

Analysing the dynamics of the Baltic States's production linkages with Russia

Varnavskii, Vladimir G.

Veröffentlichungsversion / Published Version

Zeitschriftenartikel / journal article

Empfohlene Zitierung / Suggested Citation:

Varnavskii, V. G. (2022). Analysing the dynamics of the Baltic States's production linkages with Russia. *Baltic Region*, 14(2), 4-22. <https://doi.org/10.5922/2079-8555-2022-2-1>

Nutzungsbedingungen:

Dieser Text wird unter einer CC BY Lizenz (Namensnennung) zur Verfügung gestellt. Nähere Auskünfte zu den CC-Lizenzen finden Sie hier:

<https://creativecommons.org/licenses/by/4.0/deed.de>

Terms of use:

This document is made available under a CC BY Licence (Attribution). For more information see:

<https://creativecommons.org/licenses/by/4.0>

RUSSIA AND ITS REGION IN THE BALTIC REGION

ANALYSING THE DYNAMICS OF THE BALTIC STATES'S PRODUCTION LINKAGES WITH RUSSIA

V. G. Varnavskii

V. A. Trapeznikov Institute of Control Sciences
of the Russian Academy of Sciences
65 Profsoyuznaya St., Moscow, 117997, Russia

Received 23.09.2021
doi: 10.5922/2079-8555-2022-2-1
© Varnavskii, V. G., 2022

Russia and the Baltic States have a long-standing relationship of industrial specialisation, cooperation, division of labour and trade exchange, all dating back to the Soviet Union. Today, this relationship is facing a tough test amid political and ideological challenges and risks. The last two years have seen a profound and large-scale crisis caused by the global COVID-19 pandemic. Overall, the production linkages between Russia and the Baltic States have adapted in response to the existing problems, remaining resistant to the geopolitical and pandemic shocks. This article examines the production linkages between Russia and the Baltic countries, investigating the export-import flows of consumer and intermediate goods in 2003–2020. A comparative study of the Baltic States' production linkages with Russia and their main partners in the EU — Germany and Finland — is carried out. It is concluded that, before the introduction of sanctions in 2014 and the world trade crisis of 2015–2016, Russia was a more promising market than Germany and Finland for the Baltic States' companies trading in intermediate goods.

Keywords:

production linkages, Baltic States, Russia, Germany, Finland, export, import, intermediate goods

Introduction

While Russia and the Baltic states have been developing rather tense political relations over the recent years, thanks to several factors, production and trade linkages between numerous economic entities on both sides remain stable and mutually beneficial. First, it was not so long ago (from a historical perspective) that all the countries in question were part of the same whole, the Soviet Union. Second, political concerns and even sanctions are often inferior to the pragmatics of profit, economic expediency and the need to maintain economic growth in conditions of intensified competition, rising global economic crises and increasing

To cite this article: Varnavskii, V.G. 2022. Analysing the dynamics of the Baltic States's production linkages with Russia, *Balt. Reg.*, Vol. 14, no 2, p. 4–22. doi: 10.5922/2079-8555-2022-2-1.

uncertainty of development prospects. Third, Russian companies and their peers from the Baltic states have a perfect operational understanding of their business environment, so they strive to keep mutually beneficial production linkages and remain important bilateral trade partners even though their respective countries may experience political disagreements or discord in mutual relations. This applies to ensuring the sustainability of established production relations, supply chains (SC), and global value chains (GVC) where Russia and the Baltic states serve as important links.

This paper aims to analyze the dynamics of production linkages between Russia and the Baltic states between 2003 and 2020 by using comparable data on bilateral trade in intermediate goods and to conduct a comparative study of the aforementioned linkages between the Baltic states and their most prolific intermediate goods import-export partners, Germany and Finland. Thus, in 2020 intermediate goods trade turnover between Estonia and Finland amounted to \$2,414 million (with Germany as a runner-up with \$1,283 million); the same indicator between Latvia and Germany reached \$1,382 million (for Latvia and Poland, \$944 million); and \$2,858 million between Lithuania and Germany (\$2,796 million for Lithuania and Poland)¹. Adding more countries to the analysis would not affect the results in any significant way, and, given wordcount restrictions, would only detract from a detailed cross-country comparison.

The study confirms the hypothesis that since the moment the Baltic states ascended to the EU and up until the introduction of sanctions against Russia, our country presented a much more perspective intermediate goods export market for the Baltic states than Germany or Finland. Sanctions and the world trade slowdown of 2015–2016 hampered the expansion of production linkages between Russia and the Baltic states. In 2017 the situation started to recover; and, while not straightforward, the general trend is that of progressive development.

State of Research

Over the last decade, analysis of international production linkages based on the data on intermediate goods trade has become an important feature of academic, applied and statistical research. Such studies are needed to assess the level of industrial cooperation; to determine priority areas for boosting competitiveness of industrial sectors, activities or manufacturing initiatives; and to develop measures ensuring sustainable growth of trade and access to new resources, primarily to innovations and investments. It is thus significant that the Organisation of Economic Cooperation and Development (OECD) specifies intermediate goods as a statistical category in both imports and exports sections of its BTDIXE Bilateral Trade in Goods by Industry and End-use, ISIC Rev. 4 dataset².

¹ Calculated on the basis of the OECD statistics, URL: <https://stats.oecd.org/Index.aspx?DataSetCode=BTDIXE> (accessed 22.09.2021).

² STAN Bilateral Trade Database by Industry and End-use category, 2012, *OECD Statistics*, URL: <https://stats.oecd.org/Index.aspx?DataSetCode=BTDIXE> (accessed 22.09.2021).

At the end of the 1990s, at the peak of globalization, in-depth studies on the role of intermediate goods in international trade and economic development picked up. At the time, the global economy saw a rapid increase in transborder flows of goods and services, and bilateral trade expansion was significantly (roughly 2.1–2.3 times³) more intensive than the growth of the global gross domestic product (GDP) [1, p. 53]. Thus, the need arose to calculate import-export flows not only by gross value, as it had been traditionally done, but also by the value-added. One result of this situation was a sharp increase in the volume, quality and depth of economic research on the topics specified above, as well as advances in relevant scientific and methodological approaches.

