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Russia's and the EU's Sanctions

Economic and Trade Effects, Compliance and the Way Forward

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Research assistance: Irene Langer (WIFO)

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ABSTRACT

This report summarises empirical facts about the economic impact of the EU sanctions against Russia and the Russian countersanctions, both implemented in the summer of 2014. The observed decline in trade volumes between the EU and Russia is not only due to the sanctions, but also other economic factors, such as the downturn of the Russian economy, largely caused by the falling oil price and the ensuing ruble depreciation. Furthermore, empirical evidence suggests that European and Russian companies alike managed to partly divert trade flows to other international markets in response to the deteriorating trade relationships. Overall trade diversion, however, cannot nearly compensate for losses of EU exports to Russia and thus mitigate the economy-wide negative impacts. Finally, descriptive evidence and additional information seem to indicate that compliance with the sanctions was partly circumvented right after the implementation of the sanctions in 2014, in particular for agri-food goods via countries of the Eurasian Economic Union. Legal trade diversion through countries unaffected by the sanctions has also taken place. It is important to emphasise that this study does not assess the political costs or effectiveness of the sanctions, but merely analyses potential economic costs caused by all sanction measures in place.

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1 Economic relationships between Russia and the EU in times of sanctions and economic downturn

1.1 The history of EU and Russian economic sanctions

In 2014, the political conflict between Russia and Western countries, which erupted due to the conflict in East Ukraine and Russia's destabilisation of Ukraine and annexation of the Crimea and Sevastopol, gave way to economic sanctions by the EU, USA and other Western countries against Russia. Restrictive measures were imposed gradually: In the spring of 2014 decisions were made concerning travel restrictions and asset freezes for selected individuals; an import ban on goods originating from Crimea or Sevastopol followed later on, before a comprehensive package of targeted economic sanctions was adopted 29 July 2014([1]). It includes

- measures to restrict Russia's access to EU capital markets,

- an embargo on the imports and exports of arms and related material from/to Russia,

- a prohibition of exports of dual use goods and technology for military use in Russia as well as

- of products that are destined for deep water oil exploration and production, arctic oil exploration or production and shale oil projects in Russia.

In contrast to the USA, existing export contracts in the EU were exempted; the sanctions thus concerned only new contracts closed after the decisions had been made by the EU Council. They were extended several times since then, the latest such extension decided upon in June 2017 for the sanctions to be in force until 31 January 2018.

Responding to the Western sanctions in early August 2014, Russia prohibited imports of certain agri-food goods from countries that imposed sanctions on Russia, in particular the USA, EU, Canada, Australia and Norway (extended later on to Albania, Montenegro, Iceland, Liechtenstein and the Ukraine). This import ban includes beef and pork of all kinds, poultry and poultry products, smoked foodstuffs and sausages, milk and milk products including raw milk and all foodstuffs containing milk as well as fish, vegetables and fruits([2]).

It is important to stress that the EU sanctions concern only a very small group of products, exhibiting a minor share in total EU exports to Russia. The Russian embargo, on the other hand, seems more substantial both for the EU, with Russia being the second most important destination market for agri-food goods, and Russia since the EU is its largest supplier of agri-food products (see chapter 2 for further details).

1.2 Multiple factors weakening the Russian economy

Whether and to what extent these sanctions by the Western economies and Russian retaliatory measures have impacted the Russian economy over the last three years is hard to assess since at the same time the sanctions came into force when the oil price, a major source of government revenues in Russia, dropped considerably, as Figure 1 depicts. This negative oil price shock adversely affected output growth and exchange rates (Rautava, J.; Ito, K.; Tuzova, Y. and Qayum, F.). Many economists have thus argued that these multiple shocks caused the economic problems Russia has faced since 2013/2014. A detailed portrait of the various roots of Russia's recession in the wake of the economic crisis 2008/2009 and the additional shocks of 2014 – international sanctions and sharp decline in the international oil price – is summarised by

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[1] See (Moret, E. et al.) and (Dreyer, I. and Luengo-Cabrera, J.) for a detailed presentation of the content and timeline of diplomatic decisions.
[2] Products used specifically for the production of baby food are excluded from the ban.

(Dabrowski, M.). In the context of the 2014 events the Russian economy experienced (Tuzova, Y. and Qayum, F.; Nelson, R.; Kholodilin, K. et al.):

- an economic slowdown, with GDP growth slowing to 0.7 % in 2014, before contracting by 2.8 % in 2015;

- a massive depreciation of the ruble by more than 50 % against the US dollar in 2015;

- a substantial increase in the inflation rate, especially with respect to food prices (Gros, D. and Di Salvo, M.);

- budgetary pressure;

- a substantial outflow of capital, deteriorating Russia's capital and financial account balance.

Figure 1: Economic trends in Russia since 2013
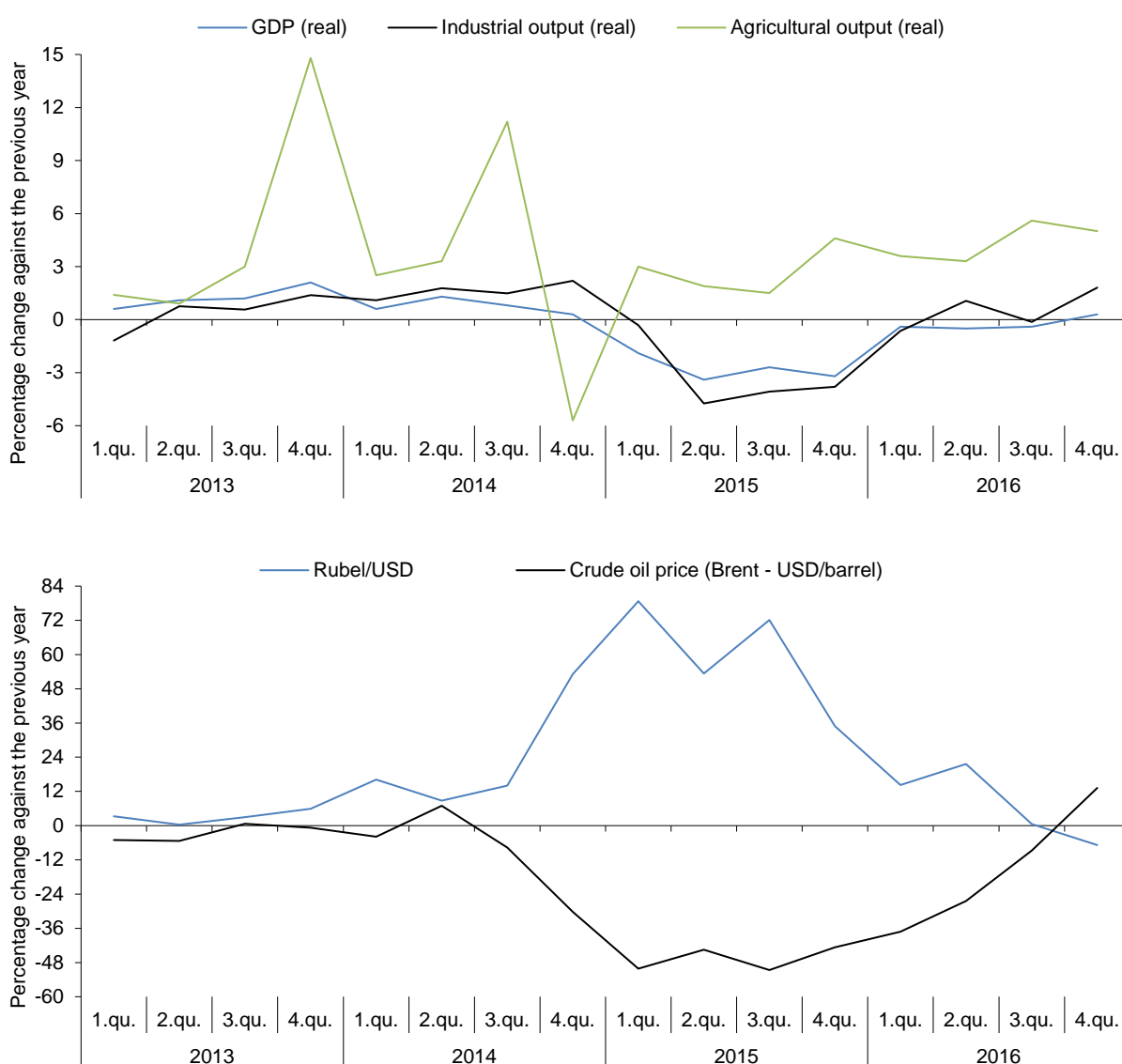
Source: wiiw Monthly Database, Russian Federal State Statistics Service, WDS - WIFO Data System, Macrobond.

In addition, sanctions restricted Russia's access to international financial markets. According to (Dreyer, I. and Luengo-Cabrera, J.) the magnitude of capital outflows in 2014 was more severe than the immediate stop of capital inflows in the wake of the recession 2008/2009. Moreover, agricultural production deteriorated in late 2014 but gained pace again in early 2015 due to the shortages of agri-food products.

In contrast, industrial output, which came to a halt in 2015, has started to resume only at the beginning of 2016.

In the course of 2016 the Russian economy began to stabilise and GDP deteriorated only by 0.2 %, even though the sanctions remained in place. Moreover, the investment climate has been improving slightly, as the Russian government managed to sell new bonds on international capital markets and capital outflows slowed. According to (Nelson, R.) inward FDI into Russia, which came to a halt in 2014 and 2015, began to resume slightly in 2016. However, data for the EU FDI stock in Russia is only available until 2015 and does not yet depict this upward trend. According to the IMF forecasts, Russia's economy is projected to experience modest growth of 1.4 % in 2017 (EU 1.9 %) and 1.4 % in 2018 (EU 1.9 %) (World Economic Outlook Update, July 2017), as the economy is benefitting from the rising oil price, which increased from 43.7 USD/barrel in 2016 to 53.8 USD/barrel in the first quarter 2017.

1.3   Recent development of trade relationships between Russia and the EU

Disregarding the influence of other factors, all sanctions potentially entail severe economic consequences for the EU and Russia alike, given a high and steadily increasing volume of trade between these two economic areas in previous years. With a share of 7.7 % in total exports of the EU (2013, without deliveries within the EU) Russia was, after the USA, Switzerland and China, the fourth largest trading partner of the EU. On the other hand, with 42.4 % of total exports (2013) the EU was Russia's most important trading partner. As early as in 2013, and thus before the sanctions had been in force, EU trade relations with Russia suffered significantly from the economic downturn in Russia. The exports stagnated, while they had increased significantly in each of the previous years. As a consequence of the sanctions, but also due to other external factors weakening the Russian economy, EU exports to Russia declined by 20.7 % annually between 2013 and 2016, while they had increased by 20.0 % per year between 2009 and 2012.

Providing descriptive statistics on monthly UN COMTRADE data[3], Figure 2 separates EU countries according to their annual changes in exports to Russia being above or below the EU average for 2013/2016. No clear pattern in terms of country size or geography arises with respect to relative export losses. Even though two smaller economies[4], Denmark (-28.9 %) and Austria (-27.9 %) experienced the strongest relative export declines in that period, the drop of Russian exports of larger and more distant economies like Spain and the UK was also above EU average. Not surprisingly the largest EU economies (Germany, France, and Italy) had to deal with the highest export losses in absolute terms.

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[3] Trade data reported in this study is sourced from monthly UN COMTRADE. The advantage of this dataset over other ones, such as Eurostat's COMEXT, is the availability of and consistency with other countries' data, as needed in the econometric analysis below. The correlation between the reported numbers in COMTRADE and COMEXT is, at the lowest disaggregation CN6, 0.954 and 0.984 at the level of sectors as described in chapter 3. Moreover, monthly UN COMTRADE data is partly drawn from Eurostat's database.

[4] The island economies of Malta and Cyprus had even higher export decline rates but are very specific cases in terms of the structure of their economies and trade patterns.

Figure 2: Changes in EU exports to Russia over the period 2013 to 2016
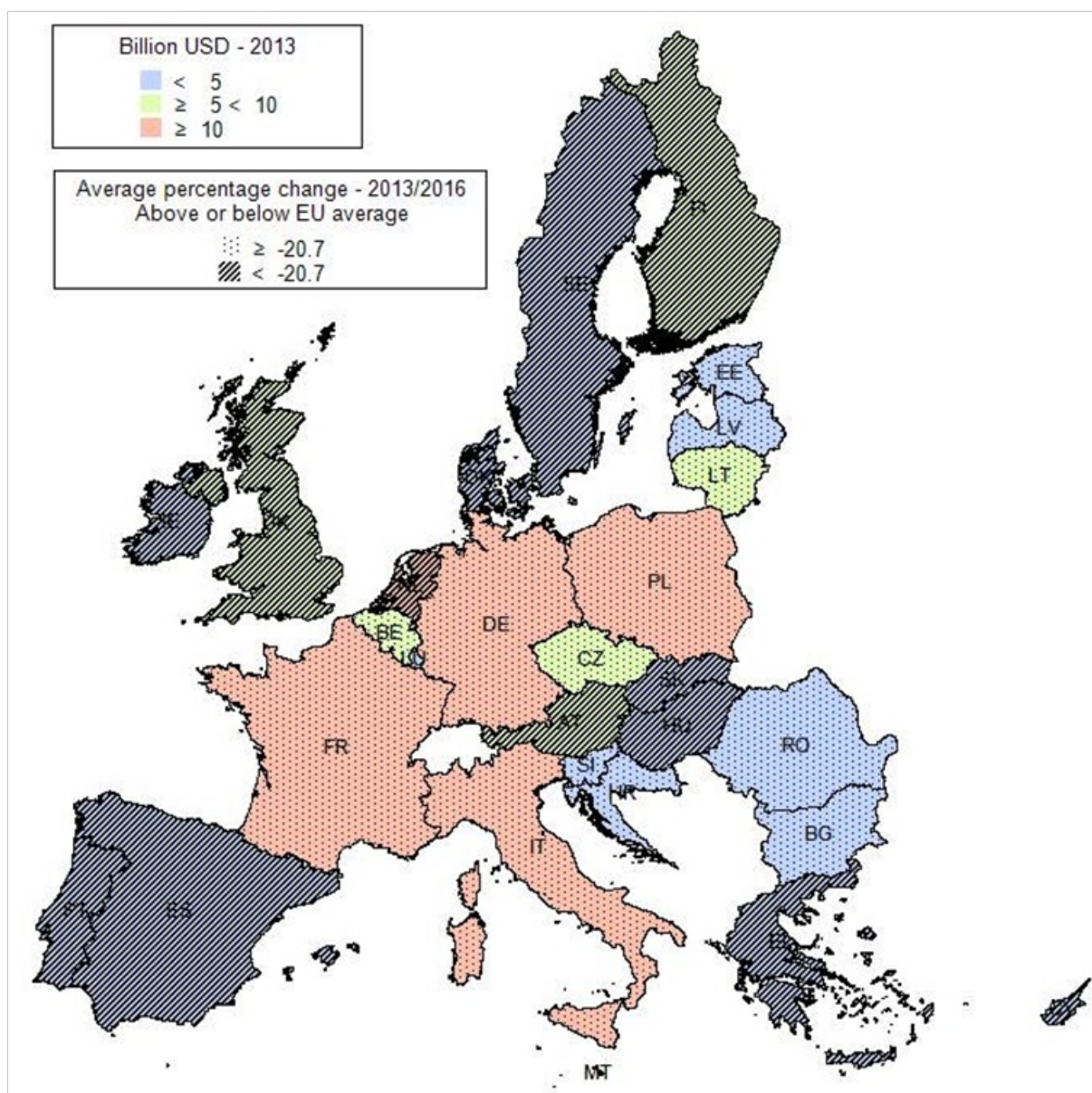
Source: UN Monthly COMTRADE, WIFO calculations.

Proximity to Russia, but also historically formed economic relationships to Russia do matter in terms of impact when country-specific export portfolios are taken into account. The shares of Russia in total exports are significantly higher in Central and Eastern European as well as in Baltic countries, as Figure 3 shows. In 2013 more than 40 % of total exports of Lithuania, Latvia and Estonia were delivered to Russia. Consequently, as a result of the sanctions and the economic slowdown in Russia, export shares of these countries declined considerably and much more than for the EU as a whole (-3.2 percentage points) between 2013 and 2016.

Figure 3: EU export shares to Russia relative to total exports in 2013 and changes over the period 2013 to 2016
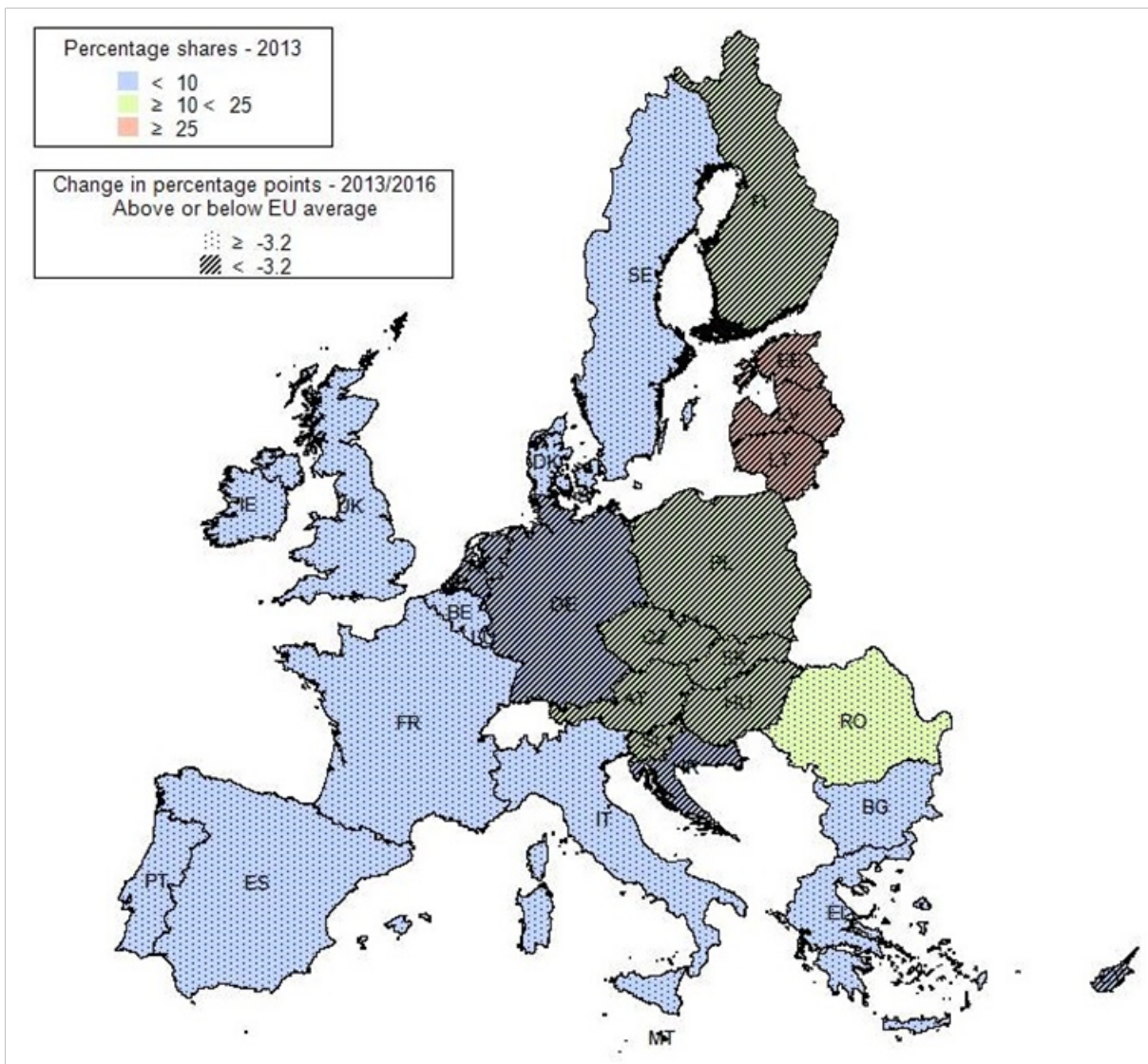
Source: UN Monthly COMTRADE, WIFO calculations.

