NEW PROTECTIONISM, SANCTIONS AND EU DISINTEGRATION: CHALLENGES FOR BALTIC TRADE

Claus-Friedrich Laaser[1], Klaus Schrader[2]
Kiel Institute for the World Economy (IfW)

Abstract

Against the backdrop of the Estonian Presidency of the Council of the European Union in the second half of 2017 the authors propose to focus the political agenda on the threats to free trade which emerged by the protectionist views of the Trump government, the imminent weakening of the EU Common Market in course of the Brexit and the still lingering conflict with Russia which is accompanied by trade sanctions. The authors show how far the three Baltic States depend on trade with Russia, the United Kingdom and the USA by a share analysis of disaggregated trade flows and a gravity analysis of trade relations. The analyses reveal that Estonia, Latvia and Lithuania could be affected negatively by all the three challenges to the free movements of goods and services. While they are still trading over-proportionally with Russia the attractiveness of UK and US markets for Baltic enterprises is already visible and these markets offer further development potential. Hence, the promotion of the concept of open markets would not only help bridging political divides but it would also foster the Baltic States' gains from globalization and would reduce economic and political dependencies.

1. Estonian Presidency of the Council of the European Union: Agenda Setting

When Estonia will take over the Presidency of the Council of the European Union for the July to December 2017 term, the country will have to coordinate important European political initiatives in a period of increasing international tensions and uncertainties. The Estonian government started its process of defining its main political objectives for the Estonian presidency in 2014. As a starting point it chose the topics which were important for Estonia since its accession of the European Union in 2004. This catalogue comprised: the information society, the internal market and competitiveness, the environment, connection, employment and the European neighborhood policy (Riigikantselei 2014). At the same time, the Estonian government stated that it would pursue its agenda setting in accordance with the European Commission's policy guidelines, which were published in 2014, too, and which are highlighting the Commission's general objectives for the subsequent five

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[1] Dr. Claus-Friedrich Laaser, Kiel Institute for the World Economy, 24100 Kiel, Germany, claus-friedrich.laaser@ifw-kiel.de.
[2] Dr. Klaus Schrader, Kiel Institute for the World Economy, 24100 Kiel, Germany, klaus.schrader@ifw-kiel.de.

years.[3] Comparing these catalogues of policy objectives renders a great number of similarities which will clearly shape the Estonian presidential agenda.

In the recent past, however, European policy has been challenged by three incidents, which may sharpen the view on a specific topic: free trade. This topic did not materialize directly in the objectives catalogue, but was more or less implicitly assumed to be valid so far. But these three incidents might seriously challenge this assumption:

(i)   In 2014 the EU sanctions against Russia and Russian counter-sanctions were imposed in the aftermath of the Ukraine crisis and impaired trade with Russia, particularly for its neighbors in the Baltic Sea Region (BSR).

(ii) In 2016 the British vote for a "Brexit" – the United Kingdom's (UK) complete exit from the European Union – induced a shock in the EU, as it may entail severe consequences for trade with the UK, particularly in the case of a "hard" Brexit.

(iii) Since the end of 2016 the announcement of the newly elected president of the United States, Donald Trump, to revise or even disengage all free trade agreements and to pursue a distinct protectionist and mercantilist policy in favor of the USA invoked the nightmare that the era of free trade advocated so far by the United States might come to an end.

All three incidents are threatening the free movement of goods and services which have contributed to growth and wealth worldwide. Impaired trade relations with Russia are already visible in trade data, while the other two events might have an even greater impact on trade in Europe, given the UK's and the US's by far greater economic weight.

The EU sanctions against Russia and the Russian countersanctions coincided with a deteriorating economic situation in Russia since 2012 caused by the shrinking oil prices and a sharp devaluation of the Ruble. One is inclined to attribute the lion's share of the apparent slowdown of export and import flows with Russia to the country's economic crisis, less to the sanctions which are no trade boycott at all and do not affect the trade in main commodity groups seriously. Therefore, it is the Russian crisis which has left its visible marks in BSR trade statistics.[4]

In contrast, the British Brexit vote of June 23, 2016, could not yet leave any marks in trade statistics so far. Moreover, the actual exit will take several years, and it is not yet predictable how it will take place and which status as trading partner the United Kingdom will have vis-a-vis the EU. Nevertheless it seems plausible that the Brexit might influence trade relations in the BSR given the fact that the UK is a close neighbor to the BSR, only separated from it by the North Sea.

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[3] See Estonian Presidency of the Council of the EU Website (2017) and the corresponding EU priority program (European Commission 2015). The latter source states 10 objectives of European policy.

[4] See Schrader and Laaser (2015) und Laaser and Schrader (2016).

Even vaguer to envision are the consequences of the still not completely settled and thus only potential trade policy of US President Trump. But if Trump should proceed on his projected path to pursue policy "exclusively for the US" without any regard to the principles of free trade that governed US trade policy so far, the consequences might be substantial, even if his policy stance should not result in an open "trade war" as envisaged by some commentators.

But anyway all three incidents fall into the category of "raising barriers to trade" which might affect trading partners world-wide. These impacts give a clear mandate to the Estonian presidency and its agenda to explicit advocate for free trade, a policy stance that is in accordance with Estonian economic policy anyway. In order to give some empirical support to this suggestion we will show in section 2, in how far the three Baltic States depend on trade with Russia, the UK and the USA in a descriptive way. In section 3 we will disaggregate trade flows with respect to commodities in order to identify the commodity groups where potential dependencies might be highest. In section 4 we will deploy a gravity model to systematically analyze trade relations with the three partners. Finally in section 5 we will draw conclusions on the importance of the free trade issue for the Estonian presidency.

2. The Potential Impact of Russian Sanctions, the Brexit and US-Protectionism on Baltic Trade

To what extent the three incidents described above may harm trade relations of the Baltic States, can approximately be predicted by analyzing the shares of exports and imports in the individual countries' trade with Russia, the United Kingdom and the USA. Figures 1 to 3 exhibit the shares of the three partners in Baltic exports and in imports.

With respect to exports we find a common feature in the shares' structure during the observation period from 2000 to 2016: the shares of exports to Russia did not dominate in the early years but were only second to the UK's shares for all three Baltic States in the beginning. This picture changed in the course of the 2000s. In Estonia and Lithuania the sharply rising Russian export shares passed by the British counterparts from 2003 onwards and reached then an unchallenged top position (Figures 1a and 3a). In Latvia, the same passing-by happened two years later (Figure 2a). The Russian boom – only interrupted by a short contraction during the global financial crisis in 2009 – lasted until the outbreak of the Russian economic crisis in 2012.
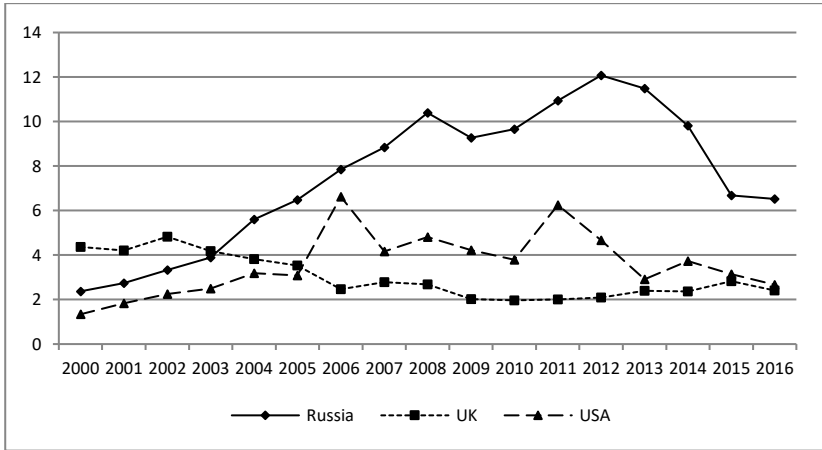
Figure 1a: Export Shares. Estonia's trade relations with Russia, the UK and the USA, 2000–2016

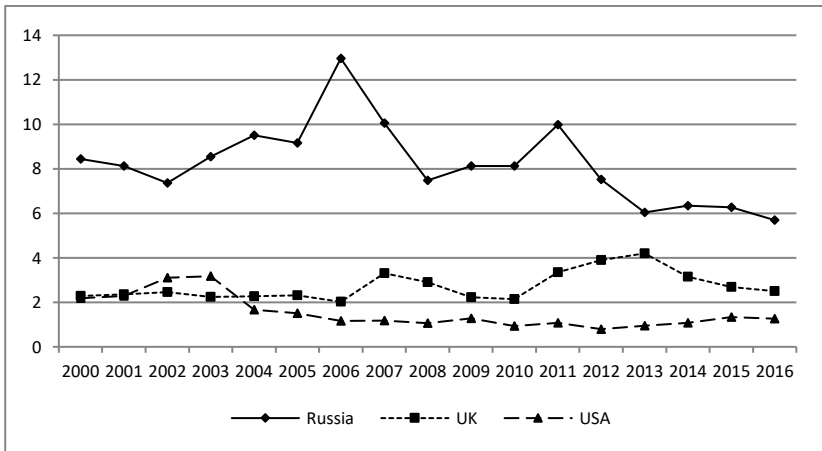*Figure 1b:* Import Shares. Estonia's trade relations with Russia, the UK and the USA, 2000–2016

Source: Eurostat (2017); own compilation and calculations.

Afterwards, Russian export shares decreased from 12 to 6 per cent in Estonia and from 18 to less than 12 per cent in Latvia. In Lithuania, the share of exports to Russia still grew until 2014 to 21 per cent, and decreased sharply to less than 15 per cent in the aftermath.

Figure 2a: Export Shares. Latvia's trade relations with Russia, the UK and the USA, 2000–2016

Figure 2b: Import Shares. Latvia's trade relations with Russia, the UK and the USA, 2000–2016

Source: See Figure 1.