Since then, several terms and concepts that characterize different aspects of the international division of production and evaluate international trade by value-added have been introduced to the economic discourse: *international fragmentation of production*, *global value chains*, *vertical specialization*, *trade in value-added*, *trade in operations* (functions, tasks), etc. (see, for example [2–10] and major methodological papers published by international organisations⁴).

As the Baltic states became more integrated into the global economy after joining the EU, they triggered the emergence of studies into their role and place in global value chains (GVCs) [11–14]. Some major studies analyze intermediate goods, among other things. Thus, one study uses the example of Latvia to demonstrate how a more active participation of hi-tech manufacturing in GVCs creates possibilities for faster output growth thanks to intensified use of intermediate imports [15, p. 10].

Another study shows that Latvian companies starting to export intermediate goods or knowledge-intensive services have significantly bigger performance gains than those exporting final goods or transportation services [16, p. 27].

With the COVID-19 pandemic, the number of papers dedicated to GVCs skyrocketed⁵, papers analyzing the Baltic states being no exception to this trend (see, for example: [18; 19]). This analysis relies on the data on volumes of international intermediate goods trade and confirms some previously made conclusions; specifically, it shows that neither the Baltic states' accession to the EU nor the sanctions imposed against Russia in 2014 have led to "value chain shrinkage between Russia and the Baltic states" [19, p. 128].

Method

Imports and exports play different roles in economic reproduction. The same value of imported goods can bring about different economic effects depending on the category and type of imports as well as on their place in the reproduction cycle.

³ Author's estimate.

⁴ Trade in Value-Added: Concepts, Methodologies and Challenges (Joint OECD-WTO Note). OECD and WTO, 2012, *OECD*, URL: <https://www.oecd.org/sti/ind/49894138.pdf> (accessed 22.09.2021); Measuring and Analyzing the Impact of GVCs on Economic Development, 2017, *World Bank*, URL: https://www.wto.org/english/res_e/booksp_e/gvcs_report_2017.pdf (accessed 22.09.2021).

⁵ See, for example, a 2021 WTO paper on the subject listing more than 130 sources [17].

Thus, goods supplied through international trade can go directly to final consumers. In this case, there is no added value, and the total effect of such imports may not be so significant in terms of economic reproduction.

However, if the imported goods are intermediate, that is, if they are to be further processed by the importing country, they become a part of the reproduction cycle. Such goods have a much greater positive impact on the economy by adding value and creating jobs. At the same time, intermediate imports are also an important factor in joining GVCs and introducing new technologies. Value-added products may: a) go to final consumption in the importing country; b) be exported to third countries as part of the GVCs; and c) return to the country of origin with value-added.

International trade of intermediate goods and *global value chains* are methodologically similar concepts since import-export flows of intermediate products are formed within global, regional, bi- and multilateral supply chains. The joint OECD-WTO report on global value chain development states that “GVCs’ are basically ‘trade in intermediate products”⁶.

However, nobody really trades in value-added; goods are traded at the price formed by the market, and the market equilibrium of supply and demand is determined by gross value. At the same time, calculating international flows of goods and services in value-added remains a useful tool for economic analysis, reproduction cycle research and trade policy development. The emergence of a new methodological approach to evaluating and studying international trade in value-added, Trade in Value Added, or TiVA, does not take away from the importance of traditional gross value indicators for economic analysis, policy-making and international cooperation.

The term *global value chains*, or GVCs, also requires some clarification. The word “global” here is a hyperbole, an exaggeration, in other words, a trope. Globalization, by definition, requires participation of the entire world, so a value chain can only be truly global if it involves, in its production linkage, all the world’s countries. Such value chains simply do not exist. Typically, a value chain for a particular product consists of only a few links (i.e., countries). Dozens of publications cite the example of Apple iPod, which boasts six countries participating in its production: the USA, China, Japan, the Republic of Korea, Singapore and Taiwan [20, p. 6]. This is a lot: an average value chain, depending on the sector, of course, will only include two or three countries [21, p. 9, Fig. 4]. Such low-level fragmentation of production is optimal for most goods manufactured at the current stage of economic development and globalization. It is also highly unlikely that a value chain with links in 200 countries can be at all efficient. Thus, each value chain is localized, but together they produce a global value-added network. The concept of *global value chains* should be understood in this context, in our opinion (see [22] for more details).

⁶ *Global Value Chain Development Report 2019: Technological Innovation, Supply Chain Trade, and Workers in a Globalized World (English)*, 2019. Washington, D. C., World Bank Group. P. 42. URL: <https://www.worldbank.org/en/topic/trade/publication/global-value-chain-development-report-2019> (accessed 22.09.2021).

This paper relies on the country's Index of Production Participation (proposed by the author). This indicator represents the share of intermediates in a country's total commodity exports and is calculated by the formula:

$$I_t = P_t/E_t \cdot 100, \quad (1)$$

where I is the index of production participation; P is the volume of intermediate exports, E is the value of exports, and t is years.

This indicator is used to analyze GVCs by OECD, European Central Bank (ECB) and other international organisations (see, for example, [23, p. 13]).

When making calculations with the formula (1) specified above, we must also make sure that the initial statistical data is correct; this methodological issue is of principle importance for the current study. The problem is that official country-issued statistics for any two countries will differ in their reporting on bilateral import and export flows⁷. In other words, exports from country A to country B (as reported by country A) will differ from imports to country B from country A (as reported by country B), often by several orders of magnitude⁸. This is particularly true for statistics on trade flows between Russia and the Baltic states.

To minimize calculation errors, all the data were cross-referenced with comparable OECD statistics, including data for Russia. OECD, WIOD, Rosstat and other databases were used in the preparation of this article.

The OECD database (OECD DB), BTDixE Bilateral Trade in Goods by Industry and End-use, ISIC Rev. 4, was used as a source for country-level statistics on bilateral imports and exports, including that of intermediate goods.

The World Input-Output Database, WIOD⁹, was commissioned by the EC and developed by a consortium of 11 European universities and research centres. It covers 56 industrial sectors, 43 countries (28 EU member states, 15 non-EU countries, including Russia, and "the rest of the world", for balance), and a time period from 2000 to 2014. In this study, dynamic series of output, imports and exports of both intermediate and final goods are used for calculations. The WIOD database is quite often used for other economic calculations (see, for example: [25; 26]).