Figure 4 complements the picture in terms of trade impacts by considering both export and import losses observed in the EU trade relations with Russia between 2013 and 2016. It also illustrates the heterogeneity of these impacts caused by sanctions, Russian retaliatory measures and economic slowdown in Russia across Member Countries. While Germany is most affected in absolute terms, exports to and imports from Russia halved in most of the EU countries over the last three years. The decline in nominal import values was certainly influenced by the devaluation of the Russian ruble, but may also reflect the aforementioned general deterioration of trade relationships between Russia and the EU.

Figure 4: EU trade relations with Russia: changes in exports to and imports from Russia in billion USD over the period 2013 to 2016
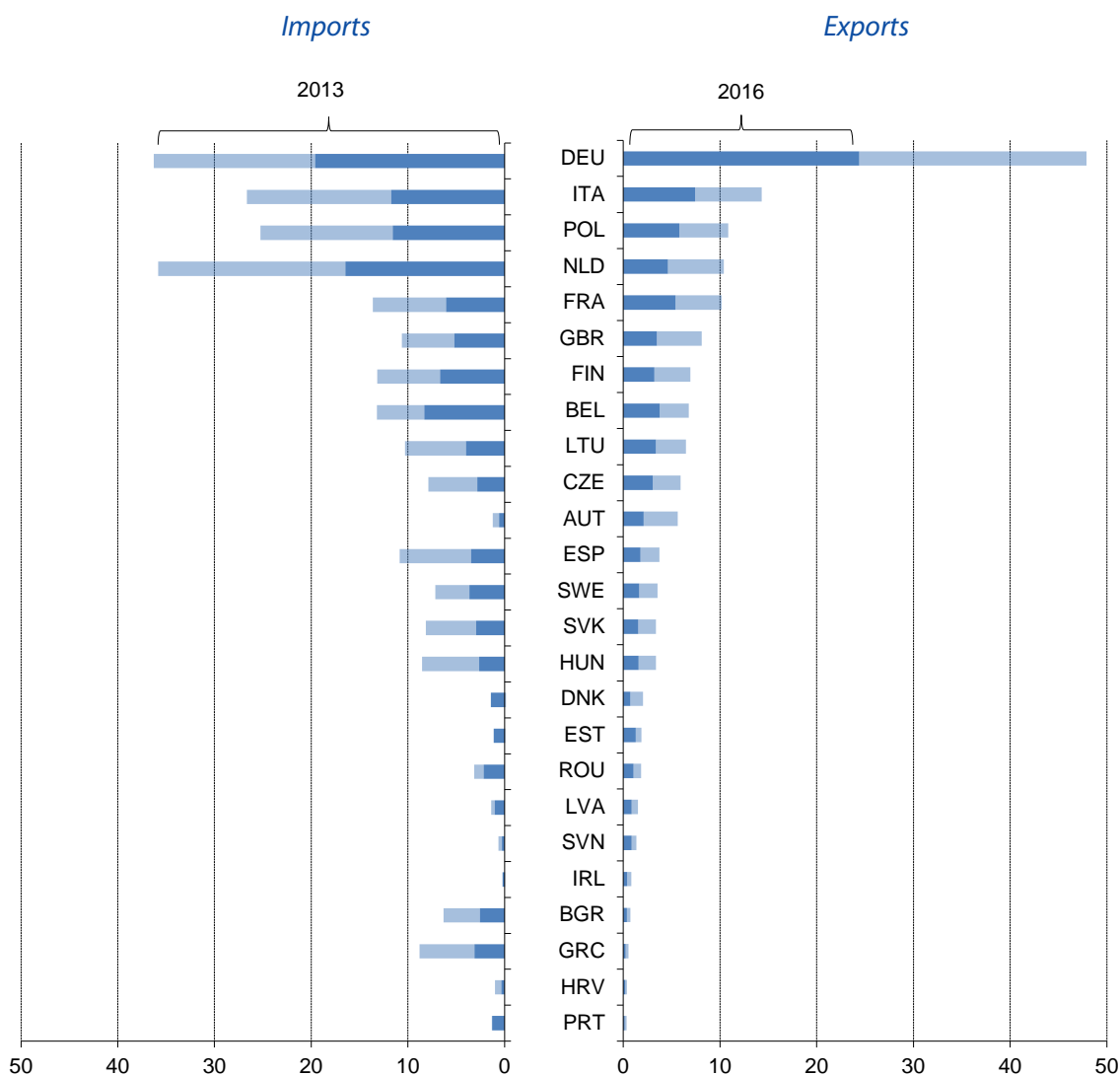
Source: UN Monthly COMTRADE, WIFO calculations. Figures for Luxembourg, Cyprus and Malta too small to show.

Table 1 highlights the significant decline in total exports to Russia over the period 2014 to 2016 in more detail by displaying semi-annual export patterns. In the second half of 2014 EU exports to Russia declined by 17.8 % and thus fell to a value of USD 66.5 bn. In most of the EU countries the reduction in exports to Russia intensified in the last quarter of 2014 and even more so in 2015. In the first six months of 2015 total EU exports to Russia decreased by 45 %, similar negative impacts on exports can be observed for the Czech Republic, Great Britain and Austria. However, countries like Estonia, Spain, Denmark, Lithuania and France experienced even greater reductions in exports to Russia in the first two quarters of the year, while the decline in exports of Hungary, Italy, Poland and Germany was around 40 % and slightly less (around 35 %) in Latvia and Slovenia. In 2016 exports to Russia still show a declining trend in most of the EU countries and began to recover only slightly for Belgium, France and Poland.

A similar hit to exports since mid-2014 can be observed for the USA (-17.4 %). However, US trade flows were less affected compared to the EU in 2015, but dropped significantly stronger in 2016 (-18.2 %; EU -3.2 %).

Table 1: Recent developments of exports to Russia

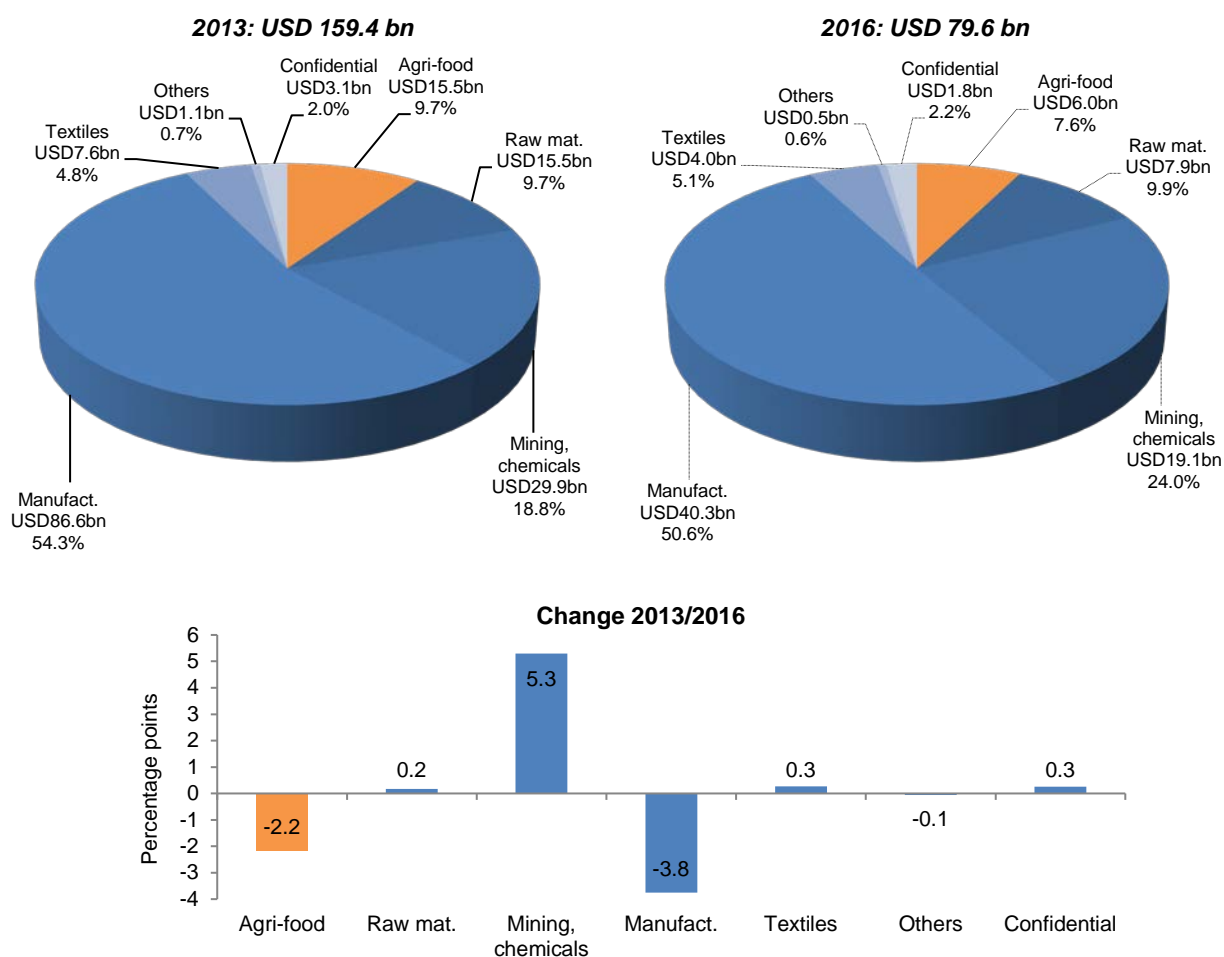|	2013			2014			2015			2016		
	1.HY	2.HY	Year	1.HY	2.HY	Year	1.HY	2.HY	Year	1.HY	2.HY	Year
	Percentage changes against the previous year											
AUT	16.9	2.4	9.1	- 6.5	- 8.8	- 7.7	- 46.3	- 43.7	- 45.0	- 29.9	- 22.6	- 26.2
BEL	- 3.5	- 1.0	- 2.3	- 17.0	- 23.4	- 20.1	- 43.3	- 31.3	- 37.7	9.3	13.4	11.4
BGR	4.5	4.7	4.6	- 2.1	- 12.8	- 7.8	- 39.1	- 31.1	- 35.1	- 19.6	- 12.5	- 15.8
CYP	36.5	39.0	37.2	- 39.3	- 41.7	- 40.0	- 51.1	3.2	- 37.0	- 16.0	- 1.9	- 10.0
CZE	- 3.4	- 3.5	- 3.4	- 1.3	- 11.8	- 6.7	- 45.0	- 40.4	- 42.8	- 10.5	3.3	- 3.5
DEU	- 1.6	- 7.0	- 4.4	- 11.9	- 23.8	- 17.9	- 42.9	- 30.7	- 37.2	- 2.2	- 0.1	- 1.1
DNK	21.8	4.5	12.6	- 26.3	- 35.1	- 30.6	- 49.4	- 43.5	- 46.7	- 6.3	0.7	- 2.9
ESP	5.1	- 6.0	- 0.7	- 3.3	- 15.3	- 9.2	- 52.1	- 37.4	- 45.3	- 2.6	- 5.9	- 4.3
EST	6.5	- 9.6	- 2.8	45.3	20.0	31.7	- 52.4	- 38.3	- 45.5	- 9.7	- 2.7	- 5.8
FIN	7.1	- 7.4	- 0.8	- 8.3	- 17.0	- 12.8	- 46.8	- 39.5	- 43.3	- 10.5	- 1.9	- 6.1
FRA	- 12.5	- 11.7	- 12.1	- 10.1	- 13.8	- 11.8	- 49.3	- 38.1	- 44.2	0.6	15.2	8.0
GBR	- 14.9	1.0	- 7.3	- 10.7	- 24.3	- 17.9	- 45.1	- 37.5	- 41.4	- 1.1	- 19.2	- 10.4
GRC	- 2.5	- 3.5	- 3.0	- 12.3	- 12.2	- 12.2	- 51.0	- 49.6	- 50.2	- 14.1	14.5	1.1
HRV	- 21.1	- 3.4	- 10.6	12.2	- 11.9	- 3.2	- 41.2	- 40.6	- 40.8	- 0.9	- 4.5	- 3.0
HUN	18.4	- 1.6	7.7	- 16.2	- 17.8	- 17.0	- 40.8	- 37.2	- 39.0	- 8.8	- 3.7	- 6.2
IRL	22.1	1.8	11.5	16.5	10.9	13.8	- 60.3	- 53.8	- 57.3	- 3.9	1.1	- 1.4
ITA	11.9	12.1	12.0	- 6.1	- 17.0	- 11.9	- 42.4	- 33.4	- 37.8	- 6.6	- 4.4	- 5.4
LTU	18.2	13.3	15.5	8.1	1.3	4.4	- 49.4	- 47.6	- 48.5	- 6.7	0.6	- 2.8
LUX	- 7.5	- 24.6	- 15.9	- 26.2	- 16.1	- 21.7	- 43.2	- 19.2	- 31.8	- 5.6	18.1	7.7
LVA	9.2	4.0	6.2	- 3.0	- 7.3	- 5.4	- 34.3	- 37.8	- 36.2	- 13.9	0.4	- 6.2
MLT	4 595.1	- 77.6	1.9	- 97.2	- 66.6	- 90.6	42.2	- 38.8	- 19.9	94.8	- 66.1	0.5
NLD	17.7	- 13.7	0.3	- 20.9	- 14.7	- 18.0	- 46.5	- 31.3	- 38.9	2.4	- 22.7	- 11.6
POL	13.5	6.3	9.6	- 7.0	- 19.0	- 13.3	- 42.7	- 35.8	- 39.3	0.0	2.7	1.4
PRT	43.6	54.4	49.2	- 12.5	- 30.2	- 22.0	- 40.0	- 31.1	- 35.8	- 12.0	- 6.6	- 9.2
ROU	35.3	36.8	36.1	21.0	- 7.9	6.0	- 41.4	- 45.4	- 43.2	- 15.5	13.5	- 2.9
SVK	11.5	- 8.2	0.5	- 3.1	- 32.8	- 18.3	- 47.0	- 34.0	- 41.6	- 25.7	18.8	- 4.7
SVN	29.2	14.3	21.3	- 2.2	- 1.6	- 1.9	- 37.1	- 31.8	- 34.4	- 17.5	11.9	- 2.2
SWE	1.9	7.4	4.7	- 4.7	- 17.2	- 11.2	- 49.3	- 41.9	- 45.7	- 4.9	- 0.5	- 2.6
EU	**3.3**	**- 2.2**	**0.4**	**- 8.6**	**- 17.8**	**- 13.3**	**- 44.9**	**- 35.8**	**- 40.5**	**- 4.9**	**- 1.7**	**- 3.2**
CHE	2.6	11.4	7.4	- 1.5	- 16.0	- 9.7	- 27.6	- 16.6	- 21.8	- 4.3	- 21.3	- 13.9
USA	4.0	5.2	4.6	11.7	- 17.4	- 3.6	- 33.7	- 34.8	- 34.2	- 28.7	- 5.1	- 18.2
ARM	18.9	19.8	19.4	- 7.3	- 8.9	- 8.2	- 34.2	- 19.5	- 25.8	92.5	38.4	59.2
BLR	5.6	1.2	3.3	- 7.6	- 11.8	- 9.7	- 33.9	- 30.2	- 32.1	- 3.3	12.0	4.6
KAZ	.	.	.	.	.	.	- 9.7	- 14.8	- 12.2	.	.	.
MKD	2.4	- 8.5	- 4.7	17.6	42.4	33.2	1.5	- 25.4	- 16.6	62.1	24.6	39.5
SRB	28.0	18.3	22.5	2.0	- 6.7	- 2.8	- 69.2	- 51.8	- 60.0	152.6	8.0	60.6
TUR	4.7	4.0	4.3	- 11.3	- 17.9	- 14.7	- 38.0	- 41.2	- 39.6	- 59.8	- 43.2	- 51.7

Source: UN Monthly COMTRADE, WIFO calculations.

Regarding the export pattern by sectors, Figure 5 shows that manufactured goods represent the most important product group in EU exports to Russia with a share of 54.3 %, followed by mining and chemical products (18.8 %). EU agri-food exports to Russia amount to 9.7 % of total trade flows and this share declined by 2.2 percentage points over the period 2013 to 2016. Similarly, also the importance of manufactured goods, although only partly covered by the sanctions, decreased significantly by 3.8 percentage points, while the export share of mining and chemical products grew considerably by more than 5 percentage points over the same period. (Giumelli, F.) argues along the same line when pointing out that not all economic sectors were affected the same way with some enhancing their exports to Russia even after the imposition of the sanctions.

Figure 5: Sectoral breakdown of EU exports to Russia, 2013 and 2016

2013: USD 159.4 bn

Others
USD1.1bn
0.7%

Confidential
USD3.1bn
2.0%

Agri-food
USD15.5bn
9.7%

Textiles
USD7.6bn
4.8%

Raw mat.
USD15.5bn
9.7%

Manufact.
USD86.6bn
54.3%

Mining,
chemicals
USD29.9bn
18.8%

2016: USD 79.6 bn

Others
USD0.5bn
0.6%

Confidential
USD1.8bn
2.2%

Agri-food
USD6.0bn
7.6%

Textiles
USD4.0bn
5.1%

Raw mat.
USD7.9bn
9.9%

Manufact.
USD40.3bn
50.6%

Mining,
chemicals
USD19.1bn
24.0%

Change 2013/2016

Sector	Percentage points
Agri-food	-2.2
Raw mat.	0.2
Mining, chemicals	5.3
Manufact.	-3.8
Textiles	0.3
Others	-0.1
Confidential	0.3

Source: UN Monthly COMTRADE, WIFO calculations. Details on the sectoral breakdown are displayed in the Appendix 6.1.

1.4 Wider economic impacts of the sanctions and the economic crisis in Russia

The decline in EU exports to Russia, as shown by these official statistics, is undoubtedly the most significant economic impact related to the sanctions; however, for at least two reasons it may be an insufficient indicator for the total sanction-induced economic costs.

Firstly, total economic costs need to include negative spillover effects on firms which are part of the supply chain for the companies/sectors exporting to Russia. The extent of these indirect multiplier impacts may even exceed the value of export losses. Since they cannot be observed directly they must be estimated by models taking into account inter-sectoral linkages within the European economy.

While it is difficult to assess the impact of the sanctions for the EU and Russian economy in isolation from other factors, several studies nevertheless attempted to estimate the economic costs taking into account economy-wide multiplier effects. Some of these are cited by (Moret, E. et al.), which provide a first assessment of potential costs and impacts of the sanctions. According to releases by the (European Parliament, 2015) and EU Observer([5]), the European Commission summarises the damage to Europe's economy as "contained" and puts the overall costs of the sanctions and countersanctions at EUR 40 bn (-0.3 % of EU GDP) in 2014 and EUR 50 bn (-0.4 %) in 2015. An assessment by the (Institute of Economic

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[5] https://euobserver.com/economic/125118 (retrieved 16 August 2017).

Forecasting) estimates the potential impact of the sanctions for the Russian economy at 8 % to 10 % of GDP and the impact for the EU at 0.5 % of GDP. A study by (Havlik, P.) concludes that Ukraine's economy is hit strongest by the conflict with GDP contracting by up to 10 % in 2014, while the loss in Russian GDP is predicted to amount to EUR 20 bn and more than EUR 30 bn and EUR 50 bn in 2015 and 2016, respectively. Assuming a 10 % loss in exports of goods and services to Russia, he estimates a GDP loss for the EU of around EUR 11 bn (-0.1 % of GDP), while in a more extreme scenario with a decline in value added exports by 50 %, the predicted losses may account for EUR 55 bn (-0.4 % of GDP).