In Estonia and in Lithuania, the Russian shares are still two to three times higher than the shares of exports to the UK and the USA. In Latvia, they are even two to eight times higher. Thus, the large neighbor Russia is still dominating the export statistics of the three Baltic States.
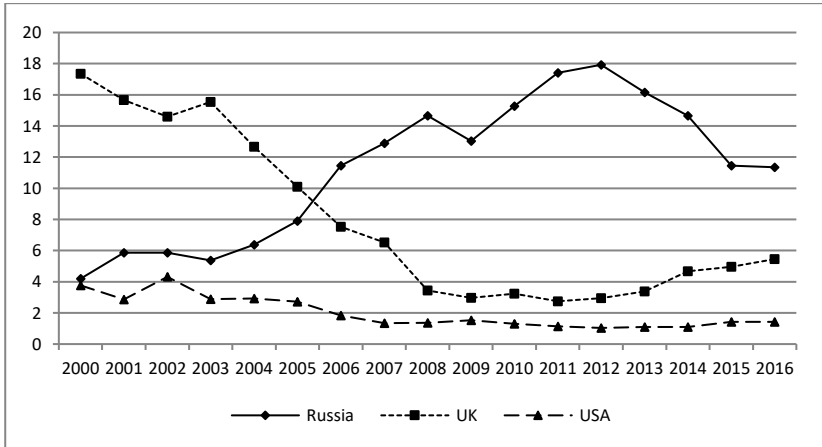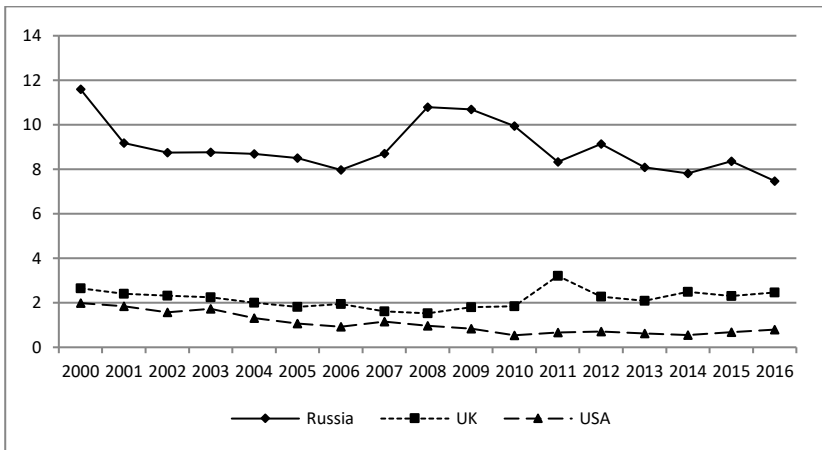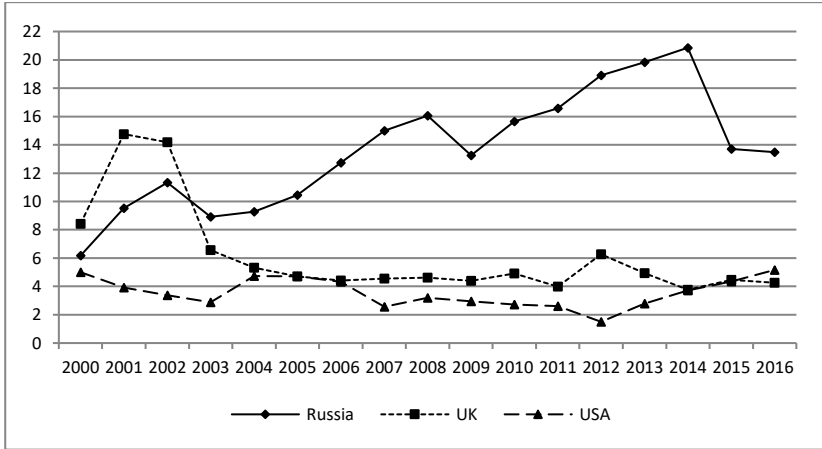
Figure 3a: Export Shares. Lithuania's trade relations with Russia, the UK and the USA, 2000–2016
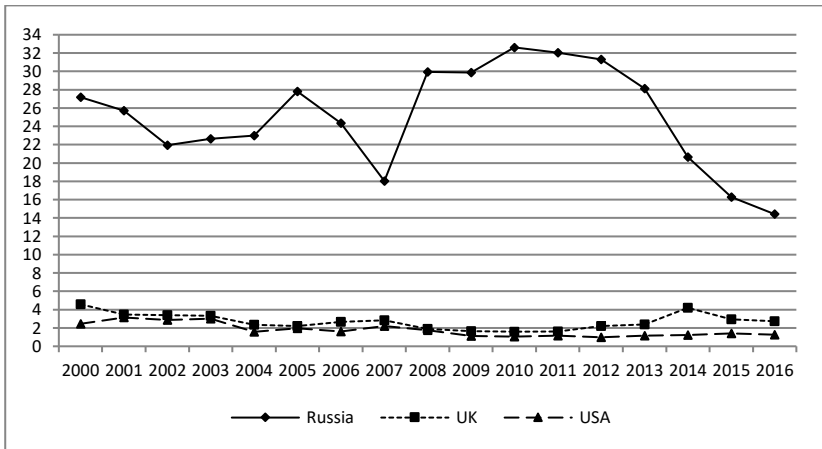
Figure 3b: Import Shares. Lithuania's trade relations with Russia, the UK and the USA, 2000–2016

Source: See Figure 1.

Nevertheless, the UK and the USA appear to be important destinations at least for Estonian and Lithuanian exports. For Estonia the USA have even played the greater role compared to the UK since 2005. For Lithuania the USA were more important in the beginning and again in the most recent years. In contrast, Latvia shows a clear preference for exports to the UK which had a clearly dominant position in the beginning of the observation period but export shares decreased sharply until 2008.

On the import side (Figures 1b, 2b, 3b) the picture is more homogeneous. The shares of imports from Russia clearly dominate throughout the observation period with some intermediate peaks and a more (for Estonia and Lithuania) or less (for Latvia) sharp decline after 2012 where the three Baltic States commenced to get rid of their dependency on Russian energy imports.[5] The hierarchy of the import shares shows the UK shares on a stable second rank – with the exception of 2002 and 2003.

It can be concluded from the shares' analysis that the adjacently located large neighbor Russia has the greatest impact on Baltic exports and imports. But the UK and the USA reach non-negligible shares at least on the export side. These suggest that the UK and the USA are also important trading partners for the three Baltic States. Any troubles in these trade relations might harm them, too, the more as trade relations with these markets might provide still unexploited growth potential.

3. Economic Dependencies on single Export and Import Markets

The intensities of Baltic trade with Russia, the UK and the USA at first sight remind on the economic separation of Europe during the cold war and on the integration of the Baltic States into the Soviet division of labor. The Baltic trade relations with Russia are still much closer than those with the Western industrialized countries UK and USA. This is in contrast to the EU-28 countries which on average trade much more intensively with the UK and the USA than they do with Russia. This heterogeneous pattern can be possibly attributed to path dependencies, diverging distances and various economic factors — the gravity analysis in chapter 4 will shed light on these issues. An analysis of sectoral trade patterns will identify dependencies on single export and import markets in trade with Russia, the UK and the USA which might be hidden behind average export and import shares.[6]

Estonia

In the case of Estonia the share of exports to Russia amounted to 6.5 per cent in 2016 — 5 percentage points above the EU average. For the majority of the main commodity groups the partner export weight was even significantly higher (Table 1a.). Exports in the top commodity group SITC-74 mainly comprises of pumps, heating and cooling equipment as well as mechanical handling equipment. In the groups ranked next, Estonia exports mainly special machinery and equipment of various kinds (SITC-72) and pigments, paints and varnishes (SITC-53). The export of beverages to Russia (SITC-11), just among the top five export groups, is near-complete export of alcoholic beverages. The Russian export weights in all these main commodity groups range between 26 and 37 per cent, thus constitute some dependencies from Russian markets. But with respect to Estonia's world exports these commodities are of minor importance. The opposite is true for the export of electrical machinery (SITC-77), electrical apparatus and power machinery for a major part: The Russian export weight

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[5] See Laaser and Schrader (2016).

is below average but this group has the same weight in Estonia's world exports as the other main commodity groups altogether.

The Estonian exports to the UK are not only significantly smaller than the exports to Russia but the main commodity groups are also somewhat different: Various wood products of a very low processing depth (SITC-24) and furniture (SITC-82) are dominating. Telecommunication equipment (SITC-76) and equipment for distributing electricity (SITC-77), major groups in Estonia's world export, are ranked next. In contrast, prefabricated buildings (SITC-81) are less important for Estonia's world export while they belong to the main exports commodities in Estonian UK trade. But for none of these major groups a critical degree of dependence from British markets can be observed, even though Estonian wood producers obviously developed trade relations above average.

Table 1:
Estonian trade with Russia, the UK and the USA by the main commodity groups, 2016

a. Exports			
SITC 2-digit	Partner Export-Share[a]	World Export-Share[b]	Partner Export-Weight[c]
Russia			
74	12.8	3.2	26.0
72	10.2	2.4	27.6
53	8.2	1.4	37.0
77	7.6	8.3	6.0
11	7.3	1.3	35.7
Total	100.0	100.0	6.5
UK			
24	20.5	5.5	9.1
82	11.6	4.1	6.9
76	10.4	11.7	2.1
77	8.0	8.3	2.3
81	7.7	3.5	5.3
Total	100.0	100.0	2.4
USA			
33	26.8	5.3	13.4
87	9.2	2.4	10.4
77	9.1	8.3	2.9
89	6.9	4.9	3.8
76	5.1	11.7	1.2
Total	100.0	100.0	2.7

b. Imports

SITC 2-digit	Partner Import-Share[d]	World Import-Share[e]	Partner Import-Weight[f]
Russia			
33	38.8	6.6	33.6
24	13.6	1.9	40.7
34	11.6	0.8	80.4
67	6.2	2.9	12.2
56	5.7	0.7	48.9
Total	100.0	100.0	5.7
UK			
72	12.6	3.2	9.7
11	10.3	1.9	13.7
77	9.3	9.7	2.4
78	8.1	8.3	2.5
89	6.3	4.9	3.2
Total	100.0	100.0	2.5
USA			
89	27.5	4.9	7.1
9	20.2	1.2	20.6
87	10.0	1.2	10.2
76	4.7	7.1	0.8
74	4.5	3.3	1.7
Total	100.0	100.0	1.3

[a]Exports to the partner country by commodity group in per cent of total exports to the partner country. — [b]Exports by commodity group in per cent of total exports to the world. — [c]Exports to the partner country by commodity group in per cent of total exports by commodity group. — [d]Imports from the partner country by commodity group in per cent of total imports from the partner country. — [e]Imports by commodity group in per cent of total imports from the world. — [f]Imports from the partner country by commodity group in per cent of total imports by commodity group.