The Russian Statistical Yearbook (by Rosstat) and reviews of Russian foreign trade published by russian-trade.com based on the data provided by the Federal Customs Service of Russia were used as the sources of information on Russia's foreign trade flows and their sectoral structure.

⁷ For more, see, for example: Statistical Insights: Merchandise trade statistics without asymmetries, 2017, *OECD*, URL: <https://www.oecd.org/sdd/its/statistical-insights-merchandise-trade-statistics-without-asymmetries.htm> (accessed 22.09.2022).

⁸ The reasons behind this phenomenon are detailed in [24].

⁹ World Input-Output Database: Intercountry Input-Output Table 2014, 2014, *World Input-Output Database*, URL: <http://www.wiod.org/database/wiots16> (accessed 22.09.2022).

Results

Since the accession of the Baltic states to the EU, two stages can be distinguished in the dynamics of their production linkages with Russia: before and after the introduction of sanctions against our country in 2014. The first stage, spanning from 2004 to 2013, is characterized by accelerated growth of trade in intermediate goods compared with Germany and Finland, the main trading partners of the Baltic countries. The second stage, which started in 2014, showed a slight decline in export-import flows of intermediates in 2014, followed by a serious drop in 2015–2016, prompted by the synergy of the world trade slowdown and the sanctions. In 2017–2020, production linkages between the Baltic states and Russia were gradually recovering from the turmoil, and there was even a prospect of reaching the level of the early 2010s in some areas (e.g., exports from Lithuania to Russia).

Exports

Joining the EU gave a powerful impetus to the economic development of the Baltic states; it opened new channels of free trade with other members of the Union and boosted trade with Russia. Commodity export was doing particularly well in terms of growth pace (Fig. 1).

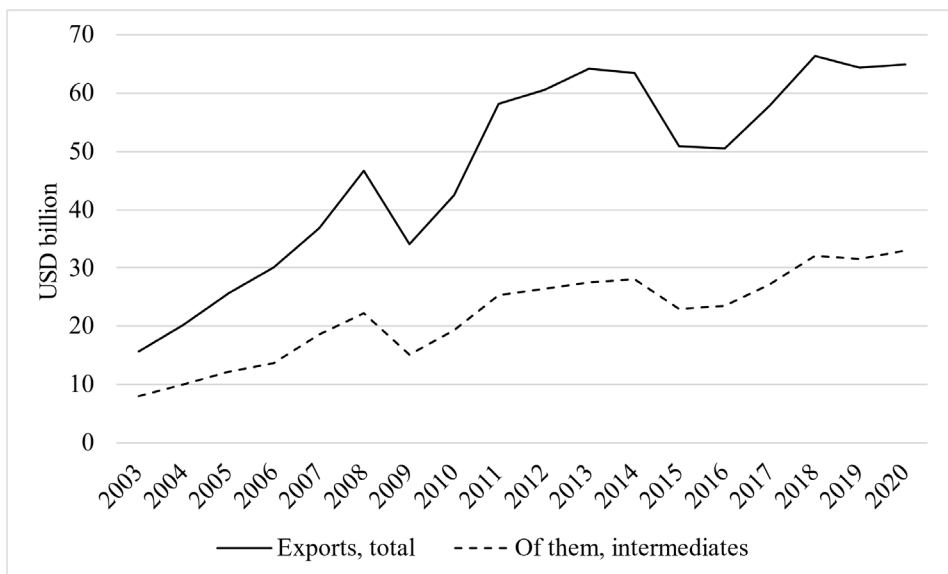


Fig. 1. Dynamics of exports of goods of the Baltic states, including intermediates, USD billion, current prices

Source: compiled by the author on the basis of OECD DB.

Exports were growing at an unprecedented rate: from 2003 to 2008, annual commodity exports from the Baltic states almost tripled, having risen from \$15.7 billion to \$46.8 billion, while exports of intermediate goods more than doubled, going from \$8 billion to \$22.2 billion. Annual exports from the whole group of countries were growing at a double-digit rate, and amounted, in % to each preceding year, to 28.9 for 2004; 26.8 for 2005; 17.4 for 2006; 22.4 for 2007; and 27.1 for 2008. The indicators of exports of intermediate products displayed the same trend, with the following growth rate, in % to each preceding year: 25.1 for 2004; 21.8 for 2005; 12.2 for 2006; 35.5 for 2007; and 19.9 for 2008.

That was the period when Russia *de facto* reopened its market for intermediate goods from the Baltic states. The rate of annual growth of the Baltic states' exports to the Russian market exceeded all other macroeconomic indicators of these countries, including those of general economic development, industrial output, and foreign trade. As a result, from 2003 to 2008, the flow of intermediate products into the Russian market increased 2.7-fold for Estonia, almost 7-fold for Latvia and 4.3-fold for Lithuania (Table 1)¹⁰.

Table 1

**Exports of intermediates from the Baltic states to Russia, Germany and Finland,
USD million, current prices, 2003–2013**

Country	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Commodity exports to Russia											
Estonia	351	354	347	480	684	954	743	936	1283	1453	1467
Latvia	60	131	194	221	334	411	292	363	456	454	468
Lithuania	277	409	629	636	894	1192	806	1076	1451	1705	1961
<i>Total</i>	688	893	1170	1337	1912	2557	1841	2375	3191	3611	3896
Share of exports to Russia in all commodity exports from the Baltic states, including intermediates, %											
Exports to Russia, total	9.7	9.5	10.3	11.0	12.8	14.5	13.5	14.3	15.1	16.9	17.6
Of them, intermediates	8.6	8.9	9.6	9.8	10.3	11.5	12.1	12.3	12.6	13.6	14.1
Exports to Germany											
Estonia	327	332	248	250	305	305	283	364	460	412	411
Latvia	291	269	278	326	404	391	356	515	611	588	543
Lithuania	358	405	441	521	859	1000	777	1008	1199	1204	1140
<i>Total</i>	976	1005	967	1096	1568	1696	1415	1887	2271	2203	2094
Exports to Finland											
Estonia	617	718	833	877	1071	1239	762	987	1286	1077	1091
Latvia	53	78	104	120	232	271	145	223	276	246	219
Lithuania	41	28	41	47	114	176	119	113	182	182	228
<i>Total</i>	711	824	978	1045	1416	1686	1026	1323	1744	1505	1538

Source: calculated on the basis of OECD DB.