Table 2: Comparison of economic impacts

	Christen, E. et al., 2014				Christen, E. et al., 2015				Christen, E. et al., 2016			
	Employment		Value added		Employment		Value added		Employment		Value added	
	In 1 000	% of total employ- ment	mn €	% of total value added	In 1 000	% of total employ- ment	mn €	% of total value added	In 1 000	% of total employ- ment	mn €	% of total value added
AUT	- 9	0.2	- 570	0.2	- 15	0.4	- 990	0.3	- 7	0.2	- 550	0.2
BEL	- 8	0.2	- 570	0.2	- 15	0.3	-1 010	0.3	- 8	0.2	- 600	0.2
BGR	- 16	0.5	- 70	0.2	- 20	0.6	- 155	0.5	- 5	0.1	- 40	0.1
CYP	- 1	0.3	- 30	0.2	- 5	1.4	- 205	1.4	0	0.0	- 10	0.1
CZE	- 19	0.4	- 450	0.3	- 45	0.9	-1 015	0.8	- 29	0.6	- 760	0.6
DEU	- 101	0.2	-6 650	0.3	- 145	0.3	-9 475	0.4	- 97	0.2	-6 050	0.2
DNK	- 7	0.3	- 460	0.2	- 10	0.4	- 580	0.3	- 4	0.1	- 290	0.1
ESP	- 34	0.2	-1 440	0.2	- 60	0.3	-2 525	0.3	- 15	0.1	- 750	0.1
EST	- 14	2.3	- 290	1.8	- 40	6.5	- 800	4.9	- 6	1.0	- 120	0.7
FIN	- 10	0.4	- 700	0.4	- 15	0.6	-1 200	0.7	- 8	0.3	- 540	0.3
FRA	- 31	0.1	-1 950	0.1	- 40	0.1	-2 460	0.1	- 23	0.1	-1 630	0.1
GBR	- 21	0.1	-1 350	0.1	- 20	0.1	-1 570	0.1	- 19	0.1	-1 020	0.1
GRC	- 8	0.2	- 190	0.1	- 15	0.4	- 590	0.4	- 5	0.1	- 100	0.1
HUN	- 12	0.3	- 280	0.3	- 15	0.4	- 390	0.5	- 12	0.3	- 300	0.4
IRL	- 6	0.3	- 630	0.4	- 5	0.3	- 305	0.2	- 2	0.1	- 120	0.1
ITA	- 52	0.2	-2 710	0.2	- 75	0.3	-3 820	0.3	- 18	0.1	- 950	0.1
LTU	- 11	0.8	- 160	0.5	- 85	6.6	-1 010	3.2	- 12	0.9	- 210	0.7
LUX	0	0.1	- 50	0.1	0	0.0	- 55	0.1	0	0.0	- 30	0.1
LVA	- 3	0.3	- 40	0.2	- 10	1.1	- 175	0.8	- 7	0.8	- 150	0.7
MLT	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	- 10	0.2
NLD	- 13	0.1	- 790	0.1	- 25	0.3	-1 450	0.3	- 16	0.2	- 970	0.2
POL	- 72	0.5	-1 110	0.3	- 135	0.9	-1 945	0.6	- 78	0.5	-1 360	0.4
PRT	- 8	0.2	- 190	0.1	- 5	0.1	- 170	0.1	- 2	0.0	- 40	0.0
ROU	- 20	0.2	- 170	0.1	- 20	0.2	- 235	0.2	- 6	0.1	- 90	0.1
SVK	- 9	0.4	- 180	0.3	- 15	0.7	- 380	0.6	- 10	0.5	- 300	0.5
SVN	- 2	0.2	- 70	0.2	- 5	0.5	- 150	0.5	- 2	0.2	- 80	0.3
SWE	- 8	0.2	- 630	0.2	- 10	0.2	- 815	0.2	- 6	0.1	- 510	0.1
EU 27	**- 497**	**0.2**	**-21 760**	**0.2**	**- 870**	**0.4**	**-33 485**	**0.3**	**- 397**	**0.2**	**-17 600**	**0.2**

Source: WIFO calculations.

The Austrian Institute of Economic Research (WIFO) has conducted three studies since 2014 analysing the wider economic consequences of the weakening EU exports to Russia. For this purpose, export losses were first converted into direct value added and employment effects; thereafter indirect economic impacts through the linkages between the various sectors and countries were estimated applying a global econometric input-output model covering 27 Member States of the EU plus the economies of the most important trading partners (foremost Russia, but also the USA, China, South Korea etc.). The first two studies (Christen, E. et. al., 2014, 2015) took observed reductions in EU exports to Russia as a starting point for estimating direct and indirect value added and employment impacts. Both sanctions and other factors (oil price decline, ruble devaluation etc.) were acknowledged as underlying causes for the reduction in exports without isolating their specific contributions. The calculations thus merely produced upper benchmarks for the sanction-induced macroeconomic effects. For the EU 27 (without Croatia) these amounted to EUR 27.8 bn and EUR 33.5 bn loss in value added and a decline of 500 000 and 870 000 in terms of employment, respectively (see Table 2). These total effects are heavily influenced by sectoral and national spillovers, i.e. indirect channels of transmission. Austrian companies embedded in European supply chains of the automobile industry, for instance, suffered heavily from declining German automobile exports to Russia.

Another study published in 2016 (Christen et al., 2016) attempted to separate sanction-induced impacts from effects caused by other factors. Overall, compared to the 2015 benchmark numbers, about a third of the macroeconomic results could be specifically traced back to the sanctions. The 2016 calculations implied a potential decline of EUR 17.6 bn in value added and around 400 000 jobs being endangered across all EU countries, accounting for 0.2 % of total value added and employment, respectively.

A second reason why a sanction-induced decline of EU exports to Russia is not equivalent to total economic costs of the sanctions arises from adaptation measures undertaken by exporting companies and governments alike. In market economies, firms react to changes in the business environment they are operating in. If market opportunities in Russia deteriorate or disappear altogether, they will seek for alternative destination markets in other countries. The search for new market opportunities was partly supported by national export promotion schemes (e.g. the program "go international" in Austria and EU agricultural policies, see chapter 2) while at the same time governments further aggravated the sanction impacts by cancelling export guarantees for firms exporting to Russia. Consequently, the diversion of trade flows resulting from private firm initiatives and corresponding public policies may mitigate part of the economic losses caused by the sanctions; the various cost estimates cited above did not take these trade diversion effects into account and may thus overestimate the negative macroeconomic consequences. Existing empirical evidence, including the estimations below, however, point to a low magnitude of trade diversion.

Furthermore, additional economic costs may arise since investment opportunities for European firms in Russia may suffer considerably from a deterioration of economic relationships between the EU and Russia; the aforementioned stagnating FDI flows into Russia provide first evidence of this type of impact.

1.5　　Additional findings from the literature on sanction impacts

This report builds on the knowledge and the empirical evidence that have been gathered on the economic implications of the sanctions in various research projects.

A small but growing literature has aimed at evaluating the specific impacts of the financial sanctions imposed by the EU, USA and other countries. These measures affected the trading of certain financial instruments with a number of Russian financial institutions and energy and defence companies. (Gurvich, E. and Prilepskiy, I.) find that, akin to the findings for trade by (Crozet, M. and Hinz, J.), capital flows to and from entities not directly targeted were also affected. Furthermore, they stress that the effect of the financial sanctions on Russian GDP were 3.3 times lower than the effect of the oil price shock. This result resonates with (Tuzova, Y. and Qayum, F.) and (Dreger, C. et al.), who find little to no significant impact of the financial sanctions on the devaluation of the Russian ruble, instead pointing to the rapid decline in the oil price in early 2015 as the culprit. The findings by (Ahn, D. and Ludema, R.) point in a similar direction and state that sanctions induced smaller macroeconomic impacts on Russia than oil price volatility. Using detailed firm-level data, they find strong evidence that sanctions affected the financial health of targeted firms, which experience losses in operating revenues, asset values and employees as compared to non-sanctioned firms.

In contrast, (Dreyer, I. and Popescu, N.) in an early ad-hoc assessment, speculate that the measures drove up interest rates in Russia by reducing the availability of capital, possibly contributing to an already damaged macroeconomic downturn. (Vymyatnina, Y.) concludes that external and internal borrowing in Russia were severely restricted by both the (financial) sanctions and the oil price decline, but much more by the first than by the latter. The resulting borrowing limitations are expected to decrease investment, especially in the oil and gas sector, but will eventually also lower Russian GDP. (Harrel, P.E. et al.) also suggest that the sectoral sanctions targeting the oil and gas industry, defence and financial sector in Russia generated the greatest economic impact, while asset freezes and travel bans on individuals and restrictions on doing business, investing and economic cooperation accelerated the general worsening of economic

relations. (Bond, I. et al.), however, point out that the impact of the sanctions are likely to have short-run rather than long-run consequences as a large part of the capital flight from the Russian economy appears to be grounded more in uncertainty than in specific adverse measures. Since some of the sanctions, specifically financial restrictions and the ban on exports on certain energy equipment and energy-related services, were particularly harmful for large Russian energy firms, (Peters, E. S.) speculates that European consumers would therefore face higher gasoline prices. His empirical analysis, however, did not find any conclusive evidence for such effects. (Nikulina, A.K. and Kruk, M.N.) also focus on the Russian energy sector by pointing out that oil exploration activities in Russia are highly dependent on foreign technology and capital alike, access to which has been severely restricted by the sanctions.

1.6   Contribution of this report

This study aims at consolidating and complementing the existing evidence in order to arrive at a conclusive assessment about the economic consequences of the sanctions. New evidence is generated by:

- updating the already existing econometric model that allows a separation of the sanction-induced impact on exports from the impact of other relevant factors. The new estimates are not only based on the most recent data on international trade flows, but also include trade diversion efforts that could mitigate export losses caused by the sanctions. In addition, further model testing is carried out to ensure plausibility, robustness and completeness of the results;

- collecting supplementary information on the issues of trade diversion (including trade with the countries of the Eurasian Economic Union([6])) and compliance with the sanctions.

One caveat is to be mentioned explicitly: This report will present an assessment on the economic costs of the sanctions; political costs or targets (the latter being the main reason for implementing the sanctions by the EU in the first place) are not being addressed. However, (Hufbauer, G. et al.) have shown that roughly only one in three sanctions attain the desired political outcome([7]).

While the first chapter describes the economic relationships between Russia and the European Union in times of sanctions and economic downturn to provide an upper benchmark on potential first round effects of the trade restrictions and summarises the state of knowledge on the potential economic costs of the EU and Russian sanctions in general, the report proceeds as follows.

Chapter 2 is devoted to trade in agri-food products, part of which was banned by Russia. A first assessment of actual and potential trade diversion effects, which are of particular importance for the agri-food sector since many of these products cannot be stored for a longer period, is provided. Furthermore, the issue of non-compliance is discussed for this group of products even though evasion of Russian sanctions (as opposed to EU sanctions against Russia) does not appear to be of any concern to EU institutions, but is in fact of interest for the Russian government. However, neither dual use goods, which cannot easily be identified in official trade statistics, nor military goods, which make up a very small fraction of total trade with Russia, appear suitable for this kind of analysis. Moreover, possible non-compliance efforts with respect to banned agri-food products may also provide some insights into potential evasion activities with respect to other commodities for which trade was restricted by the EU.

Chapter 3 describes the econometric model estimates on the specific contribution of the sanctions to the observed changes in trade flows between countries. It also examines the (re)allocation of these international trade flows in the post-sanction period and thus discusses empirical indications on trade diversion. This evidence is further complemented by results from a study on French firms.

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[6] Members of the Eurasian Economic Union (EEU) are Armenia, Belarus, Kazakhstan, Kygryzstan and Russia.
[7] See (Kholodilin, K. et al.) for a deeper discussion on the effectiveness of sanctions.

Finally, the concluding chapter 4 synthesises all the empirical information gathered and the conclusions from other studies in order to summarise the current state of knowledge regarding the economic effects of the sanctions initiated in 2014.

2   Restrictions on imports of agri-food products

2.1   International trade flows affected by the import ban

Despite the fact that Russia has become increasingly important for global agricultural production, it is a much larger agricultural importer than exporter. In 2013, Russia's agri-food imports amounted to USD 43.4 bn, while agri-food exports were USD 16.2 bn[8]. The reason for Russia's trade deficit in agri-food products is partly explained by its trade structure. While Russia mainly exports crops, such as grain and sunflower seed, it imports high value products, like meat, fruits, vegetables as well as processed foods (Liefert, W. and Liefert, O.). The EU represents the largest supplier of agri-food products to Russia, providing almost 35 % of the country's imports in 2013, valued at USD 15.2 bn. In contrast, Russian agri-food imports from the USA equalled only USD 1.7 bn in 2013.

The Russian embargo against selected Western countries had a major impact in terms of agri-food trade: Measured on the basis of 2013 trade volumes, the products affected by the import restrictions accounted for more than 50 % of Russia's agri-food imports, corresponding to USD 9.6 bn. On average roughly 40 % of all affected products (measured by their import value) originated in either the USA, EU, Canada, Australia or Norway, while for specific goods, like pork, poultry, butter, cheese and fish the share of certain sanctioned countries is substantially higher (FAO).

For the EU, Russia constitutes the second most important destination market for agri-food commodities, surpassed only by the USA, with exports amounting to USD 15.5 bn in total or 2.9 % of overall EU agri-food exports (European Parliament, 2014). The value of EU exports covered by the Russian import ban totals USD 7.3 bn in 2013 or 47.3 % of total agri-food exports to Russia in that year. While the trade embargo affects approximately 1.4 % of overall EU exports of agricultural products, the impact differs substantially across Member States and product groups. Measured in terms of the absolute value of banned goods in 2013, Lithuania and Poland are affected the most, followed by Germany, the Netherlands, Denmark, Spain, Finland, Belgium and France (compare also Figure 9).

Figure 6 depicts differences in the export intensity of agri-food commodities across Member States. For six countries (Cyprus, Latvia, Denmark, Greece, Ireland and Lithuania) at least 30 % of agri-food exports were supplied to the Russian market in 2013. In comparison, for other EU countries, in particular Germany, Sweden, Romania, Slovenia, Great Britain, the Czech Republic, Slovakia and Malta, the Russian market accounts for less than 5 % of their overall agri-food exports[9]. As a result of the decline in agri-food exports to Russia due to the trade embargo, the importance of the Russian market in overall agri-food exports dropped significantly in almost all EU countries. A study by (Sinabell, F. et al.) dealt with the consequences of the Russian import ban of a number of agricultural products from the EU and other countries, analysing the direct and indirect consequences of these restrictions for agriculture and the food processing industries in Austria in both the short and longer term. For 2014 exports from Austria to Russia were estimated to decline by approximately EUR 50 mn compared to the previous year which implied a relative decline of about 50 %. Furthermore, measures for mitigating economic losses were discussed in detail. A similar study from the (BMEL-AG) came essentially to the same conclusions but showed that the exposure of Germany's agri-food sector to detrimental trade effects was even larger (Fedoseeva, S.).

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[8] Agricultural products comprise the CN chapters 1 to 24. Agri-food commodities affected by the ban include certain CN codes within the chapter 1 to 24 as well as CN code 2501 (salt). A list of banned goods is reported in (Sinabell, F. et al.) the most recent update is summarised in (WKO).

[9] For a comprehensive picture of trade exposure to Russia in agri-food trade of countries affected by the import ban, see (DG AGRI) and (European Parliament, 2014, 2016).
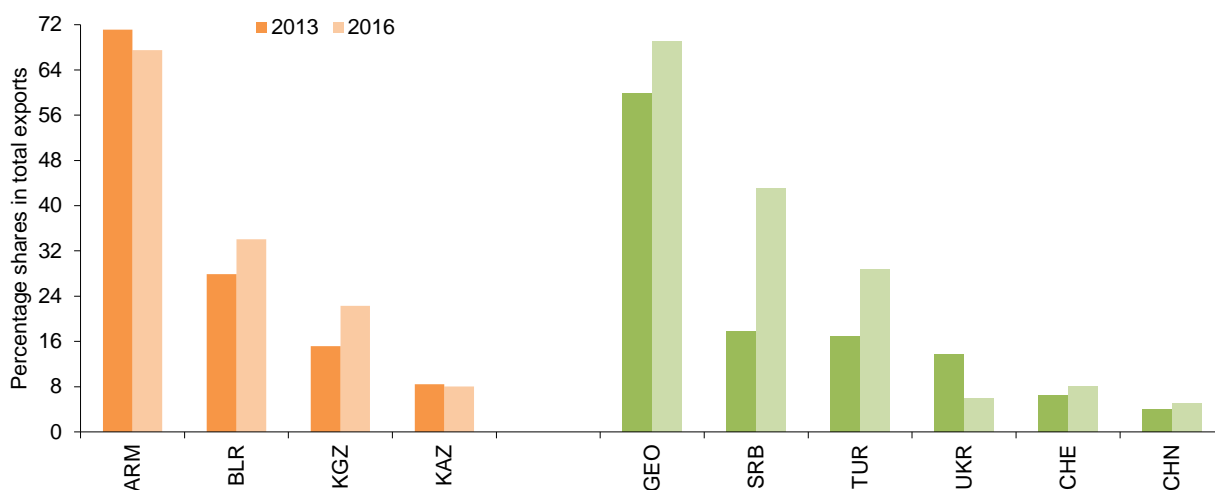
Figure 6: Importance of agri-food exports to Russia, 2013 and 2016

Panel 6a) EU and USA
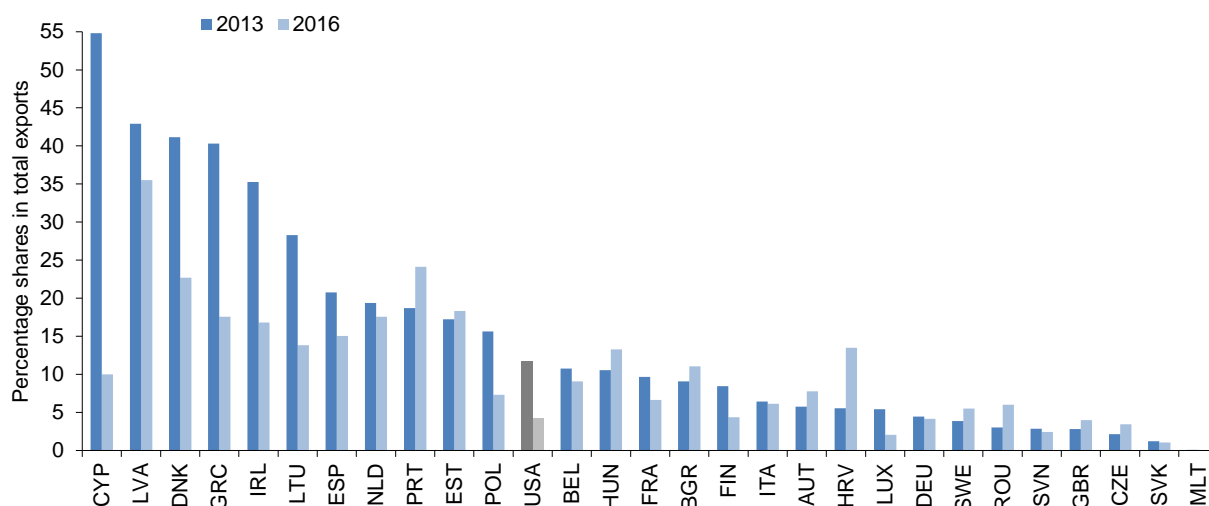
Source: UN Monthly COMTRADE, WIFO calculations.

Panel 6b) Eurasian Economic Union and selected third countries

Source: UN Monthly COMTRADE, WIFO calculations.

Following the recovery of the Russian economy in 2016 the share of agricultural products in exports to Russia increased in certain countries, as Figure 6 shows. At the same time Russia diverted its imports of banned agri-food products to other countries, specifically those in close neighbourhood. Consequently, between 2013 and 2016 these countries saw their share of agri-food exports to Russia increase significantly. This applies especially to Belarus and Kyrgyzstan, Georgia, Serbia and Turkey, while the importance of Russia as a destination market for China grew only marginally.

The Russian embargo substantially affected EU agri-food exports to Russia, which dropped from around USD 15.5 bn in 2013 to around USD 6 bn in 2016. This significant reduction of agri-food imports from the EU by Russia is due to two separate decisions: i) a ban of imports of live pig and pig meat because of the outbreak of African Swine Fever (ASF) in areas in the EU in early 2014 and ii) an import ban on 30 types of products (notably meats, dairy products and fruit and vegetables) imposed in August 2014. Concerning

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the ban imposed in January 2014, the WTO's Appellate Body confirmed that Russia's import bans on live pigs, pork and other pig products from the EU is illegal under international trade rules in February 2017([10]).

After the import ban of EU products it became evident that a potentially intended side effect of the embargo was the stimulation of domestic food processing in Russia. This point, namely the political economy and domestic consequence of the Russian agri-food countersanctions was also discussed by (Wengle, S.). She emphasises the link between the embargo and the Russian food security agenda aiming at boosting domestic food production and reducing import dependence of that sector. The sanctions in fact increased domestic production in some areas like pork and poultry and lower imports of cheese were also mainly substituted by an expansion of production of domestic dairies; for other food products, e.g. beef, the sanctions failed to boost domestic production. However, prices increased significantly due to higher production costs (Agra Europe). At the same time demand changes (e.g. substitution of beef by pork) were not only a result of the embargo but also due to a fall in the purchasing power of Russian households.