Source: Eurostat (2017); own calculations and composition.

Estonia's exports to the USA are clearly dominated by fuels of various kinds (SITC-33). The USA are a major customer of these products but the weight of this group in the Estonian world exports is rather limited. The same is true for the export of technical instruments (SITC-87) which are ranked in second place. The US export weight in the other major groups is even smaller and close to the average share of Estonian US exports. While fuels are homogeneous products and relatively easy to sell on world markets, the substitution of markets for manufactured good like instruments might be more difficult — in any case Estonia's dependency from US export markets is manageable.

With respect to Estonian imports (Table 1.b.), the Russian share is more than twice as high as it is on EU average. Compared with the UK and the USA, the Russian import weights for single commodity groups are significantly higher, in case of natural gas

imports (SITC-34) it even accounts for more than 80 per cent. Russia is almost a monopolist for natural gas and the Russian supplies are difficult to substitute — at the same time Estonia's natural gas imports have a share of less than 1 per cent of Estonian world imports. A similar discrepancy can be observed for the imports of two other major groups, simple wood products (SITC-24) and fertilizers (SITC-56) which are more easily to substitute. This is also true for the dominant imports of petroleum and products thereof (SITC-33) where potential import substitution prevents an Estonian dependency from Russian supplies.

Estonian imports from the UK mainly comprise specialized machinery (SITC-72) and whisky (SITC-11) — the latter with the highest import weight in comparison with the other top import groups. Electrical machinery, motor cars and miscellaneous manufactured articles from the UK SITC-77, -78, -89) play a minor role in this ranking. Obviously the Estonian economy does not rely on UK imports to a large extent.

A look at the US weights of the main import groups in trade with the USA shows that Estonia most of all rely on "not classified products" (SITC-9) which also account of one fifth of US imports. Nevertheless, on top of the import ranking are miscellaneous manufactured articles (SITC-89) which comprise of arms and ammunition by more than 90 per cent. Although more than one quarter of Estonian imports from the USA is military hardware, the relatively low partner weight reveals that the USA are not Estonia's principal supplier.

Latvia

In the case of Latvia, the export relations with Russia are even closer compared with Estonia (Table 2a.): The Russian export weight is ten times higher than the EU average. Alcoholic beverages (SITC-11) and industrial machinery and equipment (SITC-74), with a focus on heating and cooling, are the dominant export groups. For these groups the Russian export weights (65 and 50 per cent) signal a strong orientation towards Russian markets. But their less impressive shares of Latvian world exports put their importance into perspective. The exports of medicaments (SITC-54), specialized machinery (SITC-72) and electrical apparatus and machinery (SITC-77) imply a minor role of Russian markets and these groups are less important for Latvia's world export. However, the probability is high that individual enterprises heavily rely on Russian customers.

This might be also true for Latvian exports to the UK although the UK export weight is just half of the Russian weight and below the EU average. The export is clearly focused on wood and simple products thereof (SITC-24) which account for about the half of all Latvian exports to the UK. Closely related appear the exports of wood manufactures (SITC-63) which contribute a further 14 per cent to the UK export. These groups together are a heavy weight of Latvia's world export, with a share of more than 15 per cent. The double-digit UK export weights suggest intense sales relations. In contrast, exports of manufactures of base metal (SITC-69) and

telecommunication equipment (SITC-76) are of minor importance — the exports of crude animal and vegetable materials (SITC-29) is a mixture not further broken down.

By contrast, Latvia's exports to the USA are almost neglectable compared to the EU average and to the exports to Russia and the UK: The US export weight is only 1.4 per cent. The focus is on telecommunication equipment (SITC-76) and alcoholic beverages (SITC-11). The export weights of these two groups are well above the total export weight but are smaller than those of the major export groups ranked next. Dependencies might exist at the firm level, at most.

Table 2:
Latvian trade with Russia, the UK and the USA by the main commodity groups, 2016

a. Exports			
SITC 2-digit	Partner Export-Share[a]	World Export-Share[b]	Partner Export-Weight[c]
Russia			
11	25.4	4.5	64.6
74	11.0	2.5	50.4
54	5.8	3.7	17.9
72	4.5	1.5	33.3
77	3.9	3.1	14.3
Total	100.0	100.0	11.4
UK			
24	49.4	9.8	27.7
63	13.9	5.8	13.1
69	4.7	4.1	6.3
29	3.8	1.7	12.2
76	3.8	7.3	2.8
Total	100.0	100.0	5.5
USA			
76	19.9	7.3	3.9
11	13.2	4.5	4.2
72	8.1	1.5	7.6
65	7.1	2.0	5.0
87	6.3	1.2	7.3
Total	100.0	100.0	1.4
b. Imports			
SITC 2-digit	Partner Import-Share[d]	World Import-Share[e]	Partner Import-Weight[f]
Russia			
34	29.5	2.2	98.3
67	19.7	3.3	44.0
33	9.7	5.8	12.5
56	7.7	1.0	57.9
24	5.1	1.8	21.5
Total	100.0	100.0	7.5

Table 2 continued

b. Imports

SITC 2-digit	Partner Import-Share[d]	World Import-Share[e]	Partner Import-Weight[f]
UK			
11	18.3	3.6	12.5
89	7.8	5.0	3.9
78	5.1	7.6	1.7
59	4.6	2.8	4.0
87	4.3	1.3	8.3
Total	100.0	100.0	2.5
USA			
76	22.5	6.2	2.9
79	10.4	3.2	2.6
87	8.4	1.3	5.3
54	6.8	4.3	1.3
77	6.1	4.3	1.1
Total	100.0	100.0	0.8

[a]Exports to the partner country by commodity group in per cent of total exports to the partner country. — [b] Exports by commodity group in per cent of total exports to the world. — [c]Exports to the partner country by commodity group in per cent of total exports by commodity group. — [d]Imports from the partner country by commodity group in per cent of total imports from the partner country. — [e]Imports by commodity group in per cent of total imports from the world. — [f]Imports from the partner country by commodity group in per cent of total imports by commodity group.

Source: See Table 1.

With respect to imports (Table 2.b.), with 7.5 per cent Latvia's share of imports from Russia is three times higher than the EU average. And imports of natural gas, ranked on top of the major import groups, even account for about 100 per cent of imports in this group (SITC-34). Obviously, Latvia is still dependent from Russian gas supplies — however, the import of natural gas covers only about 2 per cent of Latvia's world imports. Flat-rolled products of iron (SITC-67) and fertilizers (SITC-56) are also primarily imported from Russia. Simple wood products (SITC-24) and petroleum (SITC-33) complement this import ranking, and exhibit lower double-digit import weights. What makes the difference from natural gas: all these imports could be easily substituted by alternative sources of supply on the world markets.

Imports from the UK are less important for Latvia but at least the group of alcoholic beverages (SITC-11), the top import group, exhibits a double-digit import weight. The import weight of the second ranked import group, miscellaneous manufactured articles (SITC-89), is already much smaller — "arms and ammunition" is the biggest subgroup. Furthermore, no prominent dependencies can be detected for the other major import groups: motor cars (SITC-78), insecticides (SITC-59) and various instruments (SITC-87).

Compared with Russia and the UK, Latvian imports from the USA have the lowest weight with a share of less than 1 per cent of total Latvian imports. Telecommunications equipment (SITC-76) and aircrafts (SITC-79) are ranked on top with import weights below 3 per cent. Imports of various instruments (SITC-87), medicinal and pharmaceutical products (SITC-54) and "various electrical machinery" (SITC-77) also do not constitute any eye-catching dependency.

Lithuania

Lithuania's exports to Russia are outstanding in comparison with the exports of the other Baltic States to Russia: an export share of 13.5 percent indicates rather close trade relations (Table 3a.). The Russian export weight in the main export groups even ranges from 17 to 61 per cent. The two top commodity groups come close to 50 per cent: General industrial machinery and equipment (SITC-74), with a focus on heating and cooling equipment, and specialized industrial machinery (SITC-72) are highly dependent from Russian markets. This applies as much more to alcoholic beverages (SITC-11) which heavenly rely on the Russian market. Electrical machinery exports (SITC-77) depend less on Russia although in the past it was an important customer of equipment for distributing electricity. Meanwhile, plastic articles, toys, baby carriages and sporting goods (SITC-89) reveal a higher level of export market diversity. A common feature of these major commodity groups is that none of them dominates Lithuanian world exports — all together they only account for about 15 per cent of Lithuania's world exports.

By contrast, the UK is a minor export partner of Lithuania. But at least the top export group exhibits a double-digit UK export weight: Furniture (SITC-82) plays the most prominent role in Lithuania's export to the UK. Exports of petroleum (SITC-33), fertilizers (SITC-56) and plastics in primary form (SITC-57) give the impression that the technology intensity of exports to the UK is much lower than of exports to Russia. The export of various kinds of apparel complements this picture (SITC-82).

A similar structure can be observed for Lithuania's US exports. Petroleum (SITC-33) dominates the export relations with a high US weight of 25 per cent. The US market is also of major importance for chemical products (SITC-59) whereas the US weight of the other major export groups — furniture (SITC-82), fertilizers (SITC-56) and instruments (SITC-87) — is close to the average US export share of 5.2 percent which is by far the highest in comparison of the Baltic States.