¹⁰ In Table 1, data for Finland and Germany are provided for the purposes of comparative analysis.

The 2008–2009 global financial crisis brought about a short-lived decrease in intermediate goods exports from the Baltic states to Russia, followed by a swift bounce-back to pre-crisis indicators. Thus, the crisis did not reverse the general trend that characterized the Baltic states' presence in the EU: that of extreme growth of exports of intermediates to Russia. Thus, between 2003 and 2013, the volume of exports under discussion increased 4.2-fold for Estonia; 7.8-fold for Latvia; and 7.1-fold for Lithuania.

Table 1 shows that the growth of exports from the Baltic countries to Germany was significantly slower than that to the Russian Federation: thus, in 2003–2013, the volume of exports in intermediates from Estonia to Germany grew 1.3 times, from Latvia — 1.9 times, and from Lithuania — 3.2 times. Similar dynamics was characteristic for exports to Finland in the reported period: 1.8-fold growth for Estonian exports, 4.1-fold for Latvian and 5.6-fold for Lithuanian.

Thus, in 2003–2013, the vector of exports in intermediate goods from the Baltic states was mainly directed towards Russia: over the entire period under discussion our country represented a market that was 2 to 3 times more perspective for the Baltic states than that of Germany or Finland.

Exceeding growth of production linkages in 2003–2013 significantly increased the Russian share in the gross commodity exports from the Baltic states, including exports in intermediates (see Table 1). While in 2004 Russia accounted for only 9.5 % of all commodity exports, and for 8.9 % of intermediates exports, in 2013 the Russian share grew to 17.6 % and 14.1 %, respectively.

These trends are largely substantiated by our calculations based on the WIOD DB (Table 2).

Table 2

**Growth of macroeconomic and international trade indicators
in the Baltic states in 2003–2013, times**

Country	GDP	Gross output (WIOD)*	Commodity exports to Russia		
			OECD DB		Intermediate exports (WIOD)
			Total	Of them, intermediates	
Estonia	2.1	2.7	5.1	4.2	7.3
Lithuania	2	2.7	10.0	7.8	3.4
Latvia	1.9	2.8	8.9	7.1	7.9

Note: *WIOD for 2014.

Source: calculated by the author on the basis of OECD DB, WIOD.

Table 2 shows that after the Baltic states joined the EU and until 2013, their GDP, on average (depending on the calculation method), doubled, while their gross output increased around 2.7–2.8 times. The export of intermediate goods from Estonia to Russia saw a 4-to-7-fold increase, Latvian exports grew 3 to 8 times, and Lithuanian — 7 to 8 times.

Since 2014, trade dynamics between the countries under consideration changed dramatically. Sectoral sanctions introduced against Russia in July 2014 together with countermeasures implemented by our country hampered bilateral trade flows. Although suffering less than imports, overall, the Baltic states' exports to Russia stagnated, with each country showing its own trend: Estonian exports shrunk by 25 %, Latvian — by 6.8 %, while Lithuanian export flows increased by 10.5 % (Table 3).

Table 3

**Exports of intermediates from the Baltic states to Russia, Germany and Finland,
USD million, current prices, 2013–2020**

Country	2013	2014	2015	2016	2017	2018	2019	2020
Exports to Russia								
Estonia	1467	1100	681	617	813	768	713	750
Latvia	468	436	297	288	358	384	364	391
Lithuania	1961	2370	1307	1402	1728	1993	2099	1950
<i>Total</i>	3896	3905	2286	2307	2900	3145	3176	3091
Exports to Germany								
Estonia	411	442	367	393	444	480	472	473
Latvia	543	571	472	531	585	605	550	644
Lithuania	1140	1088	886	848	934	1065	1089	1266
<i>Total</i>	2094	2101	1726	1771	1963	2151	2112	2383
Exports to Finland								
Estonia	1091	1050	886	974	1101	1324	1238	1329
Latvia	219	168	120	116	131	206	205	194
Lithuania	228	227	210	210	232	281	274	302
<i>Total</i>	1538	1445	1216	1299	1463	1812	1717	1826

Source: calculated by the author on the basis of OECD DB.

In 2015, total exports of intermediate goods from the Baltic states to Russia dropped by 41.5 % compared to the preceding year. Sanctions were to blame, as well as a significant global trade decline. As Table 3 shows, export flows to Germany and Finland also dwindled in 2015, shrinking by 17.9 % and 15.9 %, respectively.

The years 2015–2016 brought about a global slowdown in commodities trade, which resulted in a 13.2 % decline in global exports (from \$19.0 billion in 2014 to \$16.6 billion) in 2015, and in 15.8 % decline (to \$16.1 billion) in 2016, as compared to 2014¹¹. Experts believe that the drop in prices of oil and other mineral fuels and raw materials was responsible for the crisis (see, for example: [27–31]). However, there were other reasons, such as: slower economic growth; sluggish increase in global investment; a slowdown in Chinese economic

¹¹ *The World Trade Organisation (WTO)*, 2022, URL: <https://data.wto.org/> (accessed 22.09.2022).

development; increased protectionism; shrinking volume of global trade in intermediates within GVCs; decreasing demand for imported goods in developing countries; and so on¹².

This sharp decrease in global markets became the chief factor that influenced the decline in bilateral trade between the Baltic states and Russia in that period. Further on, in 2017–2019, total exports from the Baltic states to Russia steadily increased, having led to a 37.7% growth in commodities export against the crisis-ridden 2016, which was indicative of recovering production linkage.

The COVID-19 pandemic and global recession of 2020 had practically no effect on intermediate exports from the Baltic states to Russia: Estonia and Latvia slightly increased such exports to our country, while Lithuanian indicators went down (Table 3).

Imports

Overall, in terms of intermediate imports, the development of production linkages with Russia displayed similar trends for all Baltic states, although there were some country-specific features. In 2003–2013, it was true for all the countries under consideration that their commodities imports from Russia, including incoming trade in intermediates, had a slower growth pace than exports to our country. The gains in intermediate imports were different: for Estonia, the growth was 2-fold, for Latvia, 3.2-fold, and for Lithuania, 4.8-fold (Table 4).