Whereas agri-food exports to Russia shrank, overall EU exports of agricultural products continued to increase over the same period, amounting to USD 492 bn in 2016, 2.0 % higher than in 2015 and 0.2 % higher than in 2012. Nevertheless, products under embargo such as cheese, fruits, and meat, experienced lower export values than in 2013([11]). The scale of the import restrictions, however, affects the EU countries differently, as Figure 7 shows. For 12 countries the share of embargoed products accounts for more than 50 % of overall agri-food exports to Russia, including Cyprus, where more than 95 % of agri-food exports to Russia are affected by the ban. Also in terms of total exports to Russia the scale of banned products exceeds 25 % for Cyprus (53 %), Greece (30 %) and Denmark (25 %), while import restrictions also hit Lithuania (19 %) and Ireland (19 %) hard. Regarding the importance of the banned products for non-embargoed countries, Figure 7 shows that around 80 % of the agri-food exports of Belarus, Turkey and Serbia to Russia are sanctioned goods and thus are likely to increasingly substitute supply from Western economies. In terms of overall exports, the share of embargoed products amounts to more than 20 % in Belarus and approximately 15 % in Serbia, Turkey and Armenia, providing first insights that these countries may most likely benefit from the embargo.

For some specific agricultural products the value of EU exports to Russia is especially high, underlining the importance of Russia as a significant commercial market for agri-food exports. The breakdown of EU exports to Russia by product groups in Figure 8 highlights that dairy products, fruits as well as meat and sausages are most affected by the trade embargo (see also European Parliament, 2014). Before the import ban, EU dairy exports to Russia amounted to USD 1 795 mn (2013; 24.5 % of EU exports of banned products), while fruit and meat exports were worth USD 1 660 mn (22.6 %) and USD 1 637 mn (22.3 %), respectively. In comparison, the USA mainly exports meat and sausages (43.6 %) as well as fruits (29.7 %) to Russia and the value of exports covered by the Russian import ban amounted to USD 751 mn in 2013. A detailed account of regulatory changes since 2014 concerning import restrictions of EU agricultural products by Russia was published recently by (GTAI).

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[10] http://trade.ec.europa.eu/doclib/press/index.cfm?id=1627 (retrieved 26 June 2017).

[11] European Commission: https://ec.europa.eu/agriculture/russian-import-ban_en (retrieved 26 June 2017).
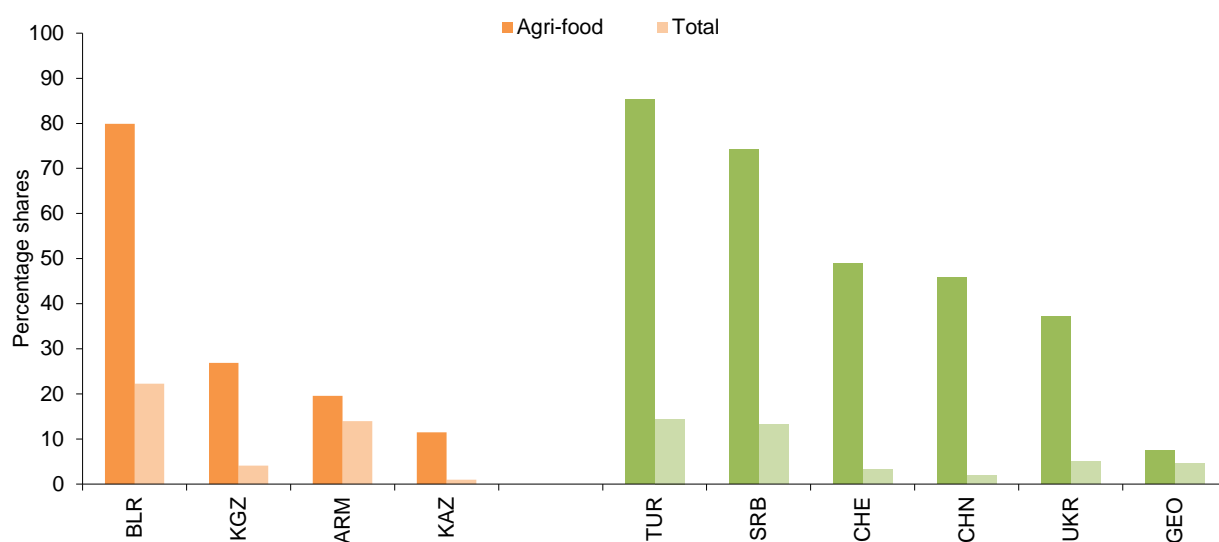
Figure 7: Share of embargoed products in agri-food and total exports to Russia, 2013

Panel 7a) EU and USA
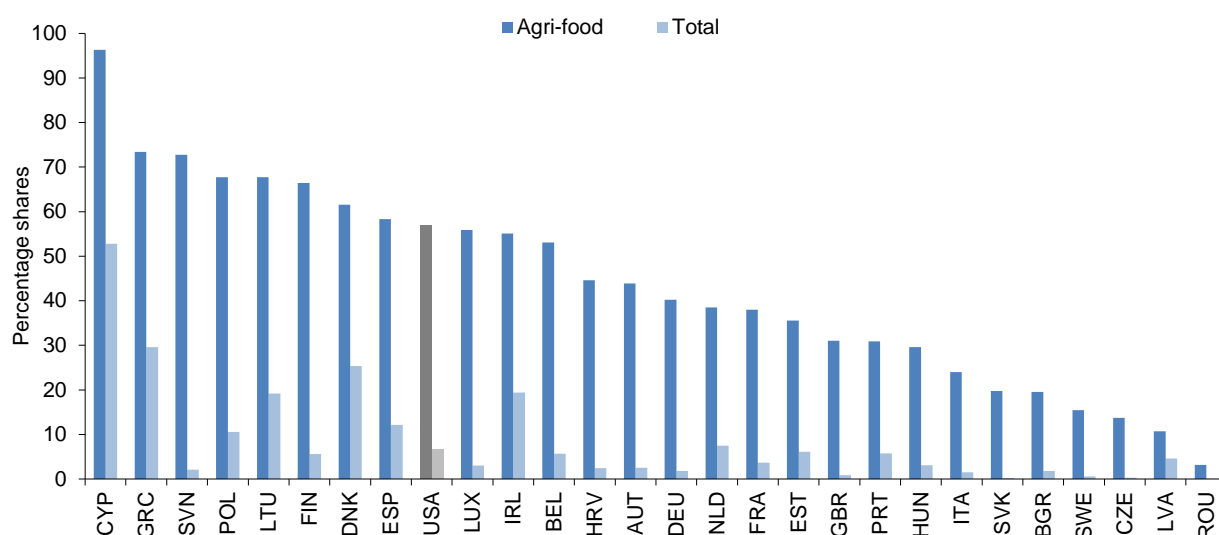
Source: UN Monthly COMTRADE, WIFO calculations.

Panel 7b) Eurasian Economic Union and selected third countries
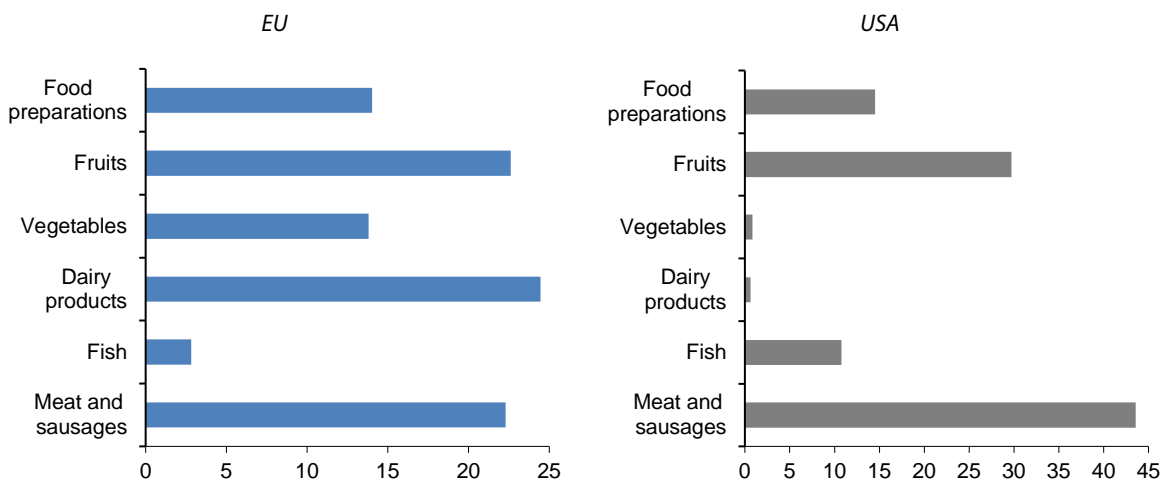

Source: UN Monthly COMTRADE, WIFO calculations.

Members of the Eurasian Economic Union (EEU), which do not fall under the embargo, are likely to benefit most from the diversion of Russian agri-food imports, as depicted by Figure 8. The most important supplier to Russia is Belarus, its export value of products covered by the Russian trade embargo amounts to USD 3 717 mn in 2013, mostly comprising dairy products as well as meat and sausages. In contrast, the exports of affected products by all other members of the Eurasian Economic Union only account for USD 109 mn in 2013. Other important suppliers to the Russian market in terms of banned agricultural products include Turkey (USD 1 007 mn) and China (USD 908 mn) with respect to fruits, vegetables, and fish for the latter, while dairy products as well as meat and sausages are mainly delivered by the Ukraine (USD 767 mn), which was, however, added to the list of sanctioned countries later on. Exports of

embargoed products of Serbia to Russia (with a total value of USD 14 mn in 2013) mainly concentrate on fruits and to a lesser extent on dairy goods, as Figure 8 shows.
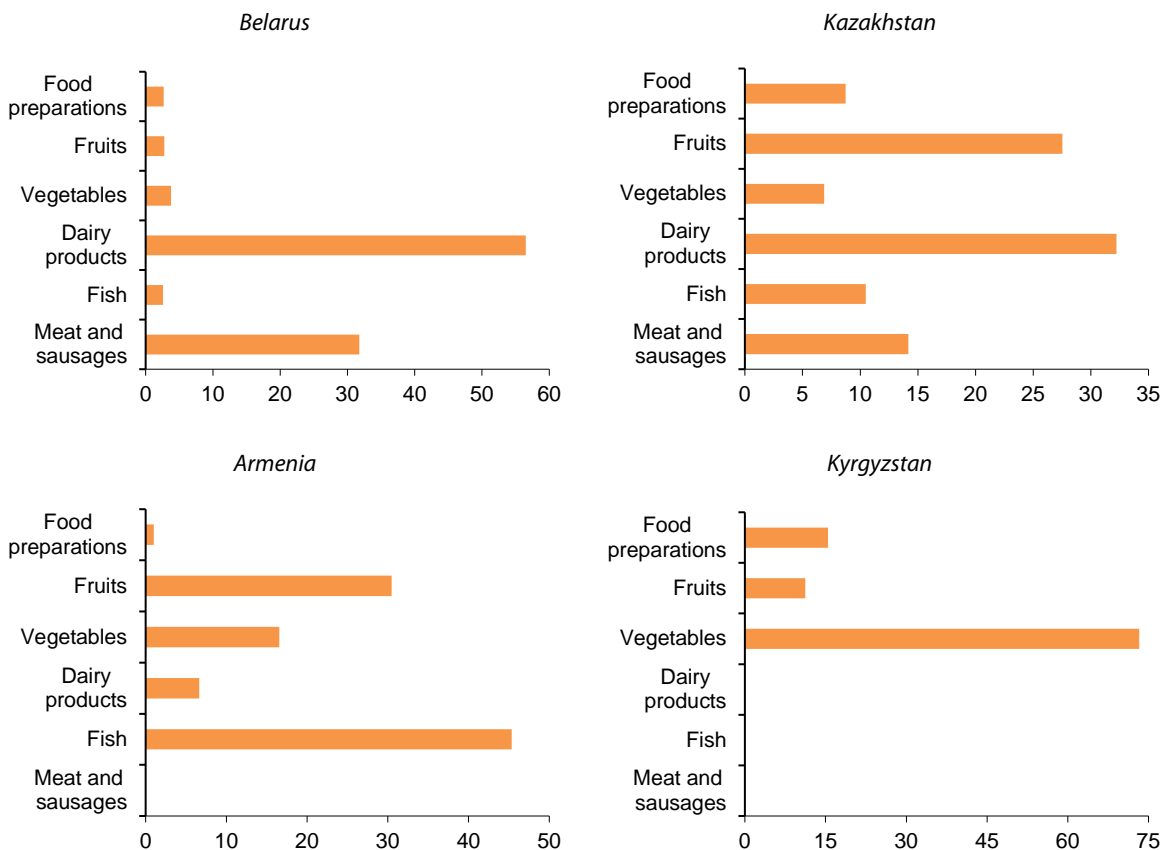
Figure 8: Percentage shares of embargoed exports to Russia by product groups, 2013
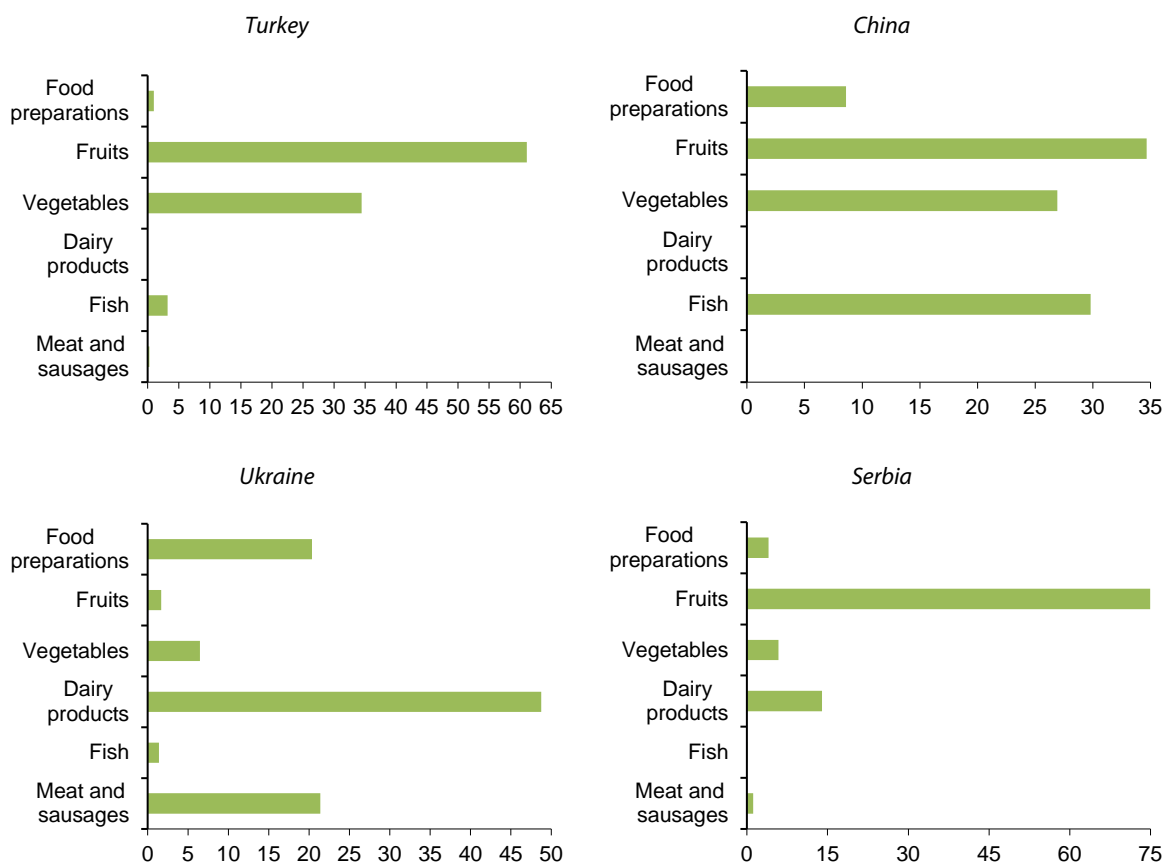
Panel 8a) EU and USA

Source: UN Monthly COMTRADE, WIFO calculations.

*Panel 8b) Eurasian Economic Union and selected third countries*

Panel 8b/continued

Turkey

China

Ukraine

Serbia

Source: UN Monthly COMTRADE, WIFO calculations.

In line with their specialisation in the production of agricultural products the impact of the ban among certain product groups differs across EU Member States. As Figure 9 shows, Lithuania and Poland are highly engaged in exports of fruits and vegetables; fruit exports also have a dominant position in Spain and Belgium. Dairy products account for a high share in the Netherlands, in Finland, Denmark, Germany, Lithuania and Poland. Regardless of the fact that in terms of meat exports the EU was confronted with SPS-related trade restrictions (sanitary and phytosanitary measures) by Russia even before the import embargo in summer 2014, Russia is still an important destination market for EU meat exports, in particular supplied by Germany, Denmark, Poland, Spain, the Netherlands and France. In addition, Norway held intensive trade relations with Russia with respect to fish and seafood (FAO). A recent detailed review of the situation in Germany showed that not all regions were affected in a likewise manner and that economic losses of exporters were also due to the sluggish economic performance of the Russian economy (Deutscher Bundestag).

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Figure 9: Percentage shares of embargoed exports to Russia by product groups and EU countries (ranked by export value), 2013
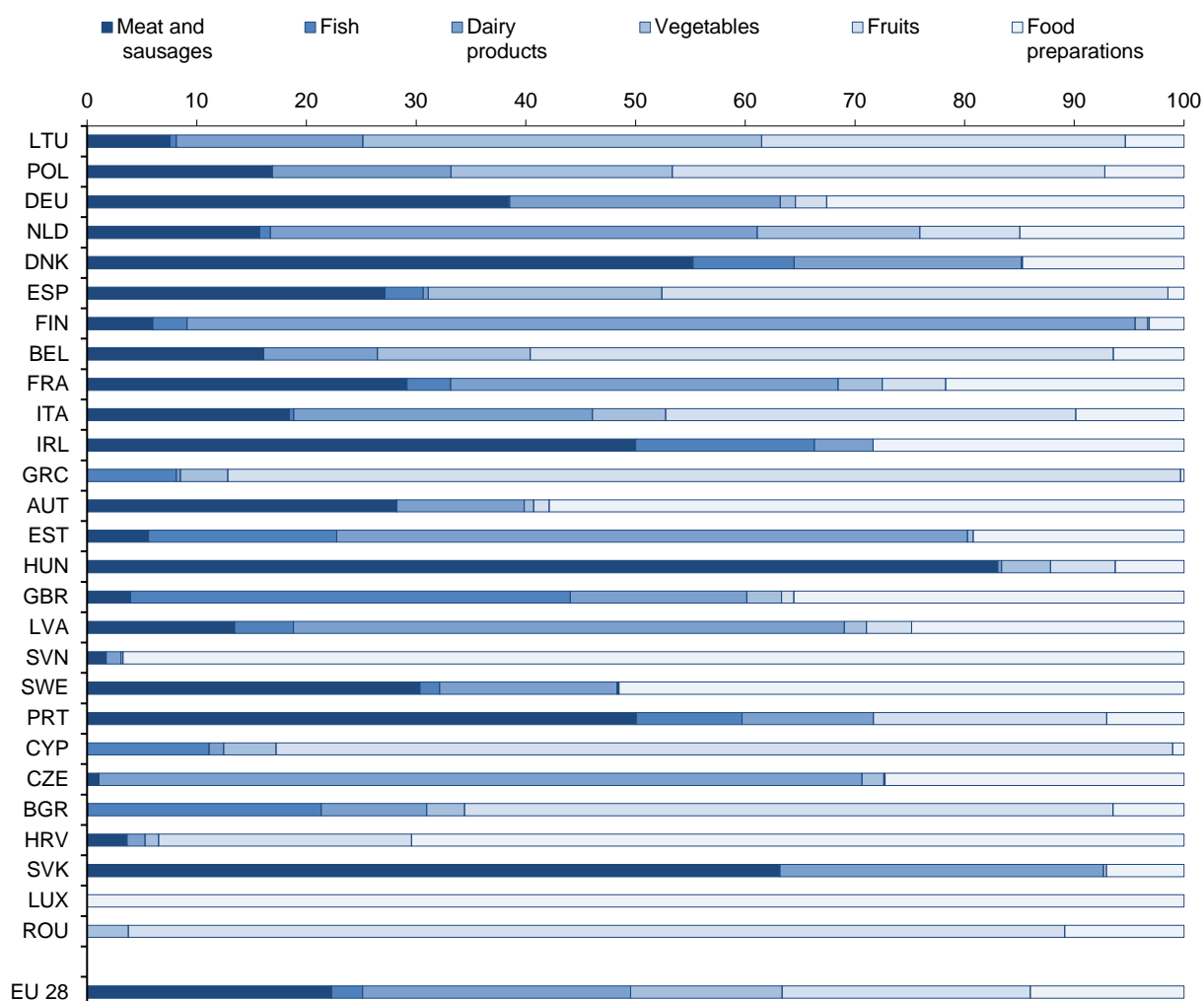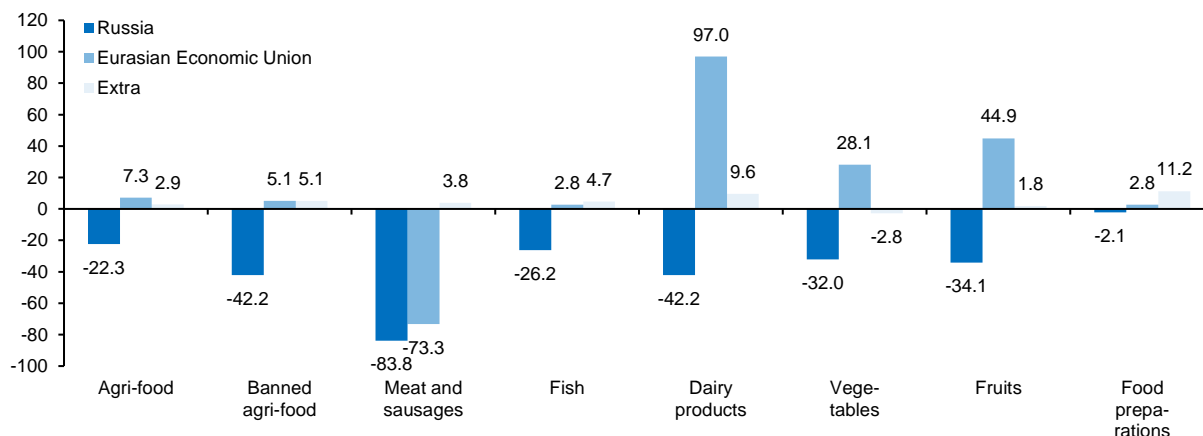

Source: UN Monthly COMTRADE, WIFO calculations.

