3.05	1.38	–0.95	3.19
Renting of machinery and equipment and other business activities	31.90	0.34	22.63	–0.52	0.71	6.63	–0.81	0.21	5.08	–0.78	0.16
Public Administration and defense; compulsory Social Security	0.81	–0.77	1.21	–0.96	1.50	2.79	–0.91	3.45	0.44	–0.98	0.54
Education	0.55	–0.46	0.11	–0.99	0.20	0.06	–1.00	0.12	0.03	–1.00	0.05
Health and social work	0.18	–0.95	0.12	–0.99	0.66	0.01	–1.00	0.06	0.12	–0.99	0.68
Other community, social and personal services	1.77	–0.48	0.91	–0.92	0.52	0.24	–0.99	0.13	1.34	–0.88	0.76
Total services	100	0.04	100	–0.66		100	–0.70		100	–0.66	

Source: Own elaboration from WIOD.

tation infrastructure contributes to the competitiveness of Lithuanian transport firms that, in many cases, are extending the services they offer (Bazaras, Palšaitis 2012). As regards to wholesale trade and retail trade, the importance of these services lies in its channeling role between producers and consumers that greatly affects the prices and the range of goods and services (Arkell 2010). The shares of the exports of wholesale trade intermediates were considerably higher in Lithuania and Latvia compared to the Euro area. In contrast, we have to note the comparatively low share of renting of machinery and other business activities (the industry which comprises most of business services) that represented a relatively minor share in comparison with the EU-17. The only exception is Estonia, where the industry of renting of machinery and other business activities plays a leading role in service exports, accounting for more than 22% of total intermediate services exports.

Comparisons of the NTB and the RCA indices in the different industries draw interesting conclusions. There is only one service industry in which the Baltic States (with the exception of Lithuania) are specialized: auxiliary transport activities. There are some industries where the value of the RCA is higher than 1 but the trade balance is negative. This indicates that the country has a strong position in the Euro area for these service industries although it does not have an "internal" comparative advantage, that is, the volume of imports is superior to the volume of exports. This is the case of inland transport and real estate activities in the three countries; sale, maintenance and repair of motor vehicles and retail sale of fuel and retail trade in Latvia and in Lithuania; or public administration and defense and compulsory Social Security in Estonia and Latvia. As regards to water transport, it is necessary to note that the three countries show positive trade balances in 2011. The same happens with the industry of air transport in Estonia and Lithuania.

To analyze the service content of net trade in intermediate services we estimate Eq. (5). Table 4 presents the results.

As can be observed, the service content of net trade was in surplus in both the Euro area and the three Baltic States. As Kiyota (2005) notes, this is explained by the fact that indirect trade in services in considerably larger than direct trade in services because of the high volume of trade in services embodied in goods. Owing to its overwhelming role, renting of machinery and other business activities was the industry with the highest contribution to the service content of net trade in the Euro area, more than doubling the contribution of the second highest contributor, water transport. This confirms the importance that trade in these services has in the production system of any economy. They can serve as vehicles to diffuse knowledge and innovation as they are inputs in the production process of many activities (Francois, Hoekman 2010). Moreover, as Francois and Woerz (2008) note, there is a direct relationship between greater openness in business services and better export performance of skill and technology intensive industries. It calls one attention the fact that the second highest positive contribution in Estonia was that of the industry of renting of machinery and other business activities. A recent study carried out by Masso and Vather (2012) concludes that, although knowledge-intensive services (KIS) spend more on research and development (R&D) the efficiency of turning R&D expenditures into innovation are higher in less knowledge-intensive sectors. The use of net exports of business services by a wide range of industries in the Estonian production system can be a possible

explanation for its comparatively high efficiency in the development of innovations, in combination with other factors like the liberal market-based model chosen for its economic restructuring (Karo 2011).

Again, it is necessary to highlight the major role played by those industries related to transport in the Baltic States. The industry of auxiliary transport activities reported the highest positive contribution both in Latvia and Estonia. In Lithuania the first position was held by inland transport. The greatest negative contributions in all cases were shown by industries related to public services, in particular health and social work; public administration and defence and compulsory Social Security and other community, social and personal services (see Table 4). It is necessary to note, however, the differential behavior shown by the industry of retail trade: while it was the third highest ranking industry in terms of negative content in the Euro area, the negative contribution was much more modest in Estonia, turning into positive when it comes to Latvia, and, in particular, Lithuania.

Finally, Table 5 reports the service content ratio for the different service activities, defined as the total service content of net trade in intermediate services divided by domestic production.

Table 4. Service content of net trade in intermediate services in the Euro area and the Baltic States, 2011 (million US$)

Industry	Euro area	Estonia	Latvia	Lithuania
Sale, maintenance and repair of motor vehicles; retail sale of fuel	–15,149	–44	14	130
Wholesale trade	–7,258	58	270	722
Retail trade	–19,820	–6	64	219
Hotels and restaurants	–11,013	–61	–43	–31
Inland transport	13,386	–60	329	1,250
Water transport	55,296	113	83	127
Air transport	19,504	54	–6	7
Other supporting and auxiliary transport activities; activities of travel agencies	4,927	616	978	584
Post and telecommunications	–5,214	16	–20	17
Financial intermediation	38,863	131	7	–106
Real estate activities	–17,080	–66	–182	–111
Renting of machinery and equipment and other business activities	111,322	345	–103	64
Public Administration and defense; compulsory Social Security	–35,395	–127	–48	–173
Education	–5,500	–68	–51	–43
Health and social work	–43,980	–168	–150	–178
Other community, social and personal services	–19,531	–99	–170	–121
Total services	63,359	633	973	2,358

Source: Own elaboration from WIOD.