Table 4

Commodity imports and imports of intermediates from Russia to the Baltic states, USD million, current prices, 2003–2013

Country	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total commodity imports											
Estonia	808	1099	1298	2368	2019	1753	1170	1382	2133	2330	1873
Latvia	455	680	781	894	1275	1679	1003	1115	1318	1513	1405
Lithuania	2160	2854	4323	4701	4401	9406	5482	7637	10185	10401	9784
<i>Total</i>	3423	4633	6402	7963	7695	12838	7655	10134	13636	14244	13062
Of them, intermediate goods											
Estonia	506	701	705	826	1002	936	560	640	824	931	1023
Latvia	390	557	565	733	1017	1352	825	939	1122	1364	1262
Lithuania	1977	2675	4146	4452	3669	8907	5306	7374	9978	10160	9474
<i>Total</i>	2873	3933	5416	6011	5688	11195	6691	8953	11924	12455	11759

Source: calculated by the author on the basis of OECD DB.

¹² See, for example: [1, p. 133; 2, p. 15]; *Economic Report of the President*, 2017, Washington, D.C. The White House, January 2017, URL: http://www.presidency.ucsb.edu/economic_reports/2017.pdf (accessed 22.09.2022). *Global Economic Prospects*, 2016, January, Spillovers amid Weak Growth, World Bank. Washington, DC, URL: <https://openknowledge.worldbank.org/handle/10986/23435> (accessed 22.09.2022).

On the one hand, higher growth rate demonstrated by Lithuania can be explained by substantial deliveries of Russian oil to the only oil refinery in the Baltic states located in the city Mažeikiai. On the other hand, it was stimulated by a spike in the global oil prices: in some years during the period under review oil traded at \$ 150 per barrel.

At the peak of trade relations (in 2011–2013), the Baltic states imported about \$ 11–13 billion worth of intermediate goods from Russia each year, which roughly translated into a third of all annual intermediate imports into the Baltic states. As in the case of exports, this shows that without sanctions or restrictions of non-economic type, in a situation of free competition, the Baltic states saw Russia as an important partner in bilateral trade in intermediates.

Sanctions against Russia made the Baltic states seek alternative suppliers of intermediate goods, and the volumes of such exports from Russia drastically decreased (Table 5).

Table 5

**Commodity imports and imports of intermediates from Russia to the Baltic states,
USD million, current prices, 2013–2020**

Country	2013	2014	2015	2016	2017	2018	2019	2020
Total commodity imports								
Estonia	1873	2161	1544	1163	1349	1937	1784	1613
Latvia	1405	1356	1192	1051	1201	1558	1209	1067
Lithuania	9784	7621	4597	3793	4059	5386	5190	2936
<i>Total</i>	13 062	11 137	7333	6007	6610	8880	8183	5616
Of them, intermediates								
Estonia	1023	994	754	635	800	1208	1105	1134
Latvia	1262	1173	985	860	1050	1409	1014	859
Lithuania	9474	7157	4222	3363	3779	5117	4874	2676
<i>Total</i>	11 759	9324	5961	4859	5629	7734	6993	4669

Source: calculated by the author on the basis of OECD DB.

Compared to 2013, in 2014 imports of intermediate products from Russia to the Baltic states decreased by 20.7%. In 2015, there was a 2-fold decrease in this indicator compared to 2013, and in 2016, the numbers fell by another 9.4%. Such a fall, however, as has already been indicated above, is associated not only with the introduction of sanctions but also with the general situation in the commodity markets during the global trade slowdown of 2015–2016.

The share of Russian companies in the supply of intermediate goods to the Baltic states' industries decreased 2.5 times between 2012 and 2020, amounting only to 14.3% in 2020 against 35.1% in 2012, the highest value since the Baltic

states' accession to the EU. Russian share in the total volume of commodity imports into the Baltic states decreased 2.6 times and amounted to 8.2 % in 2020, compared to 21.2 % in 2010.

There were 8–10 times more intermediate goods than final products in the structure of commodity exports from Russia to the Baltic states, which would make this one of the highest proportions in the world. Over the entire analyzed period, the Russian index of production participation in the Baltic states' economic reproduction, understood as the share of intermediates in each country's total commodity exports from Russia and calculated by formula (1), steadily exceeded 80 % for Latvia in Lithuania, reaching 90 % for the former and 98 % for the latter in some years (2011–2012), and rose to 70 % in 2020 for Estonia (Fig. 2).

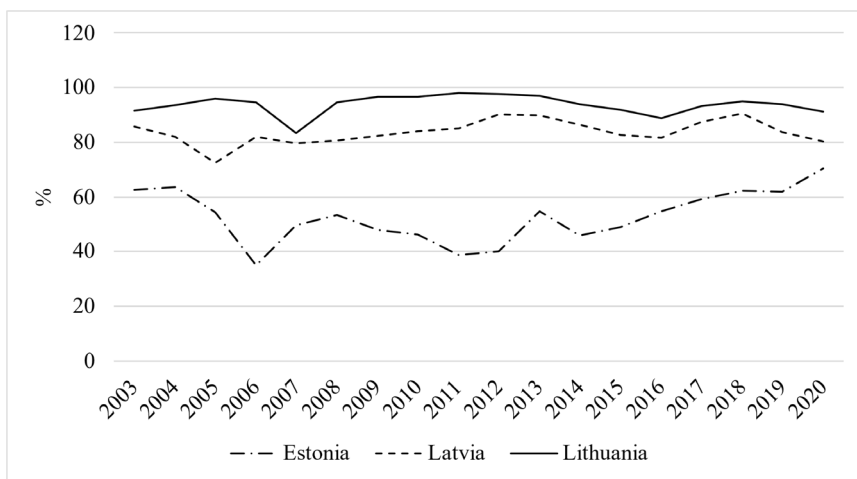


Fig. 2. Russian index of production participation in the Baltic states' economic reproduction, %

Source: calculated by the author using formula (1) and data from Tables 4 and 5.

Figure 2 shows that the sanctions and a significant decline in the volume of Russian imports into the Baltic countries had little impact on its structure and the Russian index of production participation in the Baltic states' economy.