On the imports side, the high intensity of Lithuania's trade with Russia is mirrored by an import share of 14.4 per cent (Table 3b.). But imports from Russia are ruled by petroleum (SITC-33) with a share of more than 70 per cent of Lithuanian total imports from Russia and a share of more than 70 per cent of Lithuania's total petroleum imports. The other raw material-intensive imports of natural gas, fertilizers, iron and steel products and electric current are only of little weight although the Russian import weight in these groups is partly far beyond the average. Of course, petroleum imports could be easily substituted by alternative sources of supply. However, this might be

difficult if petroleum is processed in Lithuanian refineries for export. In this case it possibly would not pay off to purchase petroleum from far away suppliers.

Table 3:
Lithuanian trade with Russia, the UK and the USA by the main commodity groups, 2016

a. Exports SITC 2-digit	Partner Export-Share[a]	World Export-Share[b]	Partner Export-Weight[c]
Russia			
74	13.7	3.9	47.5
72	6.9	2.1	45.5
77	5.9	3.8	20.9
11	5.4	1.2	60.8
89	5.1	4.1	16.9
Total	100.0	100.0	13.5
UK			
82	15.6	6.5	10.2
33	9.4	13.1	3.0
84	6.0	2.8	9.0
56	5.2	3.0	7.2
57	4.5	2.5	7.7
Total	100.0	100.0	4.3
USA			
33	63.8	13.1	25.0
59	7.0	2.5	14.4
82	6.4	6.5	5.1
56	3.0	3.0	5.2
87	2.8	2.0	7.2
Total	100.0	100.0	5.2

b. Imports SITC 2-digit	Partner Import-Share[d]	World Import-Share[e]	Partner Import-Weight[f]
Russia			
33	70.4	14.3	71.2
34	4.9	1.7	41.5
27	3.5	1.0	53.5
67	3.0	2.3	18.5
35	2.9	1.4	29.0
Total	100.0	100.0	14.4
UK			
74	7.0	4.1	4.6
77	6.5	4.0	4.4
55	6.4	1.6	10.9
65	6.1	2.4	6.9
71	6.0	0.8	20.8
Total	100.0	100.0	2.7

Table 3 continued

| **b. Imports** | | | |
SITC 2-digit	Partner Import-Share[d]	World Import-Share[e]	Partner Import-Weight[f]
USA			
78	19.3	7.5	3.3
71	10.6	0.8	17.4
72	9.6	3.4	3.6
76	8.9	3.3	3.4
03	6.1	1.9	4.1
Total	100.0	100.0	1.3

[a]Exports to the partner country by commodity group in per cent of total exports to the partner country. — [b]Exports by commodity group in per cent of total exports to the world. — [c]Exports to the partner country by commodity group in per cent of total exports by commodity group. — [d]Imports from the partner country by commodity group in per cent of total imports from the partner country. — [e]Imports by commodity group in per cent of total imports from the world. — [f]Imports from the partner country by commodity group in per cent of total imports by commodity group.

Source: See Table 1.

Lithuanian imports from the UK are only a fraction of imports from Russia. Dominant import groups are missing, while technology-intensive goods in the form of general industrial, electrical and power-generating machinery (SITC-74, -77, -71) are characteristic for these imports. Piston engines seem to be of special importance in this context. Perfumery and related products (SITC-55), with a high UK import weight, and textile yarn and fabrics (SITC-65) complete the top 5 import groups which do not reveal any crucial dependencies.

Even less important for Lithuania are imports from the USA with a share of 1.3 per cent of total Lithuanian imports. Motor cars account for about one fifth of US imports (SITC-78), followed by engines and motors (SITC-71). The latter group is the only one with a double-digit US import weight. Agricultural machinery and tractors (SITC-72) and telecommunications equipment (SITC-76) are the other major import groups which all exhibit a relatively high technology-intensity — the similarities with the UK import structures are obvious. The only exception is the import of fish of various kinds (SITC-03).

Conclusions

The analysis of the Baltic States' sectoral patterns of trade with Russia, the UK and the USA gives a rather mixed picture of dependencies on single markets. In general, Russia is the major supplier of various raw materials, especially petroleum and natural gas. While most of these supplies could be easily substituted by alternative supplies from the world markets, Russia's position as the monopolist on the Baltic gas markets will be more persistent because import substitution is more costly and only possible on a long-term basis. UK and the US enterprises do not have a position of comparable

strength on single Baltic markets, not even for defense goods which might gain importance in the course of the new NATO politics towards Russia.

With respect to Baltic exports, it appears to be crucial to increase the competitiveness of industrial products to develop the markets of high income countries for income-elastic goods. It is obvious that Baltic exports to Russia are relatively technology-intensive while exports to UK and US markets are much more raw material- and labor-intensive. Poor product qualities and investment strategies with a focus on Russian markets might explain this dichotomy of Baltic exports.

4. Baltic Trade viewed from a Gravity Perspective

Russia appears as the main trading partner of the Baltic States. The UK and the USA are less important partners, but their export and imports shares as well as the pertinent commodity structure of trade suggest that these markets should not be neglected. In order to systematically analyze trade relations with the three partners a gravity model is deployed.

4.1. Some Methodological Remarks

Gravity models are often used in trade and integration analyses to assess the shaping forces of international trade flows. They assume that gravitational forces to undertake economic interaction stem from high incomes or population figures of trading partners, because these features promise high revenues from business deals with numerous well-funded clients. But transaction costs which may vary with distance can be expected to impede the impact of the gravitational forces on the intensity of trade relations. Various forms of distance may be relevant, not only real geographical distances as a proxy of transportation costs, but also „virtual distances" as exerted by tariff- or non-tariff-trade barriers, different languages, diversities in business cultures, traditions or economic systems. Gravity models date back to Linder (1961), Tinbergen (1962) and Linnemann (1966), but have been further developed over time and remained a common tool not only for trade but also for transport analyses.

In this contribution a double-log specification is deployed and performed by pooled OLS regression for the period 2000 to 2015. Dependent variable are logs of trade flows T_{tij}, either exports X_{tij} or imports M_{tij}, of each of the reporting countries:

$$\ln T_{tij} = Const + \beta_1 \ln GDP_{tj} + \beta_2 \ln PCI_{tj} + \beta_3 \ln DIST_{ij} + \sum^{k} \delta_k DUM_k + \varepsilon$$

with subscript t indicating the year of observation (2000 to 2015), i the reporting country, j the respective bilateral trading partner, k the enumerative index of country dummies, and ε is representing the error term.

The reporting countries i in our model are all 28 (still) member states of the EU-28, the trading partners j are 194 countries worldwide for which data for the independent

variables GDP, the per-capita-income PCI and bilateral distance DIST as main shaping forces could be collected. The group of dummy variables k (= 1, if the inherent condition is met, and =0 otherwise) consists of the variable CONTIG (=1, if i and j share a common land border), various EU entities (EU15 without UK and DE/Germany, UK and DE for the latter two countries,[7] the new EU-members of 2004, the new EU-members of 2007 and 2013), and RUS for Russia and CIS–RUS for the rest of the Commonwealth of Independent States (CIS) eventually trading via Russian links. The data – in sum 86,912 observations – have been obtained from Eurostat (2016) for trade data, World Bank (2016) for GDP and PCI data, Deutsche Bundesbank (2016) for exchange rates to translate the Eurostat trade figures to US-$, and Mayer and Zignago (2011) for distances and information on common borders.

After calculating this model separately for exports and imports, the numerical variables GDP, PCI, and DIST represent the average attracting forces of market size GDP and individual wealth PCI as well as the average hampering force of distance, while the coefficients of the country dummies represent the specific attitude to the partner markets j for the whole observation period. In a second step, predicted export and import values are calculated from these "average" equations and subtracted from the real values. The positive or negative differences (residuals) for the individual reporting countries i and the highlighted trading partners j indicate, whether reporting country i is trading with partner j more intensely in the respective year or less than the average in the sample. Thus, particular affinities are displayed, and we can see how far the countries observed were connected with Russia, the UK and the USA from 2000-2015.

4.2. Gravity Estimates for the EU-28 as Benchmark

Table 4 shows the results of the export gravity equation. The first five numerical variables define the average attracting forces of market size and wealth on export flows and the impeding influence of distance between exporter and destination: GDPs both of reporting and partner countries play the dominant role, a high coefficient above/close to 1 which is highly significant at the 1 per cent level indicates that large markets dominate trade flows. The per-capita-incomes are not equally relevant: that of the reporter is small but significant, and that of the partner is even totally insignificant. Apparently, the EU-28 members are exporting on average also to less wealthy countries. At the same time, the highly significant distance coefficient of nearly 1.2 indicates that distance is in fact hampering trade flows of European countries to a non-negligible extent. The CONTIG dummy indicating the trade-enhancing influence of a common land border exhibits a non-negligible and highly significant value. It should indeed be high in this context because the EU-28 members are trading intensively with each other via a great variety of common land borders.

For European exporters as a whole the value of the UK dummy, still significant at the 5 per cent level, is higher than the smaller RUS value which is even fully insignificant.

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[7] The UK has been singled out as one of our objects of observation, and Germany, because German exports and imports might dominate the subsample of BSR-EU-members.

This means in the context of the model that European countries are exporting definitely a little bit more intensely to the UK than British GDP and PCI as well as the distance between the UK and the exporter would suggest.

Table 4:
Export Gravity Estimates for the EU-28 Countries 2000–2015

Dependent variable: lnXd[a]	Coefficient β	Standard Error	t-Value	Probability>t
$lnGDP_i$ (Reporter)	1.1649	.0046	252.62	0.000
$lnPCI_i$ (Reporter)	.0318	.0099	3.21	0.001
$lnGDP_j$ (Partner)	.9320	.0039	239.64	0.000
$lnPCI_j$ (Partner)	.0051	.0054	.94	0.349
$lnDIST_{ij}$	−1.1823	.0099	−119.08	0.000
CONTIG	.6483	.0349	18.60	0.000
EU15–UKDE	.1835	.0224	8.18	0.000
UK	.1196	.0483	2.47	0.013
DE	.2798	.0576	4.86	0.000
EUNew2004	.6650	.0234	28.44	0.000
EUNew200713	.3570	.0309	11.54	0.000
RUS	.0725	.0514	1.41	0.158
CIS–RUS	.2168	.0272	7.96	0.000
USA	.1584	.0468	3.39	0.001
_cons	−26.8451	.1635	−164.17	0.000

Number of obs = 73626; F (14, 73611) = 18146.68; Prob.>F = 0.0000; R-squared = 0.7860; Root MSE = 1.6918.
[a]Exports of reporter i to partner j in US-$.