The evolution of agri-food exports of the EU and the USA to Russia, the Eurasian Economic Union and other third countries since 2014 is summarised in Figure 10 and provides some first insights about potential trade diversion as a result of the Russian sanctions. While EU exports of total agricultural products (-22.3 %) and sanctioned goods (-42.2 %) to Russia dropped markedly in 2014, exports to the Eurasian Economic Union (+7.3 % and +5.1 %, respectively) and other third countries (+2.9 % and +5.1 %, respectively) increased significantly. In particular, EU exports of dairy products, fruits and vegetables to the members of the Eurasian Economic Union accelerated, while exports of meat and sausages decreased sharply in 2014. Despite supportive measures at the EU level, agri-food and banned agri-food exports in each of the product group have not recovered in 2015 and declined significantly, as Figure 10 shows. Only in 2016, the EU's agri-food sector managed to compensate for losses, as overall agri-food exports and supplies of embargoed goods to third countries increased by 2.1 % and 3.5 %, respectively. Similar patterns of potential trade diversion to other third markets are also observed for US trade flows with Russia. However in contrast to the EU, US exports to the Eurasian Economic Union decreased in 2014, except for vegetables and food preparations.
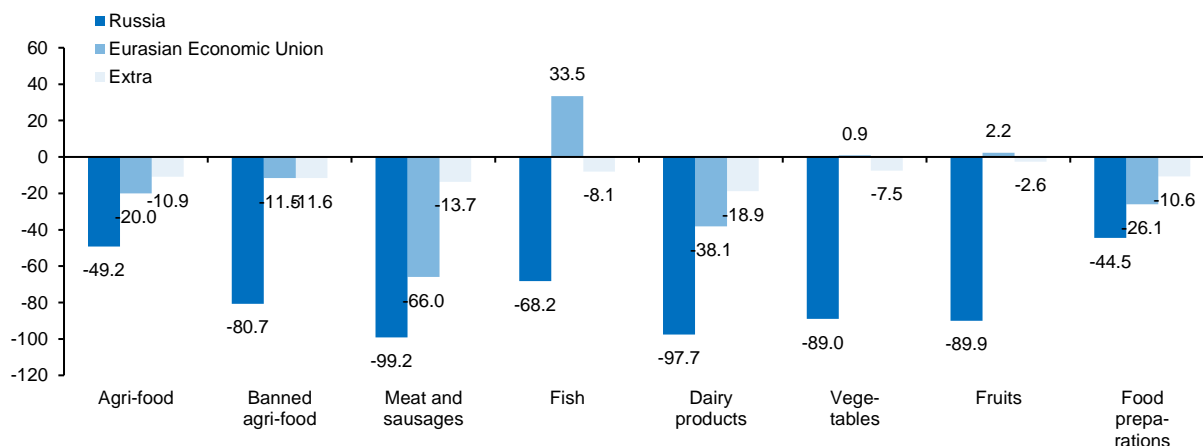
Figure 10: Percentage changes in agri-food exports to Russia, the Eurasian Economic Union and other countries, 2014 to 2016
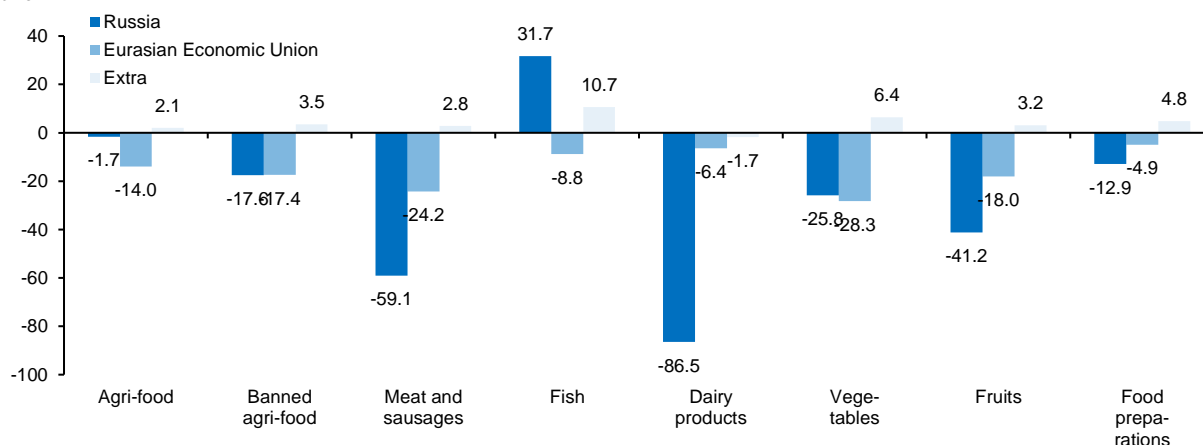
Panel 10a) EU
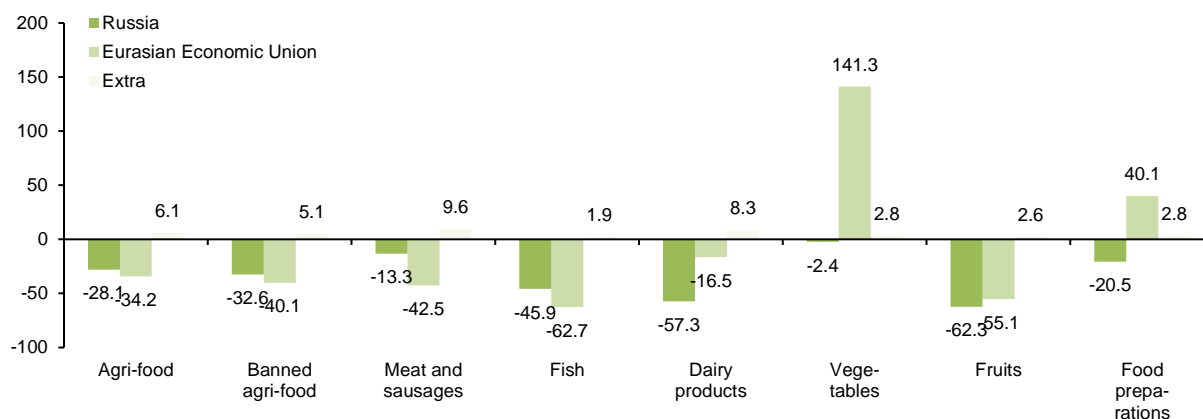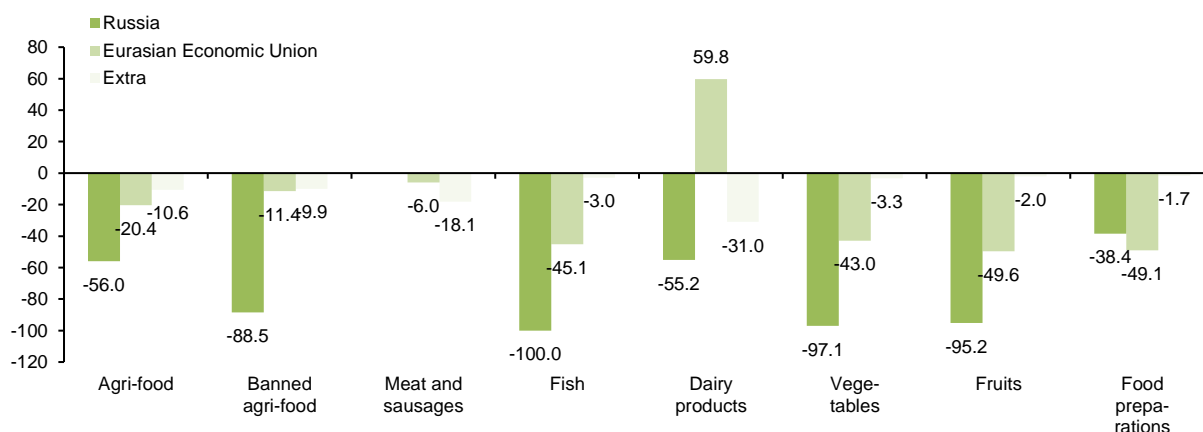

Source: UN Monthly COMTRADE, WIFO calculations. Eurasian Economic Union excludes Russia. Extra comprises all other countries except for Russia and the Eurasian Economic Union.
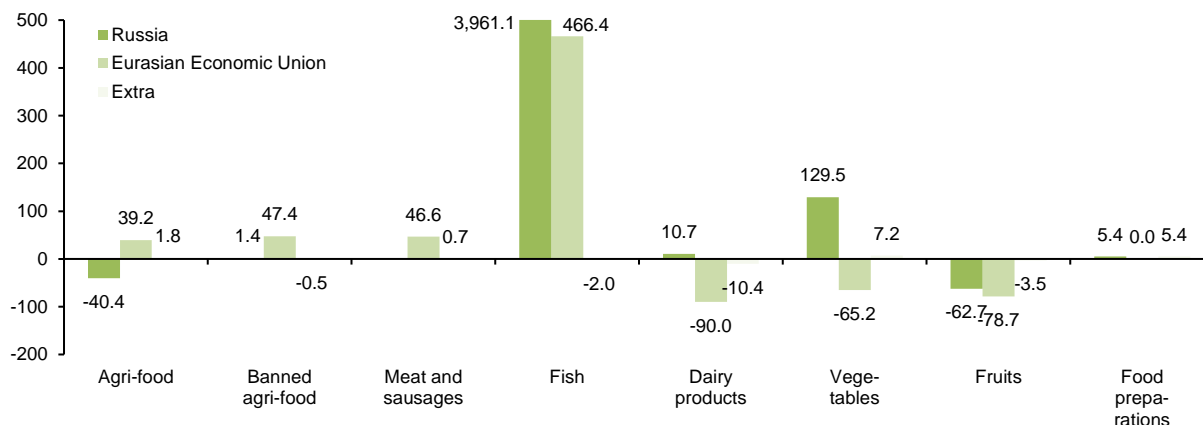
Panel 10b) USA

2014

2015

2016

Source: UN Monthly COMTRADE, WIFO calculations. Eurasian Economic Union excludes Russia. Extra comprises all other countries except for Russia and the Eurasian Economic Union.

2.2   Evidence for trade diversion

2.2.1   EU exports

While alternative market opportunities for the EU do exist for certain agricultural products, rerouting trade flows to other foreign markets takes time; furthermore, diverting deliveries to other countries will in most cases go hand in hand with a decline in sales prices since any markets with higher profit opportunities than the Russian market would have been supplied even before the sanctions were in place, assuming profit maximising firm behaviour. To address this challenge and help mitigate the impact of the agri-food market

disturbances caused by the sanctions, the EU mobilised a common response through the usage of appropriate market mechanisms within the Common Agricultural Policy (CAP) to stabilise the internal market (Boulanger, P. et al.).

Consequently, EU countries and the European Commission closely monitored all markets affected by the ban and took a range of emergency measures immediately after the embargo was imposed. Such measures are available based on Common Agricultural Policy procedures in case market frictions appear. A range of instruments to intervene in markets are available (under the CAP rules on reallocation and exceptional support) and were in fact triggered for dairy products and for fruits and vegetables. They were designed to help producers in dealing with

- increased market pressure (by withdrawal of products from the market; processing fruits to juice; donating to special groups),
- unstable prices (stabilisation achieved through coverage of storage costs of relevant products until prices recover),
- unstable farm incomes (applying in particular to milk producers in Baltic countries) and
- lost market opportunities (by exploring alternative sales opportunities through the promotion of sales in new markets; negotiations on free trade agreements; agreements on phytosanitary procedures between Member States and target markets).

Agri-food exports to Russia were not only negatively affected by discretionary product-specific trade restrictions but also by unfavourable exchange rate movements. In early 2014 the exchange rate of slightly less than 50 rubles for one euro was relatively stable. When the year came to an end a massive depreciation to well over 70 rubles per euro was observed. However, no specific measures applying exclusively to the farm sector exist with respect to exchange rate risks but exporters may benefit from national measures like the export guarantee programme (Url, Th.) and export promotion schemes (e.g. "go international" initiative) in Austria.

A sudden and unanticipated reduction of demand causes lower prices when supply cannot adjust. The measures listed above were taken in order to prevent prices from dropping to unsustainable levels or cover losses farmers incurred. Producers of vegetables were affected most heavily because such products cannot be stored. The same is true for many kinds of fruits.

Lower prices not only hurt producers but may also open new market opportunities for agents on markets not hampered by the sanctions. Consider a food processing company in a country unaffected by the sanctions; it will profit from lower prices of inputs delivered by EU producers looking for alternative markets and is thus able to expand production (and possible exports to Russia). This actually applied to some food ingredients (e.g. fruit juice concentrates, meat, milk powder, butter) that became available on certain markets in the second half of 2014. Diversion of trade flows and changes in the supply chain of products originating in the EU may have led to an increase in production in third countries; finally, processed ingredients from EU producers appeared on the Russian market. According to our knowledge, studies on the quantitative effect of such trade diversion phenomena are not yet available; therefore it is not possible to provide any further evidence on their economic effects.

The analysis of recent trade data points to increased trade flows in agricultural products to third countries. It confirms that the EU has managed to partly redirect agri-food exports to alternative third countries. Specifically, the annual value of EU agri-food exports to third markets grew by 2 % in 2016 compared to

the previous year. The highest relative gains were achieved with respect to exports to the USA (+5.5 %), China (+13.3 %), Switzerland (+2.4 %) and Japan (+7.4 %)[12].

2.2.2 Russian imports

The negative consequences of the import ban on the domestic Russian market (which led to shortages and price increases of food products, etc.) forced the Russian authorities to explore opportunities for new trading partners. In order to mitigate diminishing supply as a result of the trade embargo, banned agri-food products needed to either be sourced from non-sanctioning countries, for instance from countries in the Eurasian Economic Union, or be substituted by increased domestic production. However, in the short run imports from countries not affected by the import embargo may not fully replace lost foreign supply as they can be increased only gradually (FAO). First public announcements reveal that Russia intended to increase the exports of agricultural products especially from Turkey, Serbia and the countries of the Eurasian Economic Union. In particular, fruit imports were to be sourced from Azerbaijan and Turkey, while milk products may be mainly supplied by Belarus. As a result of intensified trade relations with South America in the previous years meat imports were likely to be replaced by deliveries from these countries; several companies in Brazil, for instance, were already approved to export to Russia. In order to facilitate imports of agricultural products, Russian authorities implemented a mutual recognition of certificates with certain trading partners and accelerated certification procedures (FAO). According to World Food Moscow[13] imports from Pakistan, Serbia, Egypt as well as South America, especially Chile, Argentina and Brazil, increased significantly after the implementation of the embargo.

2.3 Evidence for non-compliance

One might also take into account that certain quantities of banned import goods from the EU and other Western economies are re-exported[14] to Russia via Belarus, Serbia or other countries outside the sanction alliance in order to ease food shortages; such activities are illegal by Russian law since they circumvent the trade embargo by violating the rules of origin of products (Liefert, W. and Liefert, O.). Both producers of banned agri-food products in the EU[15] and companies in countries not included in the import ban (wholesalers, food processing companies, companies in the agri-food sector) have an incentive to engage in non-compliance activities. However, Russian authorities have reinforced their control of inflows of embargoed products from sanctioned countries through third countries, in particular within the Eurasian Economic Union, to prevent such non-compliance activities.

As a result of the import ban, agri-food exports from Serbia and Belarus to Russia increased by 13 % between August 2014 and December 2014 as compared to the same period in 2013. According to (Liefert, W. and Liefert, O.) Russia allows imports of Belarusian processed foods that use banned EU agri-food commodities as "inputs" as long as the processing adds substantial value added. However, Russian authorities attempt to verify the origin of agri-food products entering their market in order to prevent non-compliance with their trade restrictions. Recently, severe disputes between Belarus and Russia have occurred in this respect, with Russia blocking the import of some Belarusian agricultural products supposedly originating in the EU[16]. As a consequence of Russian measures against non-compliance with

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[12] For further details, see https://ec.europa.eu/agriculture/trade-analysis/monitoring-agri-food-trade_en (retrieved 4 July 2017).

[13] http://www.world-food.ru/en-GB/press/news/277.aspx (retrieved 30 June 2017).

[14] http://www.agra-net.com/agra-europe/meat-livestock/dairy/eu-milk-re-exports-from-belarus-put-embargo-to-the-test-458092.htm (retrieved 28 June 2017).

[15] https://www.gazeta.ru/business/news/2014/08/18/n_6403017.shtml (retrieved 28 June 2017).

[16] http://belarusdigest.com/story/belarus-smuggles-eu-food-russia-despite-sanctions-19427 (retrieved 28 June 2017); https://www.gazeta.ru/business/2014/08/19/6181309.shtml (retrieved 28 June 2017).

the import ban, the export increase observed for Belarus in the fall of 2014 came to an end in the winter of the same year (Agricistrade).

Information about the sincerity of efforts to prevent non-compliance on part of the Russian authorities, but also on part of authorities in third countries that have a vested interest in preserving good relationships with Russia has also been received from representatives of the Austrian chamber of commerce in Serbia. They conclude that even though such activities cannot be ruled out completely they are of very limited relevance and do not seriously thwart the effectiveness of the sanctions in place. On the other hand, it was pointed out that legal trade diversion efforts do work in that direction. More and more domestically produced agri-food commodities in Serbia were withdrawn from the home market and exported to Russia instead. Serbian domestic demand was increasingly satisfied by products imported from EU countries. Even though this observation cannot be confirmed here beyond any doubt, the descriptive data analysis showing both increasing EU exports to Serbia and rising Serbian exports to Russia hints in that direction.

Further qualitative evidence on the issue of non-compliance both with respect to EU and Russian sanctions, however, is lacking. Official sources are very hesitant to share their possible (more or less anecdotal) knowledge of such activities. Numerous attempts to contact OECD officials dealing with the problem of non-compliance remained unsuccessful.