Discussion

What is the reason, then, for the rapid development of trade and, more importantly, production linkages between Russia and the Baltic states in the first decade after their accession to the EU; a trend especially pronounced in exports as compared to the Baltic states' traditional trade partners, Germany and Finland?

Political and ideological talk aside, our analysis of import-export flows between the Baltic states, Russia and the two EU countries, Germany and Finland, does indicate that the main vector of bilateral production linkages of the Baltic states was directed at Russia.

In 2003, the levels of trade relations in terms of exports of each of the Baltic States to Russia, Germany and Finland were, on average, comparable to each other (Table 1). Latvia and Lithuania, for example, supplied fewer intermediate goods to Finland than to Russia, while Estonia supplied more. At the same time, Estonia exported fewer intermediates to Germany than to Russia, and so on. In 2013, the state of bilateral trade between the Baltic states and Russia reached such a high level that the volume of intermediate goods exported to Russia *exceeded that of intermediate exports to Germany and Finland combined*. The sum of the three Baltic states' exports of intermediate products to Russia increased 5.7 times between 2003 and 2013, while exports to Germany and Finland saw only a 2.2-fold increase.

We believe that there were several factors explaining intensified export relations between the Baltic states in Russia, especially compared to a more modest progress of export links development with Germany, Finland and other EU members.

1. More profitable production linkages with the Russian enterprises. Profits being the end goal of any business, buying Russian intermediates turned out to be more cost-efficient for Baltic companies than purchasing similar goods from European — Finnish or German — manufacturers. Relatively low cost of production equipment used in Russia coupled with the comparable quality of the resulting product allowed the Baltic enterprises to increase their profit margin.

2. Unsaturated Russian market was characterized by unsatisfied demand, while access to Western European and Scandinavian markets was restricted for many companies from the Baltic states. These markets have their own competition, suppliers, linkages spanning decades of cooperation, so the vast Russian market was especially attractive to its relatively small neighbours. The Russian demand for imported intermediates, including those coming from the Baltic states, was growing over the entire period under consideration, mainly due to accelerated growth of the national economy and purchasing power of the population and enterprises.

3. Advanced level of Russian manufacturing facilities, comparable with that of the developed countries. With the sharp depreciation of the ruble after the 1998 default and the spike in the global oil prices at the beginning of the 2000s, Russia was able to launch an update of its production base: not only in the energy and extractive sectors but also in the processing industry. According to Rosstat, in 2000—2013, the country's total imports increased 9.3 times (from \$ 34 billion to \$ 315 billion). Specifically, the import of machinery, equipment and transport grew 14-fold (from \$ 11 billion to \$ 153 billion); the share of non-CIS countries in imports rose from 66 % in 2000 to 88 % in 2013; the number of advanced production technologies used increased from 70,000 in 2000 to 192,000 in 2013; finally, of 2,842 production technologies imported by Russia in 2014, 1,910 were used in processing and only 103 in mineral extraction¹⁵.

¹⁵ *Russian Statistical Yearbook*. 2015, Rosstat, Moscow, p. 521, 523, 626, 631, 633, 634.

4. Spatial linkages and production technologies comparable to those of the Baltic countries. Already at the beginning of the 21st century, many Russian industrial enterprises would purchase modern western technologies and machinery to revamp their manufacturing and processing bases, develop production linkages, both global and regional ones, and win against Finnish and German competitors in open markets, including those of the Baltic states.

5. Established production linkages and personal connections going back to the Soviet times; joint regional and trans-border value streams; familiar business environment; connected infrastructure; clear and understandable logistics.

In the highly competitive global markets for intermediate goods, Russia remains an important partner to the Baltic states. The introduction of anti-Russian sanctions had a relatively little negative impact on the Baltic-Russian trade in intermediates, which was more affected by the global trade slowdown of 2015–2016.

For their internal development as well as for incorporation into the GVCs, the Baltic states need strong links with the Russian industry built through importing minerals, crude iron ore, semi-finished products and other intermediates. Their proximity to the Russian raw materials and primary processing products, the ability to take advantage of a well-developed infrastructure connected with the Russian territory, the similarity of technical and technological approaches, and other factors allow the Baltic states to import Russian intermediates, further process them and export value-added, in other words, to participate in the GVCs.

After 2014, despite political and ideological problems, sanctions, restrictions and other negative factors, there was no sign of Russian-Baltic business communication halt; the countries' trade and production linkages remained unbroken. In 2017–2020, in some spheres, these connections became even stronger.

Conclusion

Historically and technologically, industrial production of the Baltic states has been largely oriented towards Russia. Even after the Baltic states joined the EU, the newly created market conditions and open competition have not managed to reroute export flows of intermediates from the Baltic states into other members of the Union, such as Germany or Finland. Instead, their exports to Russia intensified thus reaffirming the trend that had already existed. This pattern was especially pronounced from 2004 to 2013. This entire decade saw an unprecedented in its pace and duration growth of Russian demand for intermediate goods supplied from the Baltic states, a growth unhampered even by the global financial crisis of 2008–2009.

Our cross-country comparison revealed that, in that period, Russia was a more perspective market for the Baltic intermediates than Germany or Finland: while in 2003 the Baltic states exported similar volumes of intermediate goods to Russia, Finland and Germany, in 2013 the total exports of intermediate goods from the Baltic states to Russia exceeded the total of intermediate exports to Germany

and Finland combined. Thus, in a market situation, devoid of administrative barriers, sanctions or restrictions, some Russian enterprises turned out to be highly competitive compared to the producers from the leading European economies. Russian industrial companies would often win in open competition.

By sharply increasing its intermediate imports, Russia gave a huge additional impetus to the economic development of the Baltic states and their inclusion into the GVCs. While in 2003 they supplied Russia with intermediate goods worth \$0.7 billion, in 2013 Russian intermediate imports increased to almost \$3 billion. As a result, Russia's share in total exports from the Baltic states grew from 9.7% in 2003 to 16.9% in 2013 for all commodities and from 8.6% to 13.6% for intermediate products.

The global trade trends of 2003–2013 specified in our study created favorable conditions for the active inclusion of the Baltic states in the production cooperation with Russian companies. Further on, it might allow for the creation of sustainable regional production linkages, supplemented by cross-border production cooperation with possible access to other EU countries. However, this scenario did not play out.