Source: Eurostat (2016); World Bank (2016); Deutsche Bundesbank (2016); Mayer and Zignago (2011); own compilation and calculations.

In contrast, the coefficient of the RUS dummy seems to be zero, and European trade relations with Russia are thus on a level which can be expected from Russia's market size and distance from Europe. Hence, the UK seems to be more important as an export destination for Europe as the Russian market. However, one should not forget the positive and significant coefficient for the rest of the CIS. This might raise again the relevance of the Russian case a bit, because influences can be expected to exist, but given the economic dominance of Russia over the rest of the CIS the impact of Russia itself should be greater.

The USA dummy has a slightly higher value than the UK dummy, and it is highly significant even at the 1 per cent level. Hence, the USA is the even more important export destination for the EU-28 countries compared to the UK. This is remarkable insofar as the greater economic weight of the USA is already controlled for by the numerical "country j"-Variables, whereby the distance to the USA is several times longer than the distance to the UK. In sum, the data suggest that the Brexit might do more harm to European exports than the Russian crisis so far, but any substantiated protectionist policy of the USA would harm Europe's exports substantially more.

The same procedure – again for the EU-28 trade flows as a whole – is applied to imports. Results are displayed in Table 5. All independent and dummy variables used here are statistically significant at the 1 per cent level here. The numerical variables behave as expected. It is remarkable that the distance coefficient is much smaller for imports than it is for exports, i.e., the hampering impact of distance is less important for imports to Europe than for its exports.

Table 5:
Import Gravity Estimates for the EU-28 Countries 2000–2015

Dependent variable: $\ln Md^a$	Coefficient	Standard Error	t-Value	Probability>t
$\ln GDP_i$ (Reporter)	1.3364	.0069	194.06	0.000
$\ln PCI_i$ (Reporter)	–.6129	.0159	–38.66	0.000
$\ln GDP_j$ (Partner)	1.2409	.0054	230.61	0.000
$\ln PCI_j$ (Partner)	–.0718	.0083	–8.68	0.000
$\ln DIST_{ij}$	–.7505	.0145	–51.81	0.000
CONTIG	1.1126	.0445	25.00	0.000
EU15–UKDE	1.4643	.0316	46.39	0.000
UK	.4348	.0581	7.48	0.000
DE	1.0704	.0580	18.44	0.000
EUNew2004	2.1513	.0316	68.18	0.000
EUNew200713	1.4991	.0419	35.81	0.000
RUS	1.1817	.0653	18.10	0.000
CIS–RUS	.5240	.0449	11.68	0.000
USA	–.8204	.0559	–14.69	0.000
_cons	–36.4341	.2264	160.96	0.000

Number of obs = 69949; F (14, 69934) = 14686.65; Prob.>F = 0.0000; R-squared = 0.6869; Root MSE = 2.5201.
(a) Imports of reporter i from partner j in US-$.

Source: Eurostat (2016); World Bank (2016); Deutsche Bundesbank (2016); Mayer and Zignago (2011); own compilation and calculations.

All dummy variables – CONTIG and the various country (group) dummies – show positive coefficients. Some are even of remarkable size, and all are statistically significant at the 1 per cent level. The EU-28 countries are importing more from the selected partners than it would be suggested by both trading partners' market size and the mutual distance between them. However, the comparison of the values of the Russian, the UK and the USA dummies is most interesting. For European imports, trade flows from Russia appear to be definitely more important than those from the UK – the RUS coefficient has a size more than twice as high as the UK one. The reason is the impact of energy sources, particularly natural gas and petroleum, as already analyzed in section 3. In fact striking is the negative coefficient of the USA dummy, with a size not far from "1" and statistically significant at the 1 per cent level. For Europe as a whole, the USA is definitely a less important import source: trade flows from across the Atlantic are by far smaller than could be expected in view of the economic weight of the USA.

4.3. How Russia, the UK and the USA are shaping Trade Flows of the Baltic States and their BSR Neighbors

The results of the gravity estimates for the EU-28 trade can be used for identifying the determinants of the Baltic States' and other BSR countries' trade. For this purpose, a comparison of the real trade figures with the calculated figures from the equation results in Tables 4 and 5 is performed in the following section 4.3.1. In a second step, a slightly adjusted gravity model will be calculated for the BSR countries as a group, and separately for Estonia, Latvia, and Lithuania in section 4.3.2.

4.3.1. Baltic Trade Flows Compared with the European Average

If we take the results of the coefficient estimates displayed in Tables 4 and 5 as the baseline of trading links of European countries, we can calculate their hypothetical exports and imports, assuming that the average values in the coefficients would be valid for all individual observations of trade flows. If we subtract logs of these hypothetical exports / imports from the logs of the real ones, these "residuals" show in how far the pertinent trade flow follows the European average or is more or less affected. If they are positive then reporting country *i* exports / imports more to / from partner country *j* than the average, and vice versa for negative residuals. Thus countries with positive residuals, particularly over a longer time-span, would be more affected of disturbances in the pertinent trade link than others with smaller or even negative residuals, and differences in size indicate higher or lower affectedness.

Table 6 displays the results of this calculation. It shows the residuals of the three Baltic States as well as of the other BSR countries regarding trade links to Russia, to the UK and to the USA. As space is limited, only four years have been chosen: 2000, 2006, 2012 (before difficulties in Russia began), and 2015 as the current edge in the gravity data set.

Some of the results are predictable, some others are striking. Beginning with the three Baltic States, the results indicate that these do not behave as a group. One common feature on the export side, however, is the dominance of the UK export-residual in 2000. In that year the three Baltic States were exporting more than proportionally to the UK; the same was true for exports to Russia, but to a lesser extent, as the lower RUS residual indicates. For Estonia it changed from 2006 on, Russia became more important. Only in the most recent year both residuals converged again so that the dependence on the Russian market began to decline. Latvia was leaning on the UK still in 2006, but in 2012 and 2015 Russia was dominating as export destination, although in 2015 the difference in residuals declined here, too. In contrast, Lithuania exhibits higher RUS values with the exception of 2012. Hence, its position as strongest exporter to Russia in the EU-28 is corroborated by these data. But nevertheless, the UK export residuals have been positive during the whole observation period for all three Baltic States.

Table 6:
Residuals of Trade of EU-Member States in the BSR Exports with Russia, the UK and the USA 2000, 2006, 2012, and 2015[a]

Reporter	Baltic States			Nordic Countries			Large BSR countries	
	Estonia	Latvia	Lithuania	Denmark	Finland	Sweden	Germany	Poland
Residual	**Exports to**							
Russia 2000	1,3040	,9426	1,4554	,5856	,9879	–,0993	,5562	n.a[b]
UK 2000	1,7206	2,1286	1,6432	,6366	1,5297	1,0602	–,8195	n.a[b]
USA 2000	,2540	,4052	,9274	,4925	1,0228	1,0014	,5207	n.a[b]
Russia 2006	1,0619	,7642	1,1458	–,1466	,4524	–,4500	,3382	–,2721
UK 2006	,4913	,8903	,7395	–,0222	,5928	,2975	–1,2435	,0208
USA 2006	1,3890	–,5198	,7240	,1964	,4769	,6581	,2428	–,8807
Russia 2012	,9893	,9504	1,2000	–,7680	–,4871	–1,0779	–,0089	–,6322
UK 2012	,4982	,3645	1,4295	,0208	,0929	,2030	–1,2772	,2815
USA 2012	1,0529	–,8348	–,1539	,1023	,0383	–,0284	,0440	–,9273
Russia 2015	,5492	,7953	1,1499	–1,1710	–,7421	–1,3045	–,2906	–,7567
UK 2015	,4151	,6548	,8340	–,5417	–,1436	–,1367	–1,3382	,2494
USA 2015	,3214	–,7438	,7122	,2019	–,0709	–,0747	,1142	–,7693
	Imports from							
Russia 2000	1,9271	1,3761	2,1596	,3101	1,1060	,3306	,5841	n.a[b]
UK 2000	1,0383	,2951	,8441	1,0014	1,1215	1,1851	–,7683	n.a[b]
USA 2000	,8683	–,0635	,1521	,6072	,7191	,9697	,0498	n.a[b]
Russia 2006	1,1752	,0865	1,1356	–,6728	,2478	,1068	–,2820	–,9014
UK 2006	,7021	,0349	,3515	,2475	,5398	,4779	–1,2646	–1,0460
USA 2006	,2613	–,5346	,0262	,1004	,0140	,1101	–,4536	–1,5768
Russia 2012	–,1028	–,4123	,8633	–1,8188	–,3879	–,3108	–,8674	–1,1760
UK 2012	1,4132	,3974	,4876	,1771	,1019	,5286	–1,2987	–1,0110
USA 2012	–,2041	–,7922	–,3491	–,2463	–,3354	–,1098	–,6019	–1,2966
Russia 2015	–,0430	–,1684	,6456	–,7345	–,5715	–,4711	–,9097	–1,3378
UK 2015	,6914	,1489	,5080	–,2505	–,2298	,0436	–1,6739	–1,0590
USA 2015	–,0255	–1,0895	–,1895	–,3977	–,5645	–,5534	–,6991	–1,3579

[a]Logs of real Exports to / Imports from Russia / United Kingdom / United States minus logs of calculated exports/imports from the equations in Tables 4 and 5. — [b]Apparently, Poland did not yet report to Eurostat in 2000, and has not provided retrospective data after its accession in 2004 as other new members as Estonia, Latvia, and Lithuania have done. The Polish data of the respective years are missing in the Eurostat (2016) database.

Source: Eurostat (2016); World Bank (2016); Deutsche Bundesbank (2016); Mayer and Zignago (2011); own compilation and calculations.