Nevertheless, despite all this information pointing towards little relevance of the non-compliance issue, at least with respect to the import ban of agri-food products to Russia some suggestive empirical evidence for (legal or perhaps also illegal) circumventing trade through certain transit countries, in particular Belarus, Serbia and Macedonia, has been found. Figure 11 compares the change in banned agri-food exports to overall agri-food exports (excluding embargoed goods) on a quarterly basis between 2013 and 2016 for specific members of the EU, namely the Baltic countries (Estonia, Latvia and Lithuania), small EU countries (Austria, Italy, Denmark and Spain), large EU economies (Germany, France, Netherlands) and CEE countries (Hungary, Czech Republic, Poland, Slovenia, Slovakia). As the figure shows, for the case of Baltic countries exports of banned agri-food goods may have been partly redirected to Russia via Belarus, as exports of sanctioned goods flourished till the 4th quarter of 2015. Similarly, banned exports of small Western economies to Serbia have increased exceptionally since mid-2014, while rerouting via Serbia is also obvious for large Western economies in the 3rd and 4th quarter of 2014. In line with media reports, CEE countries partly shifted their sanctioned exports via Macedonia to Russia, which explains the accelerated increase in exports of banned goods in the last two quarters of 2014, before Russia implemented stricter import controls.

Figure 11: Percentage changes in agri-food EU exports to Belarus, Serbia and Macedonia, 2013 to 2016

Exports of Baltic countries to Belarus
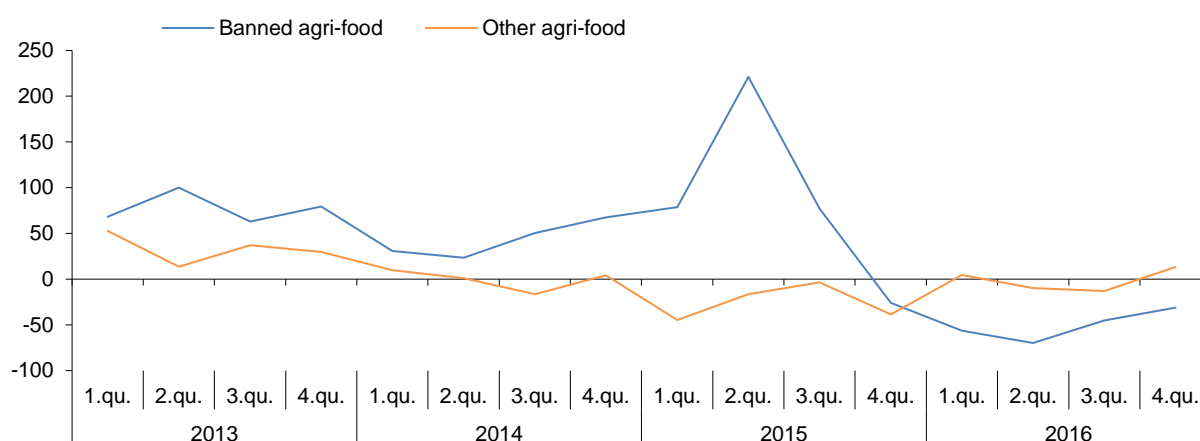
Exports of large EU countries to Serbia
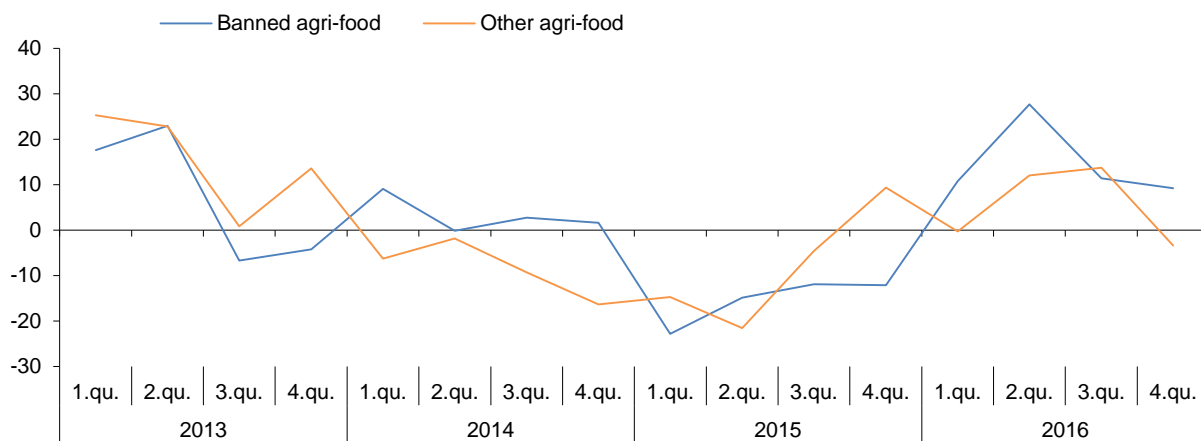
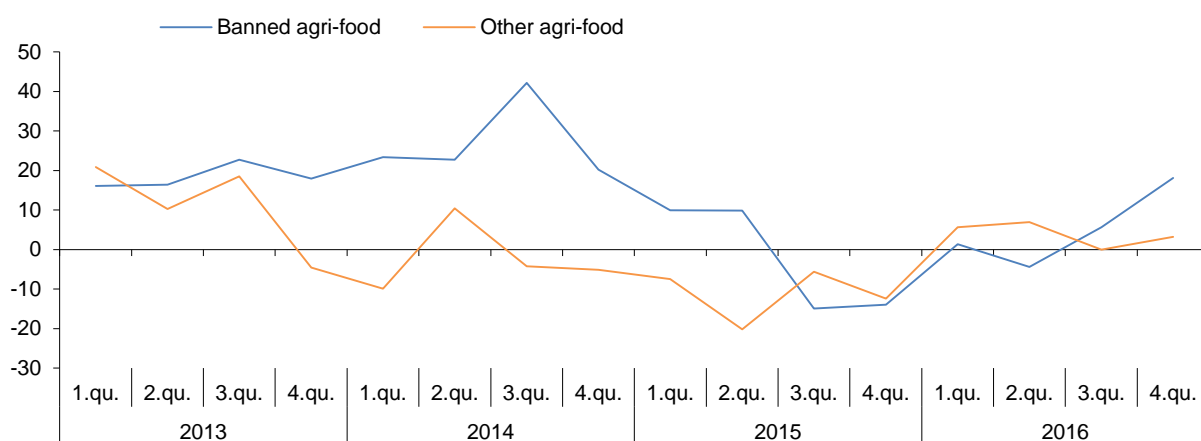*Exports of small EU countries to Serbia*

Figure 11/continued

Exports of CEE countries to Macedonia

Source: UN Monthly COMTRADE, WIFO calculations.

These insights on increased trade flows in sanctioned goods of EU countries with Belarus, Serbia and Macedonia, countries not affected by the import ban, are further supported by rising export flows of these countries to Russia, as Figure 12 depicts. Belarus increasingly supplied embargoed goods to the Russian market in the 3rd and 4th quarter of 2014, but the prospering development stopped with the blocking of suspected goods at the Russian border. In contrast, exports of banned goods from Macedonia and Serbia

to Russia kept growing until spring 2015, indicating weak evidence for supporting re-exports of the EU in the first month after the implementation of the trade embargo.

It thus can be concluded that even though illegal re-exporting of EU agri-food products by Belarus, Serbia and Macedonia to evade the Russian countersanctions has been reportedly irrelevant, the empirical evidence cannot completely support these assertions. Nevertheless, this descriptive evidence is necessarily rather vague.

Figure 12: Percentage changes in agri-food exports of Belarus, Serbia and Macedonia to Russia, 2013 to 2016
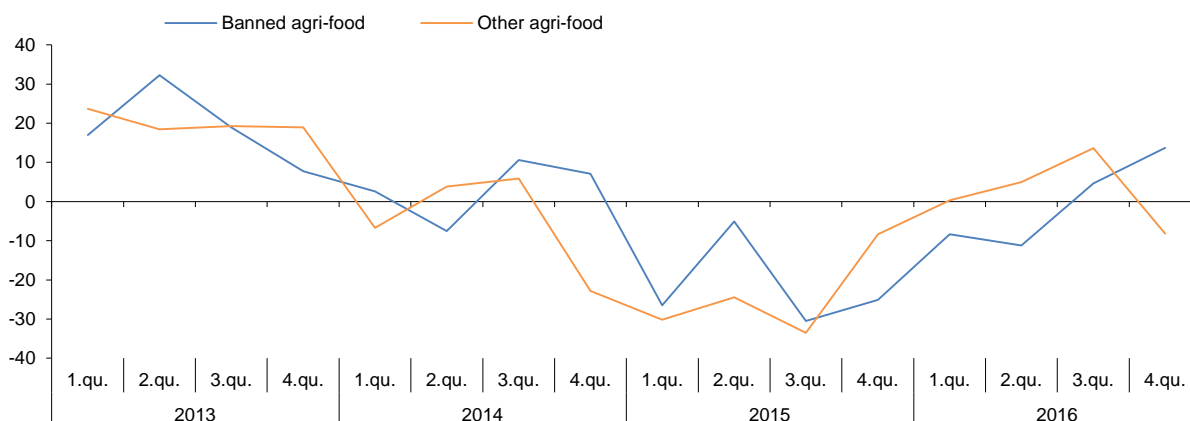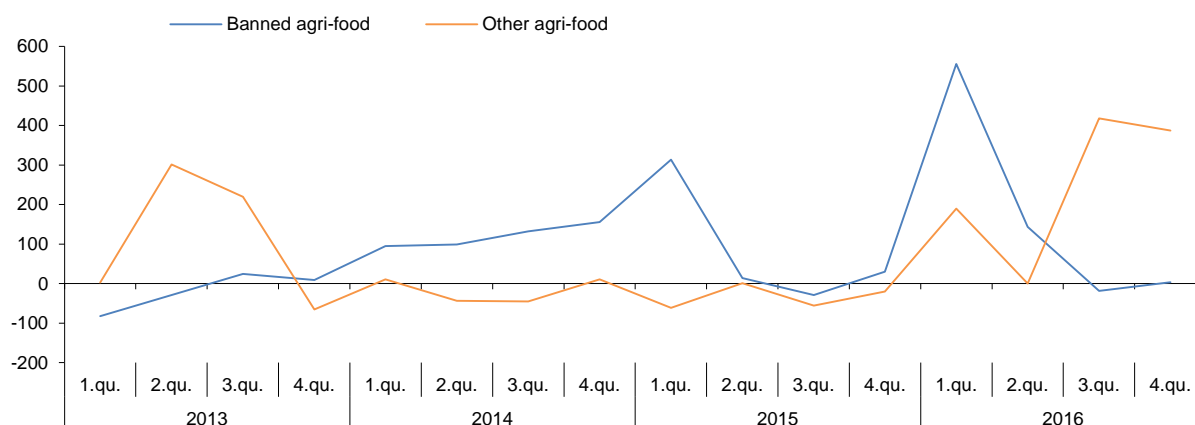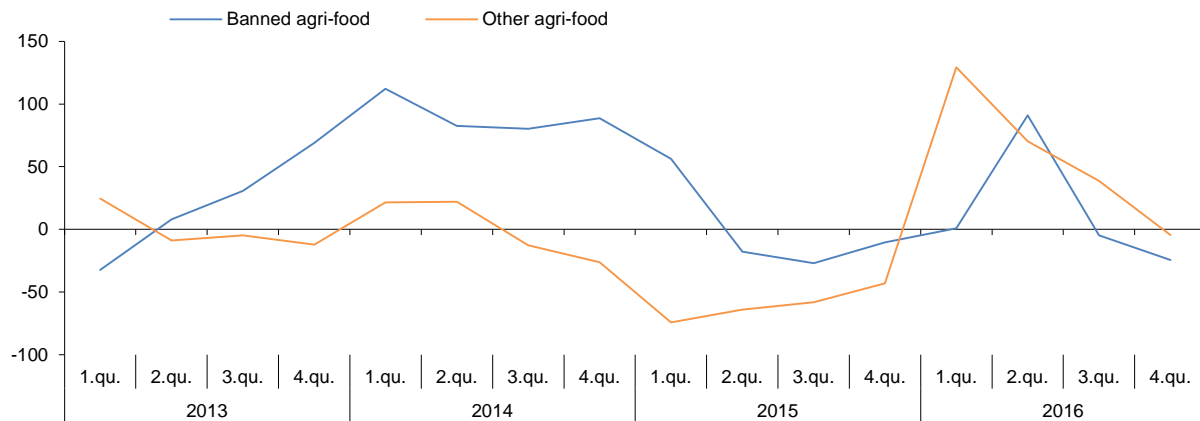
Exports of Belarus to Russia

Figure 12/continued

Exports of Macedonia to Russia

Exports of Serbia to Russia

Source: UN Monthly COMTRADE, WIFO calculations.

3 Estimation of sanction-induced trade effects

3.1 Empirical approach: assessing the impact of the sanctions and limitations of the methodology

The following assessment of the impacts of the sanctions on international trade flows is based on the use of a standard econometric model, built on recent advances of the so-called gravity approach of international trade. Using state of the art estimation techniques the model can predict changes in trade flows reflecting the emergence of certain impediments to trade, in this case the sanctions. As such, any type of bilateral sanctions between Russia on the one side and the EU and other allied Western countries on the other – financial sanctions, "smart sanctions", the Russian embargo on certain food and agricultural products but also, and perhaps most importantly, the general worsening of trade relationships as a corollary of all sanction measures and political tensions – are taken into account. Furthermore, the model provides some evidence concerning the role of the Eurasian Economic Union and other non-sanctioning countries with respect to possible trade diversion efforts by Russia to replace Western imports and by the sanctioning Western countries to compensate for lost export opportunities in Russia.

The rationale behind the econometric model can be summarised as follows: The impact of an abrupt change in trade costs on trade – caused in this case by a sudden imposition of sanctions – can be estimated by simulating hypothetical trade flows in absence of sanctions and comparing those with observed trade flows. The model thus predicts a world without sanctions, i.e. a scenario with trade costs that remain unchanged after 2013. All country-specific shocks that have taken place since beginning of 2014, such as currency devaluations, the decline of international oil price or other macroeconomic and political events, however, are included in the counterfactual simulation so that their influence on trade can be separated from the impact of sanctions.

The model allows us – under certain assumptions and econometric constraints – to make an informed statement about the impact of the sanctions and the implied diversion of trade flows to other markets for different sectors of the economy for both the sender and target countries. The technical details of the model are described in more detail in Appendix 6.2.

This econometric model will thus be used to shed light on:

- direct impacts of the bilateral sanctions regime between Russia, the EU and other Western countries, i.e. provide an estimate of sanction-induced "lost exports";

- potential indirect impacts reflected in the diversion of trade flows by companies of the European countries and Russia to third countries;

- sectoral effects of sanctions and potential trade diversion activities as their impact has been shown to be highly heterogeneous depending on various characteristics of firms and products.

The statistical estimates thus represent the total change in exports for each country that resulted from the implementation of the sanctions and the potential mitigation efforts of firms exploiting new business opportunities in other global markets.

The model is, however, limited with regard to the prediction of highly granular export flows, as e.g. in the case of dual use goods or highly specific components for arctic oil drilling, which EU regulations explicitly forbid to be exported to Russia. Consequently, as export losses with respect to these very specific commodities will not be included in the econometric model estimates, they need to be interpreted as lower-bound estimates of the true sanction-induced export losses. This limitation of the econometric analysis, however, weighs less heavily since trade in these products historically has constituted a marginal share in total exports.

The econometric model and the counterfactual simulations have very limited data requirements and only demand information on export flows between all countries. We again use monthly flows from UN COMTRADE and aggregate them to six sectors: Food and agriculture, mining and chemicals, raw materials, manufacturing, textile, and other. We restrict the sample to data from the period 2012 to 2016 and to 97 reporting countries accounting for more than 98 % of world trade.

3.2   Model results: the impacts on international trade flows

3.2.1   Overall trade effects

In the following we provide an overview of the results of a counterfactual situation in which there are no bilateral sanctions between Russia and the 37 involved Western countries. As can be seen in Figure 13, the counterfactual scenario reflects a decline in exports, even for non-sanctioning countries, due to the strong downturn of the Russian economy, largely caused by the oil price shock of early months in 2015 and the ensuing ruble depreciation. These factors depressed Russian demand and thus by and large explain the drop in exports from sanctioning and non-sanctioning countries, as described by (Dreger, C. et al.). With the imposition of sanctions in mid-2014 a divergence of the observed flows (solid line) and the predicted flows (dotted line) can be observed. This divergence goes in opposite directions for sanctioning and non-sanctioning countries: sanctioning countries, not surprisingly, exported less to Russia than predicted (in a hypothetical world without sanctions), whereas non-sanctioning countries exported more than predicted.

Figure 13: Sanctioning and non-sanctioning countries' exports to Russia: observed vs. predicted (hypothetical world without sanctions) flows
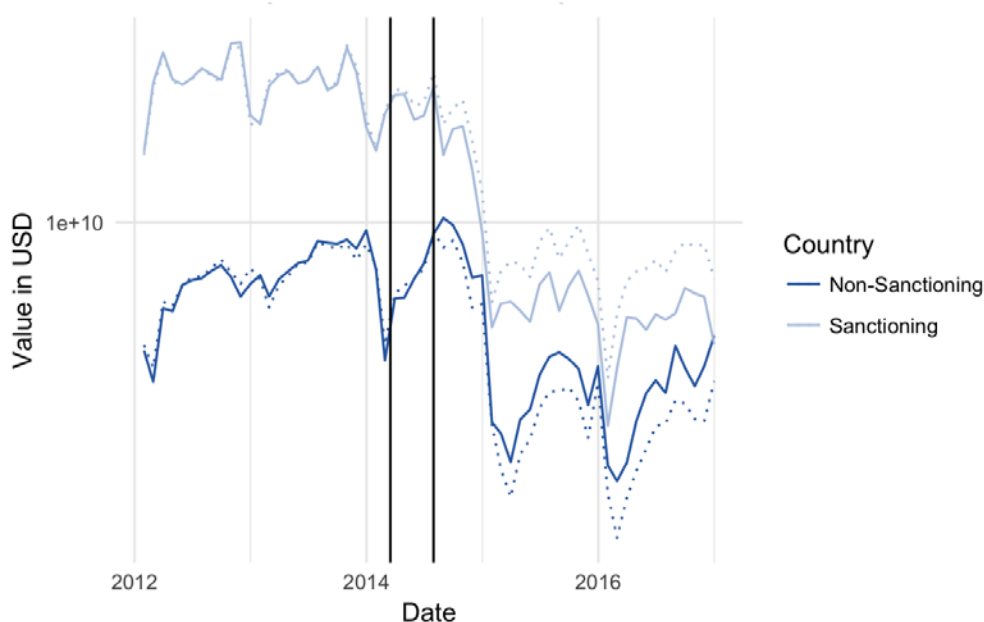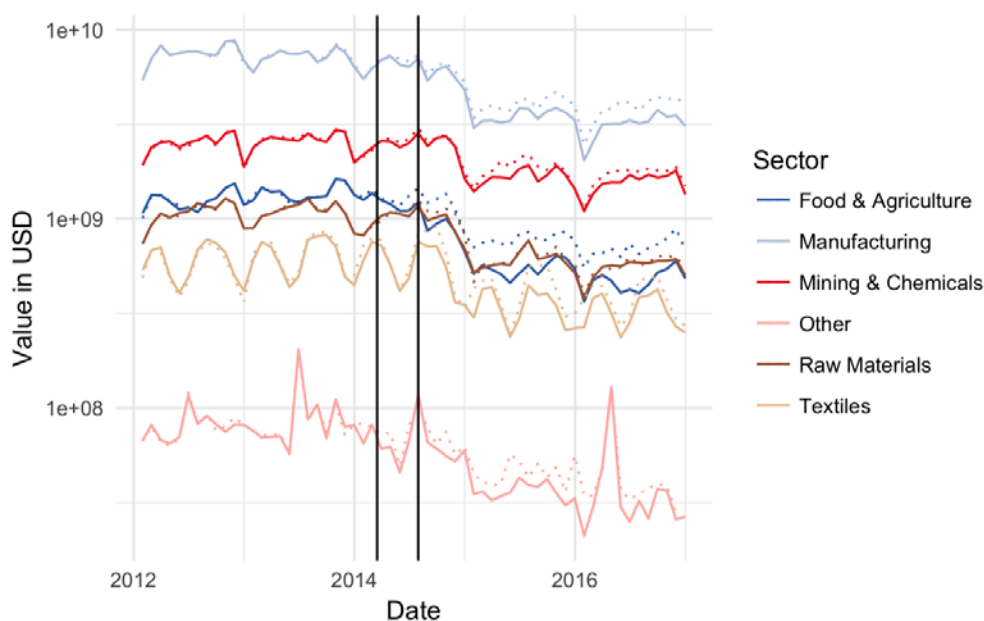

Source: UN Monthly COMTRADE, WIFO calculations.