The period was also characterized by enhanced possibilities for the Baltic states to build long-term strategic relations with Russia, including the development of GVCs through increased industrial cooperation and joint manufacturing with the possibility to enter European and Asian markets in the future. This didn't happen either. Political and ideological ambitions trampled over common sense and economic expediency. The ten-year trend, positive for the economic development of both the Baltic states and Russia, was broken by the introduction of sanctions and the subsequent global trade slowdown of 2015–2016, which further exacerbated the decline in bilateral trade between the Baltic states and Russia.

In 2017–2019, production linkages of the countries in question stabilized, began to gradually recover, and even develop, yet this was not a linear trend, and it did not affect all countries equally over the reported period. Thus, in 2018 and 2019 Lithuania managed to exceed the 2013 volume of intermediate exports to Russia, and Estonia and Latvia were able to supply, respectively, 5.2% and 7.4% more intermediate products to Russia in 2020 than in 2019, which translated into increased support to the Baltic states' economies from the Russian industrial buyers in the time of the global economic crisis.

That trade flows from the Baltic states shifted structurally in favor of Russia during the first decade of the Baltic states' membership in the EU and in more recent years, can be accounted for by the higher profitability of the huge Russian market and by difficulties the Baltic companies have been experiencing when entering already established, well-balanced and highly competitive markets of the European Union (at the same time, Russian markets were in their earlier stages of development and had good prospects of growth). Historic connections with Russian enterprises, well-established infrastructure, logistics, transport accessibility and other institutional factors were also of great importance for the Baltic enterprises.

Overall, the results obtained in this study point to the fact that production linkages between companies in the Baltic states and Russia within the framework of bilateral relations, as well as those built within global and regional value chains are characterized by significant resistance capacity to shocks of geopolitical (sanctions or trade restrictions) or economic (global trade slowdown of 2015–2016; global economic crisis of 2020) nature. Mutually imposed sanctions and restrictions introduced after 2014 caused a decline in commodity flows but did not lead to a complete wipe-out of Russia's industrial ties with the Baltic states or to the destruction of manufacturing infrastructure; nor were they able to stop bilateral business activity. For the Baltic states, Russia remains an important foreign trade partner.

Significant differences in the structures of economies of the Baltic states and Russia, as well as access to resources and the sufficiency of these resources to ensure the uninterrupted economic reproduction translate into intensive trade in intermediate goods between the countries in question and into their mutual interest to further develop already established production linkages. Economic considerations and comparative competitive advantages of both the countries themselves and their business entities will continue to have a stronger influence on the formation and preservation of their production ties than geopolitical factors. While this can only continue until a certain line is crossed, our study shows that this point has not been reached by either party.

References

1. Varnavskii, V. 2020, Growth factors and trends of global trade, *Analysis and Forecasting. IMEMO Journal*, №1, p. 51–62. doi: 10.20542/afj-2020-1-51-62.
2. Yeats, A. J. 1998, Just How Big Is Global Production Sharing? World Bank, *Policy Research Working Paper 1871*, Washington, DC. 40 p. URL: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=597193 (accessed 22.09.2021).
3. De Backer, K., Miroudot, S. 2014, Mapping Global Value Chains, *ECB Working Paper Series*, №1677, 40 p. URL: <http://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1677.pdf> (accessed 22.09.2021).
4. Faße, A., Grote, U., Winter, E. 2009, *Value chain analysis methodologies in the context of environment and trade research*, Leibniz Universität Hannover, Wirtschaftswissenschaftliche Fakultät, Diskussionsbeitrag, №429, 59 p. URL: <https://www.econstor.eu/bitstream/10419/37104/1/609241915.pdf> (accessed 22.09.2021).
5. Baldwin, R., Robert-Nicoud, F. 2010, Trade-in-goods and trade-in-tasks: An Integrating Framework. Cambridge MA. NBER Working Paper, №15882, 30 p. URL: <http://www.nber.org/papers/w15882.pdf> (accessed 22.09.2021).
6. Goldberg, P.K., Khandelwal, A.K., Pavcnik, N., Topalova, P. 2009, Imported Intermediate Inputs and Domestic Product Growth: Evidence from India, *CEPS Working Paper*, №192, 41 p. URL: <https://gceps.princeton.edu/wp-content/uploads/2017/01/192goldberg.pdf> (accessed 22.09.2021).

7. Das, D. K., Gupta, N. 2019, Climbing up India's Manufacturing Export Ladder: How Competitive are Intermediate Goods, *ICRIER*, Working Paper, № 371, 36 p. URL: https://icrier.org/pdf/Working_Paper_371.pdf (accessed 22.09.2021).

8. Gereffi, G., Humphrey, J., Sturgeon, T. 2003, *The Governance of Global Value Chains*, URL: http://www.soc.duke.edu/sloan_2004/Papers/governance_of_gvcs_final.pdf (accessed 22.09.2021).

9. Gereffi, G., Fernandez-Stark, K. 2016, *Global Value Chain Analysis: A Primer*, 2nd Edition, URL: <https://dukespace.lib.duke.edu/dspace/handle/10161/12488> (accessed 22.09.2021).

10. Hummels, D., Rapoport, D., Yi, K.-M. 1998, Vertical Specialization and the Changing Nature of World Trade, *Economic Policy Review*, June 1998, vol. 4, № 2, p. 79—99, URL: <https://www.newyorkfed.org/medialibrary/media/research/epr/1998/EPRvol4no2.pdf> (accessed 22.09.2021).

11. Beņkovskis, K., Bērziņa, S., Zorgenfreiņa, L. 2016, Evaluation of Latvia's re-exports using firm-level trade data, *Baltic Journal of Economics*, vol. 16, № 1, p. 1—20. doi: 10.1080/1406099X.2016.1163891.

12. Ali-Yrkkö, J., Mattila, J., Seppälä, T. 2017, Estonia in Global Value Chains, *ETLA Reports*, № 69, 24 p. URL: <https://pub.etla.fi/ETLA-Raportit-Reports-69.pdf> (accessed 22.09.2021).

13. Smidova, Z., Yashiro, N. 2017, Getting the most out of trade in Estonia, *OECD*, Economics Department Working Papers, № 1436, URL: [https://www.oecd.org/official-documents/publicdisplaydocumentpdf/?cote=ECO/WKP\(2017\)68&docLanguage=En](https://www.oecd.org/official-documents/publicdisplaydocumentpdf/?cote=ECO/WKP(2017)68&docLanguage=En) (accessed 22.09.2021).