As regards the USA, this country has been an important destination for exports from Estonia and Lithuania with partially rather large positive residuals (with the exception of the year 2012 for Lithuania). For Latvia this was only the case at the beginning of the observation period in the year 2000. Later on, US export residuals for Latvia turned to the negative side with a non-negligible size.

On the import side, Estonia and Latvia apparently managed to curb their dependence on Russian imports which was still visible in 2000 and 2006. The more recent values of 2012 and 2015 indicate more than proportional imports from the UK, while imports from Russia were less than proportional, given the individual countries' market size and location. Lithuania again behaved differently: Russian imports dominated the time series.

The UK import residuals have been positive as well during the whole observation period for all three Baltic States. This means that Estonia, Latvia and Lithuania have something to lose if a "hard Brexit" would occur. In contrast, the USA import residuals for Estonia and Lithuania showed positive values only for the years 2000 and 2006. Afterwards, they turned to the negative side, as it was the case for Latvia for the whole observation period: Baltic imports from the USA failed to reach the EU level, with the exception of Estonia, where the negative residual was close to zero in 2015. Latvia again appears as the Baltic State with the least intensive trade relations to the USA.

Turning to the other BSR countries as benchmarks: For the Nordic countries it is plausible that both Denmark and Sweden exhibit higher positive UK-residuals (or lower negative ones) than Russian residuals for exports as well as for imports in all years. Any "hard Brexit" would touch them clearly much more than the Russian crisis has done so far. The same seems to be true for Finland, although the actual export and import shares are higher for Russia.[8] But only the import residuals of 2000 in Table 6 seem to be more or less identical, and in all other cases the UK one is higher or less negative. Finland's location helps to explain this result, i.e. the proximity to Russia and the medium term distance to the UK. Controlling for Finland's neighborhood to Russia, a "hard Brexit" wood hurt the country, too, as it is the case for its Western Scandinavian neighbors.

Regarding the USA, the export residuals of Nordic countries were positive and high in 2000, later on they decreased. For Denmark, the residual again increased in 2015, while the USA residuals turned slightly negative in Sweden from 2012 on and in Finland for 2015. For Denmark the USA have kept their position as an important export destination, while for Finland and Sweden exports to the USA are at the level that can be expected in view of America's economic weight and distance from the Nordic countries, as the values are close to zero. The USA import residuals equally decreased from rather high values in 2000, but here the development follows a steeper slope.

Poland clearly shows a much higher dependency on exports to the UK, because all UK export residuals are clearly positive while Russian ones are all negative. Regarding the USA, Poland is much less oriented towards exports to the USA than any other country in the whole sample. The size of negative Polish US export residuals is even higher than that of the Latvian residuals, and the residuals do not shrink substantially in the course of time. On the import side this analysis also shows at least a slight dominance of imports from the UK. UK import residuals are negative, but are closer to zero than the Russian ones, with the exception of 2006. Polish US import residuals turn out to be the highest, both among the three sources of imports analyzed here, and among all reporting countries in our sample. Thus Poland might be more anxious of the Brexit compared to protectionist tendencies in the USA. But given the

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[8] Calculated form the sources of Figures 1-3.

close connection of Poland to German markets it might suffer indirectly, if Germany would be hit by US protectionism.

Germany itself turns out to be a special case in this context. Although the share of exports to and imports from Russia is definitely much lower than UK shares, the gravity analysis shows that Russian residuals are either positive or at least less negative than the UK residuals for both exports and imports. In the first years of the observation period Germany was trading with Russia more than proportionally (as market size and location would suggest). This changed in the years after 2006 with increasing intensity. But German trade links to the UK were less than proportional during the whole period.

The German results concerning the USA are different from the UK outcomes. The US export residuals of Germany are positive during the whole observation period, albeit shrinking in size. The USA have kept so far their position as important export destination for German commodities. On the import side the initially positive US residuals turned to the negative side, reaching a non-negligible size. But in any case they did not reach the relatively high UK level.

In sum the gravity residual analysis shows that the Baltic States and their Baltic Rim neighbors have to lose from all three threats to free trade. The Russian crisis is still more relevant for Estonia, Latvia and Lithuania, but Brexit and US protectionism might hurt them as well. For the other BSR countries the British and American case might be more threatening, at least on the export side.

4.3.2.   A Gravity Analysis Focusing on the Baltic States and their Neighbors

In addition to the analysis performed so far – by calculating the gravity model for the entire EU-28 and assessing the residuals for Baltic Rim countries – a second method has been applied, i.e. calculating a gravity model (a) for the whole group of Baltic Rim reporting countries i among the EU-28 members as a benchmark, and (b) for the three Baltic States Estonia, Latvia, Lithuania separately.

The set of independent variables has been changed insofar, as country dummies have been redesigned in order (i) to discern between different Baltic Rim country groups as partner countries j and, at the same time, (ii) to construct the country dummies in a "profile-free" manner without any overlapping. Therefore, the CONTIG variable has been skipped, as all major contiguity relations in the BSR are now controlled by explicit country group dummies: Nordic countries (NORDIC) has been subtracted from the EU-15 alongside with the UK and Germany. Accordingly, Estonia, Latvia, and Lithuania (BALT3) as well as Poland (PL) have been subtracted from the new EU-members of 2004. For both groups (a) and (b) of reporting countries i the coefficients directly convey information on the attitude towards the partner countries j as given by the country dummy groups. Moreover, for the individual country gravities of the three Baltic States the numerical variable $lnPCI_i$ (Reporter) has been skipped, because it interacts with $lnGDP_i$ (Reporter) if a single-country-gravity is calculated. In the actual model design $lnGDP_i$ (Reporter) represents a kind of time

trend variable for exports or imports. The tables 6a to 6d are displaying the results of this focused gravity analysis for exports.

BSR Exports

With respect to the numerical variables of the equation for the whole EU member states in the BSR (Table 6a), both GDP_i and GDP_j variables show the expected behavior with high positive and highly significant coefficients. Coefficients of both PCI_i of the reporter and PCI_j of the partners are small but positive and significant as well, whereby that of the partners is much smaller. Baltic Rim countries are trading more with richer countries than the rest of the EU-28, as the PCI_j coefficient in Table 6a is greater than the (non-significant) coefficient for the former overall gravity (Table 4). In this context it is revealing that the coefficient of the distance variable $DIST_{ij}$, (which is negative and highly significant as normal and) is smaller for the Baltic Rim countries (–1 versus –1.18). The trade hampering impact of distance does not play the same role for the exports of the Baltic Rim countries than for the EU countries as a joint sample.

Concerning the country group dummies of the BSR export equation it can be noted that all of them are positive and highly significant at the 1 per-cent-level for the Baltic Rim countries (Table 6a). With all of them the BSR countries are trading more intensely than might be expected from the partners' economic weight and location. Among the EU-15 core countries, the Nordic countries exhibit the highest coefficient of 1.3 followed by the coefficients for Germany, the UK and the rest of the EU-15. Only the latter one is somewhat lagging behind in size. Among the new members, the intra-Baltic States form an integration zone on its own with an outstanding coefficient of 2.2, but also the coefficients for Poland and the other new members of 2004 have a non-negligible size. The new members of 2007 and 2013 appear to be less important as export destinations.

Comparing the coefficients of the most interesting core variables, the UK, RUS and USA, renders a somewhat surprising result: Russia's coefficient now has a positive value beyond "1" for the entire group of Baltic Rim countries, which is higher than that of the UK with .73 and that of the USA with .34 (Table 6a). This result can partly be explained by the fact that we have skipped the CONTIG variable in this equation, because all common land border effects are caught by the country dummies. Therefore, the Russia dummy now captures part of the explaining power of the common land borders for export flows from Finland, the Baltic States and from Poland. Nevertheless, the high RUS coefficient tells us in the context of the model that exports to Russia from the BSR are high in relationship to the only moderate economic weight of Russia and its distinctly adjacent location to the BSR. Moreover, we know from the residuals in section 4.3 that the result of the joint BSR equation renders a "mélange" of the Nordic links to the UK and the USA, the Baltic States' links to Russia, and Germany's more than proportional exports to Russia.

Table 6a:
Export Gravity Estimates for the Baltic Rim EU Members 2000–2015[a]

Dependent variable: $\ln Xd$[a]	Coefficient β	Standard Error	t-Value	Probability>t
$\ln GDP_i$ (Reporter)	1.0933	.0085	127.99	0.000
$\ln PCI_i$ (Reporter)	.2481	.0204	12.16	0.000
$\ln GDP_j$ (Partner)	.9110	.0073	123.95	0.000
$\ln PCI_j$ (Partner)	.0272	.0103	2.65	0.008
$\ln DIST_{ij}$	−.9968	.0199	−50.12	0.000
EU15–UKDENORDIC	.4698	.0427	11.00	0.000
UK	.7264	.0821	8.84	0.000
DE	1.0070	.0744	13.53	0.000
NORDIC	1.2859	.0627	20.49	0.000
EUNew2004–BALTPL	.9590	.0485	19.77	0.000
BALT3	2.1984	.1012	21.72	0.000
PL	1.0193	.1030	10.46	0.000
EUNew200713	.3422	.0499	11.48	0.000
RUS	1.0768	.1030	10.46	0.000
CIS–RUS	1.0027	.0480	20.88	0.000
USA	.3441	.0640	5.38	0.000
_cons	−28.4155	.3092	−91.89	0.000

Number of obs = 20693; F (16, 20676) = 5643.73; Prob.>F = 0.0000; R-squared = 0.8078; Root MSE = 1.6132.
[a]Exports of reporter *i* to partner *j* in US-$.

Source: Eurostat (2016); World Bank (2016); Deutsche Bundesbank (2016); Mayer and Zignago (2011); own compilation and calculations.

One may notice, in addition, that the export link to the rest of the CIS-States excluding Russia (variable "CIS–RUS") exhibits a rather positive record with a highly significant coefficient of "1" in Table 6a. In the context of the model this result indicates more than proportional exports to these countries despite their rather limited economic potential and their remote geographical location. Moreover, this positive coefficient may give a hint that trade with the other CIS states may in fact take place via Baltic Sea routes.