Table 5. Service content ranking in the Euro area and the Baltic States, 2011

Industry	Euro area		Estonia		Latvia		Lithuania	
	Ratio	Ranking	Ratio	Ranking	Ratio	Ranking	Ratio	Ranking
Sale, maintenance and repair of motor vehicles; retail sale of fuel	–0.038	16	–0.062	13	0.017	6	0.092	5
Wholesale trade	–0.006	7	0.025	6	0.081	4	0.152	4
Retail trade	–0.023	12	–0.004	8	0.025	5	0.063	6
Hotels and restaurants	–0.015	11	–0.085	15	–0.059	14	–0.038	12
Inland transport	0.023	5	–0.033	10	0.122	3	0.292	2
Water transport	0.456	1	0.170	3	0.674	1	0.539	1
Air transport	0.144	2	0.404	1	–0.011	8	0.033	7
Other supporting and auxiliary transport activities; activities of travel agencies	0.010	6	0.228	2	0.553	2	0.212	3
Post and telecommunications	–0.011	10	0.014	7	–0.014	9	0.012	9
Financial intermediation	0.030	4	0.105	4	0.003	7	–0.064	15
Real estate activities	–0.010	9	–0.023	9	–0.033	13	–0.026	11
Renting of machinery and equipment and other business activities	0.045	3	0.096	5	–0.025	11	0.018	8
Public Administration and defense; compulsory Social Security	–0.030	14	–0.056	12	–0.015	10	–0.043	13
Education	–0.007	8	–0.047	11	–0.028	12	–0.015	10
Health and social work	–0.034	15	–0.128	16	–0.115	16	–0.074	16
Other community, social and personal services	–0.023	13	–0.076	14	–0.072	15	-0.057	14

Source: Own elaboration from WIOD.

The industry of water transport reported the first position in the Euro area, Latvia and Lithuania. In the case of Estonia the first position was shown by the air transport industry. If we descend into the ranking we can appreciate how the industries that ranked higher were almost identical in the Euro area and Estonia while the same happens with the ranking of Latvia and Lithuania. Thus, in these two Baltic States the four highest ranking industries in terms of transmission of service content by means of net trade in intermediate services were the same: water transport; inland transport; auxiliary transport activities and wholesale trade. Concerning the Euro area and Estonia, along with those industries related to transport, it is necessary to note the contribution of the industries of financial intermediation and renting of machinery and other business activities. As was noted before,

this latter industry comprises business services, and, in particular, most of knowledge-intensive services, which have a strategic importance in the production system of advanced countries.

Turning to those industries with negative contributions, the picture does not change too much in the Euro area when we take into consideration the size of the industries: those industries related to public services continued to rank high in terms of negative content per unit of production. However, some differences have to be highlighted in the case of the Baltic States. In particular we have to note the negative contribution of the industry of financial intermediation in Lithuania.

Conclusions

The globalization of intermediate services has risen considerably over the last decades as a result of the combination of two trends: for one part, the fact that firms can source the service they use in their production processes either from the domestic economy or from abroad, and, for the part, that intermediate services can be produced inside the own firm or at arm's length.

In this exploratory article we have examined, for the first time, the situation of trade in intermediate services in the Baltic States. A first look at the recent evolution of trade flows in intermediate merchandises and intermediate services confirmed that the behavior of trade in intermediate services has been much more dynamic than that of trade in merchandises. Focusing on trade in intermediate services, the comparison of sectoral structures, in combination with RCAs and NTBs, has revealed that, overall, the Baltic States are specialized in the provision of intermediate services related to transport and that the share of wholesale trade intermediate services was substantially higher in Latvia and Lithuania compared to Estonia or the Euro area. In contrast, a comparatively low share of intermediate financial services exports in the Baltic States and, more importantly, of intermediate business services in Latvia and Lithuania, was found.

The computation of the service content of net trade in intermediate services provides an example of the key role that business services can play in the production processes: in Estonia the industry of renting of machinery and other business activities ranked second in terms of service content diffused through net trade in intermediate services and in the Euro area it ranked first. At the opposite end of the scale we find Latvia where the contribution was negative. As it was found in the analysis of the sectoral structure of exports in intermediate services, auxiliary transport activities and inland transport were also the top diffusers of service content in global terms in Lithuania.

As was noted in the introduction, the growth of trade in intermediate services is closely linked to the development of the so-called knowledge-based economy. Among the different service activities the group of business services deserves special mention as they can act as vehicles for accessing new knowledge, fostering innovation and improving productivity. Although some common patterns have been depicted for the Baltic States, there are also substantial differences among them. In particular Estonia seems to have reached a more advanced position as intermediate services provider than Latvia and, especially, Lithuania.

Various factors can help to explain these differences, for instance the fact that there is direct relationship between the level of participation in global value chains and the importance of trade in knowledge intensive intermediate services.

The contribution of this article is twofold. First, the analysis of the recent evolution of trade in intermediate inputs emphasizes the need for a better understanding of the factors that affect the attraction for the production and trade in intermediate services. Second, and accepting that the contribution of services to production and trade will continue to increase in the coming years, policies aimed at promoting growth may well extend beyond manufacturing to include services, and in particular knowledge-intensive intermediate services.

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