14. Stavitsky, A., Kharlamova, G., Giedraitis V., Sengul, E. C. (eds.) 2019, Gravity model analysis of globalization process in transition economies, *Journal of International Studies*, vol. 12, № 2, p. 322—341. doi: 10.14254/2071-8330.2019/12-2/21.

15. Yashiro, N., De Backer, K., Hutfilter, A., Kools, M., Smidova, Z. 2017, Moving up the global value chain in Latvia, *OECD*, Economics Department Working Papers, № 1438. doi: 10.1787/3a486c5e-en.

16. Benkovskis, K., Masso, J., Tkacevs, O., Vahter, P., Yashiro, N. 2017, Export and productivity in global value chains: Comparative evidence from Latvia and Estonia, *OECD*, Economics Department Working Papers, № 1448, doi: 10.1787/cd5710c4-en.

17. Bacchetta, M., Bekkers, E., Piermartini, R., Rubinova, S., Stolzenburg, V., Xu, A. 2021, *COVID-19 and global value chains*, World Trade Organisation, 34 p. URL: https://www.wto.org/english/res_e/reser_e/ersd202103_e.pdf (accessed 22.09.2021).

18. Banh, H., Wingender, P., Gueye, C. 2020, Global Value Chains and Productivity: Micro Evidence from Estonia, *IMF Working Papers*, WP/20/117. URL: <https://www.imf.org/en/Publications/WP/Issues/2020/07/03/%20Global-Value-Chains-and-Productivity-Micro-Evidence-from-Estonia-49376> (accessed 22.09.2021).

19. Simachev, Y. V., Fedyunina, A. A., Averyanova, Y. V. 2020, Transformation of global value chains in Russia and the Baltics amid Covid-19: prospects for regionalization and implications for economic policy, *Balt. Reg.*, vol. 12, № 4, p. 128—146. doi: 10.5922/2079-8555-2020-4-7.

20. Linden, G., Kraemer, K. L., Dedrick, J. 2007, Who Captures Value in a Global Innovation System? The case of Apple's iPod, *Personal Computing Industry Centre (PCIC)*, Working Paper 92697, 06-01-2007, 10 p. URL: <http://escholarship.org/uc/item/1770046n> (accessed 31.10.2021).

21. De Backer, K., Miroudot, S. 2012, *Mapping Global Value Chains. Groningen, The Netherlands*, 19 p. URL: http://www.wiod.org/conferences/groningen/Paper_DeBacker_Miroudot.pdf (accessed 31.10.2021).

22. Varnavskii, V.G. 2018, International trade in value added terms: methodological issues, *World Economy and International Relations*, vol. 62, №1, p. 5—15. doi: 10.20542/0131-2227-2018-62-1-5-15.

23. Ahmad, N., Bohn, T., Mulder, N., Vaillant, M., Zaclicever, D. 2017, Indicators on global value chains: A guide for empirical work, *OECD, Statistics Working Papers* 2017/08. doi: 10.1787/8502992f-en.

24. Fortanier, F. 2016, Towards merchandise trade statistics without asymmetries, *The OECD Statistics Newsletter*, №64, p. 7—11. URL: <https://www.oecd.org/sdd/OECD-Statistics-Newsletter-March-2016.pdf> (accessed 22.09.2021).

25. Timmer, M. P., Dietzenbacher, E., Los, B., Stehrer, R., de Vries, G. J. 2015, An Illustrated User Guide to the World Input-Output Database: The Case of Global Automotive Production, *Review of International Economics*, vol. 23, №3, p. 575—605. doi: 10.1111/roie.12178.

26. Giammetti, R. 2019, Tariffs, Domestic Import Substitution and Trade Diversion in Input-Output Production Networks: how to deal with Brexit, *MPRA Paper*, №92835, URL: <https://mpra.ub.uni-muenchen.de/92835/> (accessed 22.09.2021).

27. Hoekman, B. 2015, Trade and growth — end of an era? In: *The Global Trade Slowdown: A New Normal?* CEPR, London, p. 3—19, URL: https://voxeu.org/sites/default/files/file/Global%20Trade%20Slowdown_nocover.pdf (accessed 22.09.2021).

28. Constantinescu, C., Mattoo, A., Ruta, M. 2015, The Global Trade Slowdown: Cyclical or Structural? *IMF Working Paper*, WP/15/6. 43 p. URL: <https://www.imf.org/external/pubs/ft/wp/2015/wp1506.pdf> (accessed 22.09.2021).

29. Constantinescu, C., Mattoo, A., Ruta, M. 2017, *Trade Developments in 2016: Policy Uncertainty Weighs on World Trade*, Washington, D. C., World Bank Group, 24 p. URL: <https://documents1.worldbank.org/curated/en/228941487594148537/pdf/112930-v1-revised-PUBLIC-1706109-Global-Trade-Watch-Report-Web.pdf> (accessed 22.09.2021).

30. Aslam, A., Boz, E., Cerutti, E., Poplawski-Ribeiro, M., Topalova, P. 2017, Global trade: Drivers behind the slowdown, *VoxEU.org*, URL: <https://voxeu.org/article/global-trade-drivers-behind-slowdown> (accessed 22.09.2021).

31. Al-Haschimi, A., Gächter, M., Lodge, D., Steingress, W. 2016, The great normalisation of global trade, *VoxEU.org*, URL: <http://voxeu.org/article/great-normalisation-global-trade> (accessed 22.09.2021).

The author

Prof. Vladimir G. Varnavskii, Leading Research Fellow, V. A. Trapeznikov
Institute of Control Sciences Russian Academy of Sciences, Russia.

E-mail: varnavsky@imemo.ru

<https://orcid.org/0000-0003-1772-1800>



SUBMITTED FOR POSSIBLE OPEN ACCESS PUBLICATION UNDER THE TERMS AND CONDITIONS OF THE
CREATIVE COMMONS ATTRIBUTION (CC BY) LICENSE ([HTTP://CREATIVECOMMONS.ORG/LICENSES/BY/4.0/](http://creativecommons.org/licenses/by/4.0/))