Estonian, Latvian and Lithuanian Exports

Turning to the individual export equations of Estonia, Latvia and Lithuania (Tables 6b to 6d) we can notice that the coefficient of the reporter-GDP_i is much smaller for Estonia than for Latvia and Lithuania. In the context of the double-log specification used here this means that a one percent increase of the reporter-GDP_i resulted in a smaller increase of only .6 per cent of Estonian exports while Latvian and Lithuanian exports grew more or less proportionally with the domestic GDP during the observation period. At the same time, the negative distance coefficient $DIST_{ij}$ is higher for Estonia compared to Latvia and Lithuania. Apparently, Estonia's export partners are primarily located less far away than those of Latvia and Lithuania.

Table 6b:
Export Gravity Estimates for Estonia 2000–2015[a]

Dependent variable: $lnXd$[a]	Coefficient β	Standard Error	t-Value	Probability>t
$lnGDP_i$ (Reporter)	.5931	.0841	7.05	0.000
$lnGDP_j$ (Partner)	.8626	.0251	34.38	0.000
$lnPCI_j$ (Partner)	.0900	.0380	2.37	0.018
$lnDIST_{ij}$	−1.1251	.0657	−17.14	0.000
EU15–UKDENORDIC	.6514	.1291	5.05	0.000
UK	1.1183	.1403	7.97	0.000
DE	1.3677	.1503	9.10	0.000
NORDIC	2.0400	.2024	10.08	0.000
EUNew2004–BALTPL	1.3652	.1466	9.31	0.000
BALT3	4.2287	.1926	21.96	0.000
PL	1.1994	.1580	7.59	0.000
EUNew200713	.2239	.1625	1.38	0.168
RUS	2.0647	.1609	12.83	0.000
CIS–RUS	1.6950	.1361	12.45	0.000
USA	1.1654	.1876	6.21	0.000
_cons	−12.7556	2.0573	−6.20	0.000

Number of obs = 2281; F (15, 2265) = 1483.48; Prob.>F = 0.0000; R-squared = 0.7228; Root MSE = 1.7753.

[a]Exports of Estonia to partner *j* in US-$.

Source: Eurostat (2016); World Bank (2016); Deutsche Bundesbank (2016); Mayer and Zignago (2011); own compilation and calculations.

Table 6c:
Export Gravity Estimates for Latvia 2000–2015[a]

Dependent variable: $\ln Xd^a$	Coefficient β	Standard Error	t-Value	Probability>t
$\ln GDP_i$ (Reporter)	1.0731	.0891	12.04	0.000
$\ln GDP_j$ (Partner)	.7336	.0258	28.39	0.000
$\ln PCI_j$ (Partner)	.1225	.0388	3.15	0.002
$\ln DIST_{ij}$	−1.0170	.0117	−14.15	0.000
EU15–UKDENORDIC	.9710	.1425	6.81	0.000
UK	2.2761	.2145	10.61	0.000
DE	2.2020	.1807	12.18	0.000
NORDIC	2.0200	.2030	9.95	0.000
EUNew2004–BALTPL	1.7455	.1649	10.59	0.000
BALT3	4.5501	.2354	19.33	0.000
PL	2.0706	.2156	9.60	0.000
EUNew200713	.3748	.1833	2.04	0.041
RUS	2.8950	.1693	17.10	0.000
CIS–RUS	2.8071	.1178	−1.60	0.109
USA	1.0732	.1713	6.27	0.000
_cons	−22.4538	2.2122	−10.15	0.000

Number of obs = 2402; F (16, 2386) = 1363.15; Prob.>F = 0.0000; R-squared = 0.6850; Root MSE = 1.9088.
[a]Exports of Latvia to partner *j* in US-$.

Source: Eurostat (2016); World Bank (2016); Deutsche Bundesbank (2016); Mayer and Zignago (2011); own compilation and calculations.

Among the country group dummies the close intra-Baltic integration results in extraordinarily high coefficients of 4.2, 4.5 and 5.3. These dummies as well as nearly all other dummies are definitely positive and highly significant (with the exception of the new EU members of 2007 and 2013 for Estonian and for Latvian exports). Particularly the Nordic countries are a prime destination of Baltic exports. These results underline the perception that the three Baltic States maintain primarily regional trade relations while their integration into world markets can still be intensified.

As a consequence, it is not surprising that the coefficients of the RUS dummies are by far higher than those of the UK and the US dummies for all three Baltic States; only in the case of Estonia the US dummy shows a slightly higher value than the UK dummy. Russia is – at least for the whole observation period and despite tendencies of decreasing dependency at the current edge – still a gravity center particularly for Lithuanian exports (3.4), somewhat less so for Latvian (2.9) and even lesser for Estonia (2.1). But in case of the UK the dummies are also positive and highly significant, particularly for Latvia (2.3) and Lithuania (2.6), while the value for Estonia is lower (1.2).

It is not surprising for Estonia and Lithuania that the USA dummies exhibit positive and highly significant values as well (EST: 1.16, LIT: 2.0), as their residuals in the

all-over-EU-28 gravity (Table 5) indicated more than proportional exports to the USA. The focused gravities in this section now show that also Latvia could lose from US protectionism, as it exhibits a value of the US dummy (1.07) which is close to the Estonian value. Even though Latvia may be exporting to the USA less than proportional in the European context the importance of this market appears to be non-negligible from a national perspective.

Table 6d:
Export Gravity Estimates for Lithuania 2000–2015[a]

Dependent variable: $\ln Xd^a$	Coefficient β	Standard Error	t-Value	Probability>t
$\ln GDP_i$ (Reporter)	1.1474	.0842	13.63	0.000
$\ln GDP_j$ (Partner)	.7804	.0251	31.03	0.000
$\ln PCI_j$ (Partner)	.0384	.0378	1.02	0.310
$\ln DIST_{ij}$	−.9466	.0640	−14.79	0.000
EU15–UKDENORDIC	1.6465	.1427	11.53	0.000
UK	2.5954	.1772	16.34	0.000
DE	2.6045	.1594	12.18	0.000
NORDIC	2.5735	.1716	14.99	0.000
EUNew2004–BALTPL	1.5452	.1576	9.80	0.000
BALT3	5.2520	.1954	26.87	0.000
PL	2.7671	.1960	14.12	0.000
EUNew200713	1.2327	.1579	7.81	0.000
RUS	3.4281	.1646	20.82	0.000
CIS–RUS	3.3572	.1178	−1.60	0.109
USA	1.9493	.1506	12.94	0.000
_cons	−25.2821	2.0720	−12.20	0.000

Number of obs = 2429; F (16, 2413) = 1411.65; Prob.>F = 0.0000; R-squared = 0.7181; Root MSE = 1.8460.
[a]Exports of Lithuania to partner *j* in US-$.

Source: Eurostat (2016); World Bank (2016); Deutsche Bundesbank (2016); Mayer and Zignago (2011); own compilation and calculations.

To sum up the results for exports, all three challenges (impaired exports to Russia, a hard Brexit as well as US protectionism) turn out to be relevant for the three Baltic States. However, the Baltic States' exports still focus on. Hence, the Baltic States need to further adjust their exports to Russia to a normal level as suggested by market size and distance – as has already been the case in the last years – in order to alleviate any dependence on the large neighbor. Moreover, the less marked but non-negligible links to the UK and to the USA show that important alternative destinations for Baltic exports exist. But these are endangered by offenses to free trade as well.

BSR Imports

Tables 7a to 7d show the pertinent results for the focused gravity estimates for the BSR as a benchmark and then separately for Estonia, Latvia and Lithuania. Starting with the whole BSR (Table 7a), the coefficient of the partner countries GDP_j is higher than in the case of exports (Table 6a), the partners' PCI_j apparently plays even a negative role, and the coefficient of the distance variable $DIST_{ij}$ is distinctly smaller on the import side. These findings may be interpreted by saying that (i) large partners play a particular role for Baltic Rim countries as source of imports, (ii) commodities are imported from all countries regardless of the their stage of development, (iii) imports are coming from definitely more distant sources. Moreover, we observe all country dummies to be highly significant at the 1 per cent level and showing greater values than those on the export side, with the exception of the US dummy. Apparently, the intra-European import intensity is even more pronounced as could be expected from the wealth and proximity within Europe.

Table 7a:
Import Gravity Estimates for the Baltic Rim EU Members 2000–2015[a]

Dependent variable: $lnMd(a)$	Coefficient β	Standard Error	t-Value	Probability>t
$lnGDP_i$ (Reporter)	1.2840	.0139	92.22	0.000
$lnPCI_i$ (Reporter)	−.7307	.0325	−22.48	0.000
$lnGDP_j$ (Partner)	1.2318	.0106	115.83	0.000
$lnPCI_j$ (Partner)	−.0399	.0165	−2.42	0.015
$lnDIST_{ij}$	−.6303	.0314	−20.10	0.000
EU15–UKDENORDIC	1.9240	.0659	29.20	0.000
UK	1.0050	.0917	10.95	0.000
DE	2.1445	.0802	26.75	0.000
NORDIC	2.8226	.0973	29.01	0.000
EUNew2004–BALTPL	3.0068	.0671	44.83	0.000
BALT3	4.4373	.1301	34.12	0.000
PL	2.8769	.1025	28.08	0.000
EUNew200713	1.7285	.0697	24.78	0.000
RUS	2.3954	.1190	20.13	0.000
CIS–RUS	1.0373	.0891	11.64	0.000
USA	−.7384	.0787	−9.36	0.000
_cons	−35.3485	.4574	−77.29	0.000

Number of obs = 19371; F (16, 19354) = 5201.50; Prob.>F = 0.0000; R-squared = 0.7009; Root MSE = 2.4756.
[a]Imports of reporter *i* from partner *j* in US-$.

Source: Eurostat (2016); World Bank (2016); Deutsche Bundesbank (2016); Mayer and Zignago (2011); own compilation and calculations.