The figure also shows a clear shift in the source countries of Russian imports. Whereas in early 2012 almost exactly twice as much in value was imported from sanctioning countries compared to non-sanctioning countries (USD 12.7 bn vs. USD 6.3 bn January 2012), by the end of 2016 for the first time more imports came from the latter than the former (USD 6.5 bn vs. USD 6.7 bn).

3.2.2 Impacts by sector and country

Figure 14 zooms into the results for the EU and shows the observed and predicted exports to Russia disaggregated by sector. Except for exports of raw materials, all observed flows diverge from their predicted flows. While in relative terms the drop is strongest for agricultural and food products, arguably largely due to the Russian embargo on a range of these products, the drop in manufacturing exports is the most severe in absolute terms. This heterogeneity with respect to commodity groups also determines how European countries are affected, depending on their composition of exports.

Figure 14: EU exports to Russia by sector

Source: UN Monthly COMTRADE, WIFO calculations.

Export losses across the entire EU are estimated at USD 7.9 bn in 2014, USD 12.9 bn in 2015 and USD 13.9 bn in 2016. As Table 3 shows, these effects are very heterogeneous across EU countries: Germany is bearing the brunt of the lost exports in absolute terms with around USD 13 bn over the three year period, a decrease of 13 % vis-à-vis predicted exports to Russia. In relative terms, other countries are more affected. The losses for Cyprus (35 %), Greece (23 %) and Croatia (21 %) are largely due to the decrease in exports of agricultural products. The average relative drop in total exports to Russia for EU countries is 11 %.

3.2.3 Trade diversion effects

The lost exports vis-à-vis Russia may have been compensated, at least partially, by shifting trade flows to other markets. There is mixed evidence if that has actually happened and if so to which extent (see also below discussion of firm-level evidence).

Table 3: Total loss in EU exports to Russia over the period 2014 to 2016

	Total		Manufacturing		Food, agricult.		Mining, chemic.		Raw materials		Textiles		Other	
	Abs	Rel	Abs	Rel	Abs	Rel	Abs	Rel	Abs	Rel	Abs	Rel	Abs	Rel
AUT	- 1.1	- 9.5	- 0.3	- 5.3	- 0.1	- 10.8	- 0.4	- 11.9	- 0.2	- 15.6	- 0.1	- 17.5	0.0	15.7
BEL	- 2.2	- 15.1	- 0.6	- 14.5	- 0.3	- 18.0	- 1.0	- 14.2	- 0.2	- 17.0	- 0.1	- 29.6	0.0	5.1
BGR	- 0.1	- 7.6	- 0.1	- 8.7	0.0	13.3	- 0.1	- 13.0	0.0	9.5	0.0	- 16.2	0.0	21.7
CYP	0.0	- 34.5	0.0	60.0	0.0	- 70.0	0.0	- 8.6	0.0	- 73.2	0.0	- 45.9	0.0	- 63.6
CZE	- 1.2	- 9.3	- 1.2	- 12.0	0.1	18.4	- 0.1	- 5.1	0.0	2.2	0.0	7.0	0.0	- 29.7
DEU	- 13.0	- 13.4	- 8.9	- 14.9	- 1.3	- 24.7	- 2.1	- 9.8	- 0.1	- 2.0	- 0.6	- 17.2	0.0	- 12.1
DNK	- 0.6	- 16.9	- 0.1	- 8.1	- 0.7	- 49.0	0.2	36.9	0.0	- 0.2	0.0	39.8	0.0	- 29.5
ESP	- 1.2	- 14.7	- 0.6	- 21.5	- 0.9	- 43.7	0.1	6.3	0.0	3.2	0.2	21.3	0.0	- 20.3
EST	0.9	21.4	0.3	15.8	0.3	33.5	0.1	9.0	0.0	8.3	0.2	96.7	0.0	- 25.4
FIN	- 1.8	- 12.2	- 0.1	- 1.0	- 0.3	- 28.3	- 0.9	- 19.0	- 0.4	- 13.9	- 0.1	- 24.4	0.0	- 17.4
FRA	- 2.4	- 11.5	- 1.4	- 13.0	- 0.4	- 19.4	- 0.4	- 5.4	- 0.1	- 5.3	- 0.2	- 27.4	0.0	- 12.2
GBR	- 3.6	- 20.6	- 2.8	- 23.8	- 0.1	- 14.8	- 0.3	- 10.4	- 0.3	- 30.3	- 0.2	- 26.8	0.1	15.0
GRC	- 0.3	- 23.2	0.0	7.6	- 0.3	- 43.1	0.0	22.1	0.0	17.8	0.0	- 2.2	0.0	- 22.9
HRV	- 0.2	- 21.0	- 0.1	- 35.7	0.0	- 1.5	- 0.1	- 16.9	0.0	- 5.3	0.0	- 32.0	0.0	1 934.8
HUN	- 1.2	- 16.4	- 0.8	- 25.0	0.1	12.7	- 0.7	- 25.0	0.2	70.6	0.0	34.6	0.0	- 61.5
IRL	- 0.2	- 8.2	- 0.1	- 14.4	- 0.3	- 48.9	0.2	30.8	0.0	- 71.3	0.0	- 56.9	0.0	118.0
ITA	- 0.2	- 0.7	0.4	2.9	- 0.3	- 10.9	0.5	15.9	0.2	9.0	- 1.0	- 16.7	0.0	- 33.3
LTU	- 0.7	- 4.8	0.1	1.0	- 1.3	- 33.8	0.7	53.8	- 0.2	- 12.2	0.0	- 0.9	0.0	- 4.3
LUX	0.0	- 3.9	0.0	- 4.3	0.0	- 2.1	0.0	66.7	0.0	- 29.6	0.0	2.4	0.0	- 39.0
LVA	- 0.2	- 4.6	0.0	- 4.6	0.1	4.1	- 0.1	- 11.9	0.0	- 15.9	0.0	- 18.3	0.0	- 27.4
MLT	- 0.1	- 89.4	0.0	79.4	0.0	- 86.1	- 0.1	- 93.9	0.0	17.4	0.0	352.6	0.0	- 50.6
NLD	- 1.6	- 10.6	- 1.5	- 16.1	- 0.4	- 13.2	0.3	11.1	0.0	9.0	- 0.1	- 33.2	0.0	6.4
POL	- 3.6	- 14.7	- 1.1	- 10.4	- 1.7	- 45.1	- 0.3	- 4.8	0.0	- 1.4	- 0.3	- 22.4	- 0.2	- 40.3
PRT	0.0	- 2.3	0.0	- 18.4	0.0	14.3	0.0	- 4.6	0.0	8.6	0.0	- 8.4	0.0	67.4
ROU	0.6	16.3	0.5	22.5	0.1	64.9	0.0	6.7	0.0	- 6.8	0.0	- 40.7	0.0	12.7
SVK	- 0.7	- 10.3	- 0.7	- 11.3	0.0	2.7	0.0	1.7	0.0	8.1	0.0	- 29.8	0.0	- 67.6
SVN	0.0	0.8	0.2	32.2	0.0	- 14.7	- 0.2	- 11.1	0.0	9.9	0.0	- 24.5	0.0	8.9
SWE	- 0.1	- 1.8	- 0.1	- 2.0	0.0	0.1	0.0	2.3	- 0.1	- 9.3	0.0	19.5	0.0	- 16.9
EU	**- 34.7**	**- 10.7**	**- 18.9**	**- 10.9**	**- 7.7**	**- 23.6**	**- 4.4**	**- 6.1**	**- 1.0**	**- 3.8**	**- 2.4**	**- 13.8**	**- 0.2**	**- 11.8**

Source: UN Monthly COMTRADE, WIFO calculations. Abs...total loss in bn USD; Rel...total loss as percent of predicted export flows.

Figure 15 shows the predicted vs. observed exports of agri-food products by the EU to Russia (red line) as well as to China and African countries. Since the imposition of sanctions, exports to Russia have deviated strongly from their predicted values, decreasing by 23 % over the entire time period. For some European countries this drop is more pronounced than for others, e.g. agri-food exports declined by almost 90 % for Malta, but only by 2 % for Luxembourg, the differences are again largely determined by country-specific export structures and whether any of the agri-food exports were directly targeted by the Russian embargo. Figure 15 also provides some evidence that some of these lost exports to Russia may have been channelled to other destinations, two of them being the African continent and China. For both regions a clear deviation of observed from predicted flows is visible after the imposition of the sanctions regime, in particular in the medium to long run. While firms were unlikely to recover their losses in the short run (see discussion of Crozet, M. and Hinz, J.), also in the aggregate numbers exports appear to have at most only partially been diverted to other markets later on.

Figure 15: EU trade diversion of agri-food products
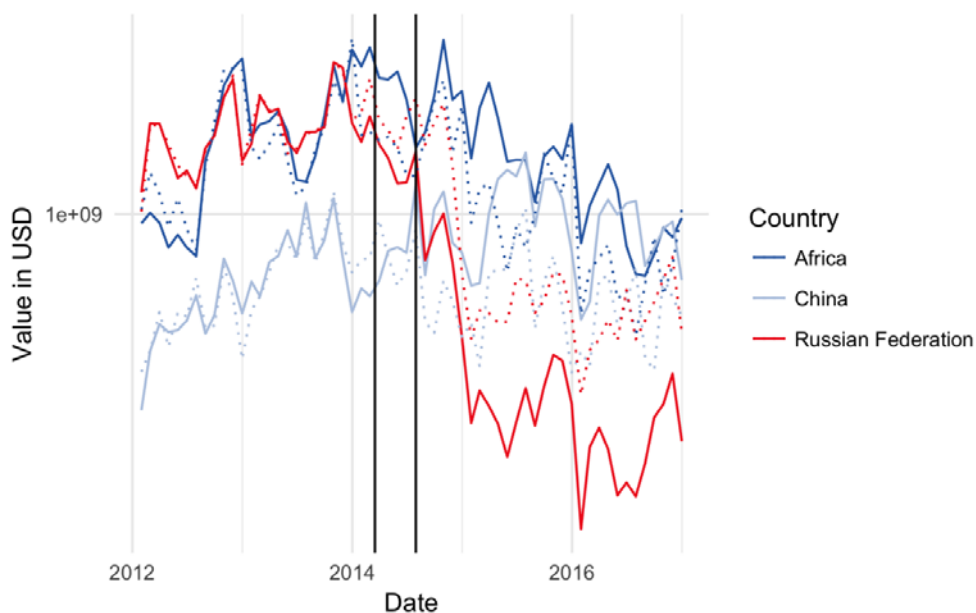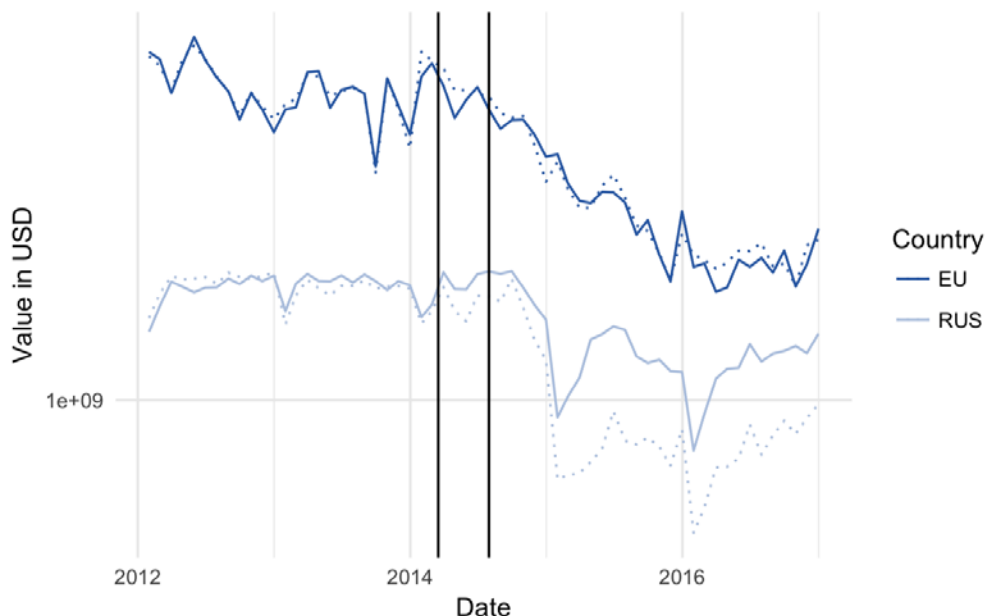

Source: UN Monthly COMTRADE, WIFO calculations.

Figures 16 and 17 display the export flows between the EU and Russia on the one side and the Eurasian Economic Union on the other. There is particular reason to believe that trade diversion has taken place within the Eurasian Economic Union. This suspicion appears to be merited. Both exports from Russia to other EEU countries as well as the inverse trade flow from EEU countries to Russia have visibly diverged from their prediction following the imposition of sanctions in March 2014. At the same time, interestingly, flows from the EU to EEU countries other than Russia have decreased over time, suggesting the affected EU countries did not divert their own trade away from Russia to other countries of the EEU; instead, the EU partly redirected agri-food exports to other third markets, such as USA and China (see chapter 2).

Figure 16: EU and Russian exports to Eurasian Economic Union
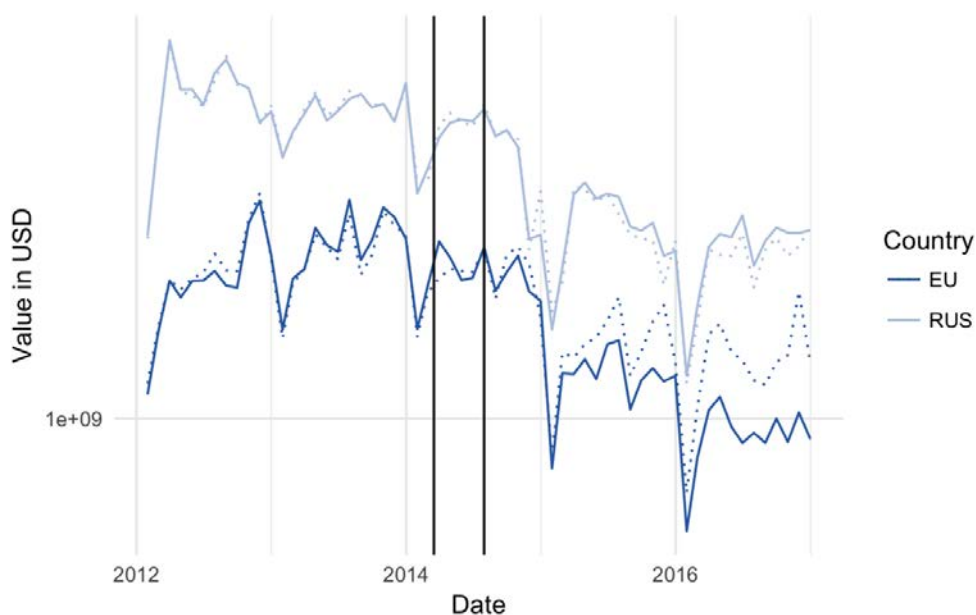
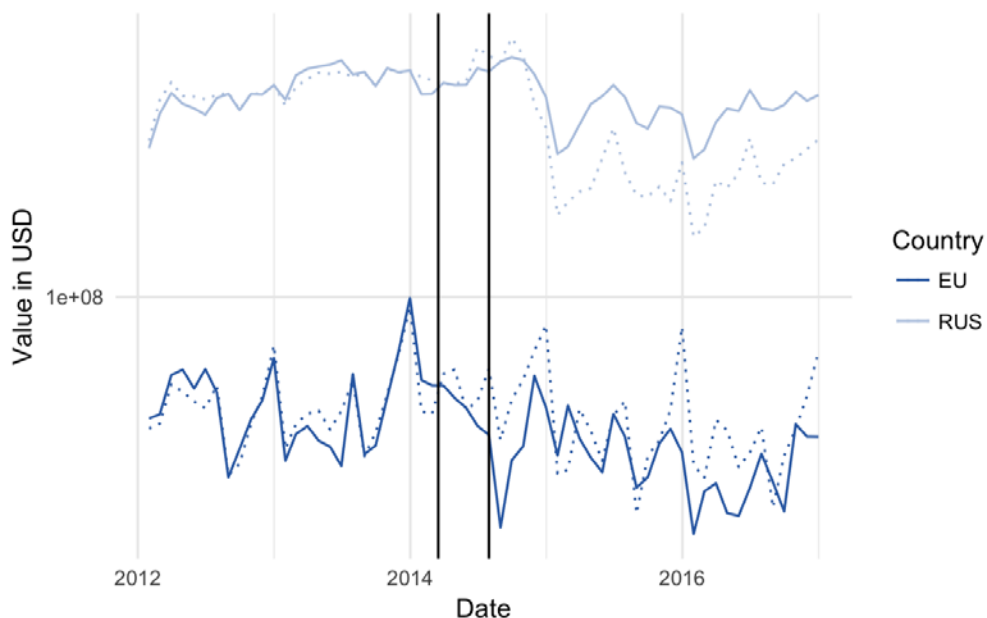Source: UN Monthly COMTRADE, WIFO calculations.

Figure 17: Eurasian Economic Union exports to EU and Russia

Source: UN Monthly COMTRADE, WIFO calculations.

A word of caution on these results is necessary, however, since 2014 the countries of the Eurasian Economic Union have pursued further steps of integration, establishing the "four freedoms", i.e. the free movements of goods, services, capital and people within the single market. Hence, as it is econometrically difficult to disentangle these effects from the diversion effect brought about by the sanctions, it cannot be ruled out that further integration of the countries of the EEU has also contributed to the difference between observed and predicted flows.

Figure 18: Eurasian Economic Union exports of agri-food products to EU and Russia

Source: UN Monthly COMTRADE, WIFO calculations.

One sector in which trade diversion from the Russian side is most likely to have happened are agricultural and food products. As the Russian embargo on certain meat and dairy products prohibited imports of these goods from European countries that had previously supplied these goods to customers in Russia, other partner countries had to be found. It appears as if a significant part of this diversion happened with respect to countries from the Eurasian Economic Union. EEU exports of these products to Russia increased by 13 % over the period from 2014 to 2016 (USD 913 mn increase per year), while the same flows to the EU over the same period decreased by 10 % (about USD 100 mn decrease per year).

3.3   Firm-level evidence on trade diversion from French firms

As mentioned above, the interpretation of the results regarding trade diversion to and from the Eurasian Economic Union has to be taken with caution as sanctions were not the only variable to change over time. Furthermore, these aggregate numbers may shield some important effects at lower levels of aggregation. At the firm-level, e.g., companies previously doing business with Russia may struggle or even disappear in the face of sanctions that impede such transactions.

A small but growing academic literature in the field of international trade has looked at the effects of sanctions on the firm-level. This body of work usually emphasises three different and equally important points and discusses:

- if firms sell less on affected markets or stop altogether (intensive vs. extensive margin);
- the mechanisms that drive these effects;
- the opportunities for affected firms to shift their sales to other markets.

Two recent studies from (Haidar, J.I.) and (Crozet, M. and Hinz, J.) provide micro-level evidence in this respect.

While so far there is no study on the firm-level effects of sanctions in the targeted economy in the case of Russia, (Haidar, J.I.) provides an enlightening study on the most comparable case – the sanctions regime vis-à-vis Iran. He finds that large firms in Iran were better able to handle the shock and did so by shifting their sales from Western countries to China and India. Hence in the Iranian case, large firms were often able to compensate the incurred losses on affected markets in the EU and North America.

(Crozet, M. and Hinz, J.) study the firm-level effects of the sanctions regime between Russia and Western countries. Aside from a global analysis of the overall "cost" of the Russian sanctions for all participants, very similar to the one conducted in this study, they use French firm-level data to answer to the three points raised above. Their analysis reveals multiple relevant results.