Looking at the three challenges which this analysis is focusing on – Russia, Brexit and the USA – renders the impression that on the import side impaired imports from Russia seem to be the most serious problem. Although imports from the UK exhibit a

highly significant and fair coefficient of 1.0 the Russian counterpart nearly reaches the threshold of 2.4 for the Baltic Sea Region as a whole (Table 7a). These figures mirror the higher dependency on energy imports from Russia. The UK coefficient is further downgraded by the smallest size of positive coefficients. Even the coefficient for imports from the other CIS countries is higher. The absolute bottom-placed import partner country in the context of the model, however, is the USA. On the import side, trade flows from the USA to the BSR are clearly less important than the country's economic strength and location would suggest.

Estonian, Latvian and Lithuanian Imports

On the import side the separate gravities for Estonia, Latvia, and Lithuania (Tables 7b to 7d) render differences in size with respect to the – in all three cases highest – RUS dummy. A more homogeneous picture emerges for the UK and US dummies, which mirror the aforementioned results for the whole BSR as well.

Table 7b:
Import Gravity Estimates for Estonia 2000–2015[a]

Dependent variable: $\ln Xd(a)$	Coefficient β	Standard Error	t-Value	Probability>t
$\ln GDP_i$ (Reporter)	−1.0394	.1096	−9.49	0.000
$\ln GDP_j$ (Partner)	1.3581	.0342	39.74	0.000
$\ln PCI_j$ (Partner)	.0796	.0552	1.44	0.149
$\ln DIST_{ij}$	−.7691	.1001	−7.69	0.000
EU15–UKDENORDIC	1.7741	.1962	9.04	0.000
UK	.8647	.2999	2.88	0.004
DE	1.7900	.2864	6.25	0.000
NORDIC	2.8514	.3444	8.28	0.000
EUNew2004–BALTPL	3.5398	.1977	17.91	0.000
BALT3	6.7563	.3386	19.95	0.000
PL	3.4083	.3220	10.59	0.000
EUNew200713	2.0175	.2171	9.29	0.000
RUS	2.7561	.2513	10.97	0.000
CIS–RUS	3.3242	.2417	13.76	0.000
USA	−1.2393	.2192	−5.65	0.000
_cons	9.2836	2.5667	3.62	0.000

Number of obs = 2088; F (15, 2072) = 722.89; Prob.>F = 0.0000; R-squared = 0.7126; Root MSE = 2.4176.
[a]Imports of Estonia from partner *j* in US-$.

Source: Eurostat (2016); World Bank (2016); Deutsche Bundesbank (2016); Mayer and Zignago (2011); own compilation and calculations.

Estonia shows the lowest Russia coefficient (2.8 in Table 7b) which is close to the BSR coefficient (2.4 in Table 7a). The Latvian RUS coefficient is somewhat larger (3.1 in Table 7c) while the Lithuanian coefficient of 4.3 in Table 7d stands out and exhibits the still close relationship of this country with Russia.

Quite similar are the still positive coefficients for imports from the UK. They range in the interval of .9 to 1.2 which is in line with the pertinent coefficient of 1.0 for the whole BSR. They all reflect over-proportional Baltic imports from the UK.

Table 7c:
Import Gravity Estimates for Latvia 2000–2015[a]

Dependent variable: $\ln Xd(a)$	Coefficient β	Standard Error	t-Value	Probability>t
$\ln GDP_i$ (Reporter)	−.2537	.1047	−2.42	0.016
$\ln GDP_j$ (Partner)	1.1283	.0334	33.80	0.000
$\ln PCI_j$ (Partner)	.2205	.0488	4.52	0.000
$\ln DIST_{ij}$	−.9719	.0968	−10.04	0.000
EU15–UKDENORDIC	1.8835	.1827	10.31	0.000
UK	.9156	.2295	3.99	0.000
DE	2.1949	.2373	9.25	0.000
NORDIC	2.3609	.2859	8.26	0.000
EUNew2004–BALTPL	3.2888	.2088	15.75	0.000
BALT3	6.2291	.3242	19.21	0.000
PL	3.4300	.2835	12.10	0.000
EUNew200713	2.1379	.2295	9.32	0.000
RUS	3.0530	.2507	12.18	0.000
CIS–RUS	3.4317	.1953	17.57	0.000
USA	−.6070	.1926	−3.15	0.002
_cons	−2.9573	2.6469	−1.12	0.264

Number of obs = 1998; F (15, 1982) = 998.36; Prob.>F = 0.0000; R-squared = 0.7216; Root MSE = 2.2314.
(a) Imports of Latvia from partner *j* in US-$.

Source: Eurostat (2016); World Bank (2016); Deutsche Bundesbank (2016); Mayer and Zignago (2011); own compilation and calculations.

This homogeneous picture is also true for the US dummies. Latvia and Lithuania exhibit negative values for the coefficient (–.6) which mirror the value for the whole BSR (–.7). Only Estonia shows a negative coefficient which is twice as large (1.2).

To sum up, the import results render the impression that Russia is the more important partner of the Baltic States: Imports from Russia are more important than imports from the UK, let alone imports from the USA. At the same time, Russia is more important for Baltic imports compared to Russia's dwindling role as a destination for Baltic exports. A coherent picture for both imports and exports is drawn with respect to the hierarchy: Lithuania is more dependent on Russia than Latvia, and Latvia is more dependent than Estonia. These results thus corroborate the results of the shares and of the residuals analyses. Any disturbances in imports from Russia might pose bigger problems than losses from decreasing UK deliveries, notwithstanding that the latter seem to be important enough to fear losses from a hard Brexit as well. In contrast, impaired imports from the USA seem to raise the least concerns. But a

looming protectionist regime in the USA would primarily affect Baltic exports, and in this respect all three countries are more vulnerable than in the case of imports.

Table 7d:
Import Gravity Estimates for Lithuania 2000–2015[a]

Dependent variable: lnXd(a)	Coefficient β	Standard Error	t-Value	Probability>t
lnGDP$_i$ (Reporter)	−.7114	.1160	−6.13	0.016
lnGDP$_j$ (Partner)	1.2071	.0396	33.51	0.000
lnPCI$_j$ (Partner)	.1197	.0572	2.09	0.000
lnDIST$_{ij}$	−.5854	.0879	−6.66	0.000
EU15–UKDENORDIC	2.0113	.1879	10.71	0.000
UK	1.1941	.2420	4.93	0.000
DE	2.3332	.2526	9.24	0.000
NORDIC	2.8021	.2883	8.26	0.000
EUNew2004–BALTPL	3.5408	.2083	17.00	0.000
BALT3	6.5255	.3009	21.68	0.000
PL	3.8659	.3256	11.87	0.000
EUNew200713	2.2830	.2268	10.07	0.000
RUS	4.2794	.2321	18.44	0.000
CIS–RUS	3.2457	.2045	15.87	0.000
USA	−.6428	.2259	−2.85	0.002
_cons	4.6537	2.7382	1.70	0.089

Number of obs = 2199; F (15, 2183) = 1147.22; Prob.>F = 0.0000; R-squared = 0.6517; Root MSE = 2.5364.
(a) Imports of Lithuania from partner *j* in US-$.

Source: Eurostat (2016); World Bank (2016), Deutsche Bundesbank (2016); Mayer and Zignago (2011); own compilation and calculations.

5.   EU Presidency with a Free Trade Agenda

The trade analysis reveals that Estonia, Latvia and Lithuania could be affected negatively by all the three challenges to the free movements of goods and services. While they are still trading over-proportionally with Russia the attractiveness of UK and US markets for Baltic enterprises is already visible and these markets offer further development potential. For a number of industries close trade relations can be observed despite the relatively small overall export and import shares. Especially for the small and vulnerable economies of the Baltic States it is important to avoid economic dependencies which could pave the way for political blackmail. In this respect free trade creates additional degrees of freedom to find alternative sources of supply and sales opportunities. Even a possible boycott of Russian gas deliveries becomes less threatening if open markets offer alternative energy sources. Moreover, without barriers to trade on world markets, dependencies from particular export markets are less likely to emerge. But a lesson still to be learnt by Baltic exporters is that only competitive producers can make use of the opportunities of free trade. They have to overcome the dichotomy of supplying "technology-intensive" goods to Russia and raw material- and labor-intensive goods to Western countries.

Against this backdrop, the further development of UK and US markets promises a technological up-grade of Baltic export structures and offers an opportunity for diversification which would also balance "East-West-Trade" and diminish strategic dependencies. Free trade on world markets would foster Baltic efforts to become politically and economically more independent from the large neighbor and increase the gains from globalization. The Baltic support for free trade agreements with the USA and the UK in course of the Brexit would be a logical consequence.

The Estonian EU Presidency offers the chance to promote the concept of open markets in favor of the whole EU. If Estonia would pursue a presidential agenda with a focus on free trade it might contribute to bridging political divides which are arising in the course of new protectionism, sanctions and EU disintegration

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Appendix

SITC	
Box 1:	
Selected Commodity Groups of the Standard International Trade Classification (Rev. 4)	
SITC	
03	Fish, crustac., molluscs and prep. thereof
11	Beverages
24	Wood, lumber and cork
27	Crude fertilizers and crude minerals
29	Crude animal and vegetable materials
33	Petroleum, petroleum products
34	Gas, natural and manufactured
35	Electric current
53	Dyeing, tanning and colouring materials
54	Medicinal and pharmaceutical products
55	Essential oils and resinoids etc.
56	Fertilizers
57	Plastics in primary forms
59	Chemical materials and products, n.e.s.
63	Cork and wood manufactures
65	Textile yarn, fabrics, made-up articles
67	Iron and steel
69	Manufactures of metals, n.e.s.
71	Power generating machinery and equipment
72	Machinery for special industries
74	General industrial machinery and equipment
76	Telecommunications apparatus and equipment
77	Electrical machinery and apparatus
78	Road vehicles
79	Other transport equipment including ships
81	Prefabricated buildings
82	Furniture and parts thereof
84	Articles of apparel and accessories
87	Professional and scientific instruments
89	Miscellaneous manufactured articles, n.e.s.
9	Commodities and Transactions not classified elsewhere in the SITC

Source: United Nations (2017).