First, French firms' exports were affected with respect to both margins of trade, i.e. the individual firm's participation on the Russian market (extensive margin) as well as the export value of those firms that stayed in that market (intensive margin). The analysis reveals that for agri-food products only about 25 % of the firms that had previously served the market were still active after the embargo was imposed; those that stayed in the market exported 89 % less than before. This should not come as a big surprise, however, as the very aim of the embargo was to prohibit trade of goods defined on the embargo list. More interestingly, perhaps, is that similar, albeit less strong, results are observed for goods that were not explicitly targeted by the embargo. Here, the export participation dropped by 15 % over the summer of 2014 and the export value of remaining firms dropped by 21 % during the same time.

Second, the bulk of the costs incurred by French exporters was not caused by the Russian embargo but came as a by-product of Western sanctions, which was coined "friendly fire". More specifically, only 9 % of lost exports stemmed from the banned agri-food products. A main mechanism driving these results is identified as country risk, or political and legal instability, enhanced by the financial sanctions that were implemented in July 2014, negatively affecting the ability to financially secure international transactions.

Another mechanism that had received some press coverage at the time of events, a consumer boycott of Western products, is effectively ruled out by the empirical analysis.

Third, and particularly interesting in the context of this current report, (Crozet, M. and Hinz, J.) show that trade diversion, at least in the short run, was very limited. In fact those firms that had previously exported agri-food products banned by the Russian embargo were not able to recover their losses. These firms had, on average, an exposure to the Russian market of 20 % prior to the political crisis and lost, again on average, roughly 20 % of their total exports to all markets after the imposition of the embargo in August 2014. For firms that were exporting goods not banned by the embargo the effects were less severe, with an average exposure to the Russian market of 14 % and a decrease in total firm exports of 6 %.

It is important to note that (Crozet, M. and Hinz, J.) limit their firm-level analysis to effects in the year 2014 and hence provide empirical evidence on firm behaviour in the very first time after the sanctions had been imposed. While this short-run focus may seem like a limitation, it made it possible to cleanly identify the effects, as other sources of disturbance with similar effects could effectively be ruled out. Over the medium to long run these initially strong short-run effects are likely to have partially dissipated.

4   Conclusions

After the gradual introduction of the EU sanctions and the countervailing Russian sanctions in the first half of 2014, a discussion about the economic costs, mainly for European countries, but also for Russia, arose very quickly. Initially, the discussion focused on the negative welfare consequences of disrupting trade. It is largely undisputed among economists that additional barriers to trade and investment, raised in this case by restrictions on exports of certain commodities as well as financial restrictions, will reduce the volume of trade and foreign investment and consequently production, value added and employment of all trading partners. The specific contribution of the sanctions to the observed decline in EU trade with Russia after 2013, however, is more difficult to determine. Shortly before the sanctions were put in place, other factors, most importantly the slump in international oil price, damaged the Russian economy. The subsequent devaluation of the ruble reduced foreign import demand and thus contributed to declining trade volumes. Disentangling all different factors influencing trade flows between Russia and other countries at the same time thus posed the main challenge for researchers attempting to quantify the impact of sanction-induced economic costs.

Adding to the difficulties of measuring the welfare effects of the sanctions, firms in market economies adapt to changing business conditions in their quest to maximise profits. If business opportunities in one market deteriorate or disappear altogether, they will seek for alternative destination markets in other countries to compensate for their losses. Disruptions of bilateral trade relationships may therefore lead to trade diversion effects which over time could make up for at least some of the exports lost after the sanctions entered into force and thus reduce negative welfare effects to a limited extent. Furthermore, some firms may also attempt to circumvent the introduced legal trade restrictions. Non-compliance with EU and Russian trade sanctions, for instance, may reduce economic costs, but thwart the intentions of policy makers.

Finally, beyond the direct costs of specific trade restrictions, which in case of the sanctions/countersanctions only concern a limited group of commodities, additional (and much higher) costs may arise due to the implementation of financial sanctions (restricting the availability of funds for firms in Russia engaging, for example, in investment activities) and, even more importantly, due to a severe deterioration of the business climate between the EU and Russia in the wake of the sanctions and the political conflict. In fact, EU exports to Russia declined not only for commodity groups directly affected by the sanctions, but for most other non-sanctioned goods as well. Thus, the general worsening of economic relationships as a corollary of all sanction measures and political tensions seems most important. It is this indirect economic impact that the project at hand, like most other cost assessment attempts, is mainly concerned about.

This report addresses all of these issues. The main conclusions can be summarised as follows:

- **EU exports to Russia have declined significantly in recent years**
  With a share of 7.7 % in total exports (2013, without deliveries within the EU) Russia was the fourth largest trading partner of the EU. On the other hand, in the same year 42.4 % of total Russian exports were delivered to EU countries, which made the EU Russia's most important export market. These economically important trade relationships have, however, suffered over the last few years. As a consequence of the sanctions, but also due to other external factors weakening the Russian economy, EU exports to Russia declined by 20.7 % annually between 2013 and 2016, while they had increased by 20.0 % per year between 2009 and 2012. Proximity to Russia and historically formed economic relationships to Russia do matter in terms of country-specific impacts. The shares of Russia in total exports of the Baltic countries, but also of Poland, the Czech Republic, Austria and Hungary declined considerably and much more than for the EU as a whole.

- **Trade diversion has mitigated the economic costs of the sanctions only to a very limited extent**

  While firms were unlikely to recover their sales in the short run, our analysis based on aggregate numbers provides rudimentary evidence that losses in EU exports to Russia may have been compensated, but only marginally, by rechanneling trade flows to other destinations, two of them being the African continent and China. A more detailed analysis on agri-food trade flows confirms that the EU has managed to partly redirect agri-food exports to alternative third markets, specifically they grew by 2 % in 2016 as compared to the previous year. The highest relative gains were achieved with respect to exports to the USA (+5.5 %), China (+13.3 %), Switzerland (+2.4 %) and Japan (+7.4 %). In contrast, it appears as if a significant part of trade diversion from the Russian side occurred with respect to countries from the Eurasian Economic Union. In particular, Russian agri-food imports from the EEU increased by 13% over the time period from 2014 to 2016.

- **Evidence for initial non-compliance attempts and legal trade diversion**

  Although non-compliance with the sanctions has reportedly been deemed irrelevant, at least with respect to exports of banned agri-food products to Russia, some empirical traces exist, suggesting that trade may have been rerouted to Russia through certain transit countries, in particular Belarus, Serbia and Macedonia. Not only did exports from EU countries to these three countries increase after the sanctions had been implemented, at the same time export flows between Belarus, Serbia, Macedonia and Russia intensified as well. For instance, agri-food exports from Serbia and Belarus to Russia increased by 13 % between August 2014 and December 2014 as compared to the same period a year before. However, to prevent non-compliance activities, Russian authorities reinforced the control of inflows of embargoed products from sanctioned countries through third countries, in particular within the Eurasian Economic Union, and blocked suspected products at the Russian border.

  Moreover, it was reported that some altogether legal diversion of trade flows render effects similar to non-compliance activities. This occurs when goods originally produced by a non-sanctioning country to be sold on the home market are being exported to Russia, replaced at home by imports from the EU.

- **Sanction-induced export losses are estimated to account for 11 % of total EU exports for the years 2014 to 2016**

  The estimated sanction-specific loss of EU exports amounts to about USD 34.7 bn for the period 2014 to 2016. These estimates take into account all types of sanctions, financial sanctions, "smart sanctions", the Russian embargo on certain agri-food products, but also the general worsening of trade relationships as a corollary of all sanction measures and political tensions. Not surprisingly, in absolute terms Germany is bearing the brunt of lost exports to Russia, while in relative terms other countries like Cyprus, Greece and Croatia are more affected, mainly due to the decrease in exports of agricultural products. The average relative drop in total exports to Russia for EU countries amounts to 11 %.

- **EU-wide impacts of export losses estimated at less than 0.2 % of total value added and employment**

  The most recent estimations of direct and indirect valued added and employment effects of the sanctions were carried out by WIFO in the fall of 2016. The estimated sanction-induced decline of EU exports to Russia of about EUR 20 bn (USD 22 bn) for 2015 imply a 0.2 % loss in total value added (EUR -17.6 bn) and employment (-400 000 jobs) for the EU as a whole. These estimates, however, did not consider any compensating trade diversion effects, which, however, reduce export losses only marginally. Based on the estimates presented in this study, which put export losses at EUR 11.6 bn (USD 12.9 bn) for 2015, the economy-wide impacts for the EU are likely to be less than 0.2 % of total value added and employment. The potential impact of the sanctions for the Russian economy is estimated at 8 % to 10 % of GDP.

- **Shortages in foreign investment and funding incur further potential economic costs**

    Although the main impact of sanctions is derived from direct and indirect barriers to trade and a subsequent reduction in exports, other economic costs may arise. These include a decline of EU investments in Russia, but also a drop of total investment in the Russian energy sector, with long-run repercussions for energy production, a large share of which is exported to the EU and hence represents a major source of government revenues in Russia.

5   References

Agra Europe, *Russland gleicht Rückgang der Käse-Importe beinahe aus*, Report, 2015.

Agricistrade, *Monitoring of Agri-food Trade Developments between Belarus and Russia in 2014*, IPM Research Center, April 2015.

Ahn, D. and Ludema, R., 'Measuring Smartness: Understandig the Economic Impact of Targeted Sanctions', U.S. Department of State, Office of the Chief Economist, *Working Paper*, 2017-01, 2017.

Anderson, J.E., van Wincoop, E., 'Gravity with Gravitas: A Solution to the Border Puzzle', *American Economic Review*, 93(1), 2003, pp. 170–192.

BMEL-AG, *Auswirkungen der russischen Importbeschränkungen auf die deutsche Agrar- und Ernährungswirtschaft*, Bericht über die Auswirkungen des russischen Importstopps auf die EU-Märkte für landwirtschaftliche Erzeugnisse und Lebensmittel, Stand: 27.10.2014, 2014.

Bond, I., Odendahl, C., and Rankin, J., *Frozen: The politics and economics of sanctions against Russia*, Centre for European Reform, March 2015.

Boulanger, P., Dudu, H., Ferrari, E. and Philippidis, G.,'Russian Roulette at the Trade Table: A Specific Factors CGE Analysis of an Agri-food Import Ban', *Journal of Agricultural Economics*, 67(2), 2016, pp. 272-291.

Christen, E., Fritz, O., Huber, P. and Streicher, G., *The Economic Impacts of the EU-Russia Trade Conflict*, Research Report for the Austrian Federal Ministry of Science, Research and Economy, WIFO, 2014.

Christen, E., Fritz, O. and Streicher, G., *Effects of the EU-Russia Economic Sanctions on Value Added and Employment in the European Union and Switzerland*, Research Report for LENA, the Leading European Newspaper Alliance, WIFO, 2015.

Christen, E., Fritz, O., Streicher, G. and Hinz, J., *Effects of the EU-Russia Economic Sanctions on Value Added and Employment in Austria and the EU*, Research Report for the Austrian Federal Ministry of Science, Research and Economy, WIFO, 2016.

Crozet, M. and Hinz, J., 'Friendly fire-the trade impact of the Russia sanctions and counter-sanctions', *Kiel Working Paper*, No. 2059, 2016.

Dabrowski, M., *The systemic Roots of Russia's recession*, Bruegel Policy Contribution, October 2015.

Deutscher Bundestag, 'Folgeschäden der Sanktionen der Europäischen Union gegenüber der Russischen Föderation sowie der Russischen Föderation gegenüber der Europäischen Union für die einzelnen Bundesländer', *Wissenschaftliche Dienste*, WD 5 - 3000 - 009/17, 2017.

DG AGRI, *Information Note on the Russian Ban on Agri-food Products from the EU*, Brussels, 2014. http://ec.europa.eu/agriculture/russian-import-ban/pdf/info-note-03-09_en.pdf, (retrieved 30 June 2017).

Dreger, C., Fidrmuc, J., Kholodilin, K. and Ulbricht, D., 'Between the hammer and the anvil: The impact of economic sanctions and oil prices on Russia's ruble', *Journal of Comparative Economics,* 44(2), 2016, pp. 295–308.

Dreyer, I. and Luengo-Cabrera, J. (eds.), *On target? EU sanctions as security policy tools*, European Union, Institute for Security Studies, Report No. 25, September 2015.

Dreyer, I. and Popescu, N., 'Do sanctions against Russia work?', European Union Institute for Security Studies*, Brief Issue*, No. 35, December 2014.

European Parliament, *The Russian ban on agricultural products*, Briefing, Brussels, EU Publishing, April 2016.

European Parliament, *Economic impact on the EU of sanctions over Ukraine conflict*, Briefing, Brussels, EU Publishing, October 2015.

European Parliament, *The Russian Embargo: Impact on the Economic and Employment Situation in the EU*, Briefing, Brussels, EU Publishing, October 2014.

FAO, *Russia's Restrictions on Imports of Agricultural and Food Products: An Initial Assessment*, Rome, September 2014.

Fedoseeva, S., 'Russian Agricultural Import Ban: Quantifying Losses of German Agri-food Exporters', *Schriften der Gesellschaft für Wirtschafts- und Sozialwissenschaften des Landbaues,* Landwirtschaftsverlag, Münster, Band 52, 2017, pp. 59-71.

Giumelli, F., 'The Redistributive Impact of Restrictive Measures on EU Members: Winners and Losers from Imposing Sanctions on Russia', *Journal of Common Market Studies*, published online March 2017.

Gros, D. and Di Salvo, M., *Revisting Sanctions on Russia and Counter-Sanctions on the EU: the economic impact three years later*, CEPS Commentary, July 2017.

GTAI (Germany Trade and Invest - Gesellschaft für Außenwirtschaft und Standortmarketing mbH), *GTAI-Special Russland-Sanktionen*, http://www.gtai.de/GTAI/Navigation/DE/Trade/Maerkte/Specials/russland-sanktionen,t=21-einfuhrverbot-fuer-lebensmittel-aus-der-eu,did=1260588.html.

Gurvich, E. and Prilepskiy, I., 'The impact of financial sanctions on the Russian economy', *Russian Journal of Economics*, 1(4), 2015, pp. 359–385.

Haidar, J.I., 'Sanctions and export deflection: evidence from Iran', *Economic Policy*, 32(90), 2017, pp. 319-355.

Harrell, P.E., Keatinge, T., Lain, S. and Rosenberg, E., *The Future of Transatlantic Sanctions on Russia*, Center for a New American Security, Washington D. C., 2017.

Havlik, P., 'Economic Consequences of the Ukraine Conflict', *wiiw Policy Notes and Reports*, No. 14, November 2014.

Head, K. and Mayer, T., 'Gravity equations: Workhorse, toolkit, and cookbook', in Gopinath, G., Helpman, E. and Rogoff, K., *Handbook of International Economics, Volume 4*, Elsevier, Amsterdam, 2014, pp. 131-195.

Head, K. and Mayer, T., 'What separates us? Sources of resistance to globalization', *Canadian Journal of Economics*, 46(4), 2013, pp. 1196-1231.

Hinz, J., 'The Cost of Sanctions: Estimating Lost Trade with Gravity', mimeo, 2017.

Hufbauer, G., Schott, J., Elliott, K. and Oegg, B., *Economic Sanctions Reconsidered (3rd ed.)*, Peterson Institute for International Economics, Washington, D. C., 2009.

Institute of Economic Forecasting, *Estimating potential effect of sanctions on economic development in Russia and EU*, Russian Academy of Science, 2015.

Ito, K, 'The impact of oil price volatility on macroeconomic activity in Russia', *Atlantic Review of Economics*, 9(5), 2010, pp. 1–21.

Kholodilin, K., Ulbricht, D. and Wagner, G., *Are the Economic Sanctions against Russia Effective?*, Deutsches Institut für Wirtschaftsforschung, DIW Roundup, 2014.

Liefert, W. and Liefert, O., 'Russia's Economic Crisis and it's Agricultural and Food Economy', *Choices*, 30(1), 2015, pp. 1-6.

Moret, E., Biersteker, T., Giumelli, F., Portela, C., Veber, M., Bastiat-Jarosz, D. and Bobocea, C., *The New Deterrent? International Sanctions against Russia over the Ukraine Crisis: Impacts, Costs and further Action*, Graduate Institute Geneva, Programme for the Study of International Governance (PSIG), October 2016.

Nelson, R., *U.S. Sanctions and Russia's Economy*, Congressional Research Service, CRS Report, 7-5700, February 2017.

Nikulina, A.Y. and Kruk, M.N.,'Impact of Sanctions of European Union and Unites States of America on the Development of Russian Oil and Gaz Complex', *International Journal of Economics and Financial Issues*, 6(4), 2016, pp. 1379-1382.

Peters, E.S., *An Inquiry into the Effect of the 2014 Russian Sanctions on European Gasoline Markets*, University of Tennessee Honors Thesis Projects, 2017.

Rautava, J., 'The role of oil prices and the real exchange rate in Russia's economy-a cointegration approach', *Journal of Comparative Economics*, 32(2), 2004, pp. 315–327.

Santos Silva, J.M.C. and Tenreyro, S., 'The Log of Gravit', *Review of Economics and Statistics*, 88(4), 2006, pp. 641-658.

Sinabell, F., Egartner, S., Heinschink, K., Pistrich, K., Resl, T. and Tribl, C., *Beschränkung der Agrarexporte in die Russische Föderation, Mögliche Auswirkungen für Österreich*, WIFO, Wien, 2015.

Tinbergen, J., *Shaping the World Economy; Suggestions for an International Economic Policy*, The Twentieth Century Fund, New York, 1962.

Tuzova, Y. and Qayum, F., 'The impact on Putin's Russia', *Energy Policy*, 90(C), 2016, pp. 140-151.

Url, T., 'Steigende Internationalisierung erzeugt neue Herausforderungen für staatliche Exportgarantien', *WIFO-Monatsberichte*, 89(8), 2016, pp. 593-603.

Vymyatnina, Y., 'Credit Dynamics of Various Entities in Russia: Impact of Oil Prices and Sanctions', *EcoMod*, No. 9543, 2016.

Wengle, S., 'The Domestic Effects of the Russian Food Embargo', *Demokratizatsiya: The Journal of Post-Soviet Democratization*, 24(3), 2016, pp. 281-289.

WKO*, Aktueller Stand der Sanktionen gegen Russland und die Ukraine, Stand 29. Juni 2017*, https://www.wko.at/service/aussenwirtschaft/Aktueller_Stand_der_Sanktionen_gegen_Russland_und_die_Ukrai.html, (retrieved 30 June 2017).

6 Appendix

6.1 Details on the sectoral breakdown

CN2	Description	Sector
01	LIVE ANIMALS	Agri-food
02	MEAT AND EDIBLE MEAT OFFAL	Agri-food
03	FISH AND CRUSTACEANS, MOLLUSCS AND Others AQUATIC INVERTEBRATES	Agri-food
04	DAIRY PRODUCE; BIRDS' EGGS; NATURAL HONEY; EDIBLE PRODUCTS OF ANIMAL ORIGIN, NOT ELSEWHERE SPECIFIED OR INCLUDED	Agri-food
05	PRODUCTS OF ANIMAL ORIGIN, NOT ELSEWHERE SPECIFIED OR INCLUDED	Agri-food
06	LIVE TREES AND Others PLANTS; BULBS, ROOTS AND THE LIKE; CUT FLOWERS AND ORNAMENTAL FOLIAGE	Agri-food
07	EDIBLE VEGETABLES AND CERTAIN ROOTS AND TUBERS	Agri-food
08	EDIBLE FRUIT AND NUTS; PEEL OF CITRUS FRUIT OR MELONS	Agri-food
09	COFFEE, TEA, MATÉ AND SPICES	Agri-food
10	CEREALS	Agri-food
11	PRODUCTS OF THE MILLING INDUSTRY; MALT; STARCHES; INULIN; WHEAT GLUTEN	Agri-food
12	OIL SEEDS AND OLEAGINOUS FRUITS; MISCELLANEOUS GRAINS, SEEDS AND FRUIT; INDUSTRIAL OR MEDICINAL PLANTS; STRAW AND FODDER	Agri-food
13	LAC; GUMS, RESINS AND Others VEGETABLE SAPS AND EXTRACTS	Agri-food
14	VEGETABLE PLAITING MATERIALS; VEGETABLE PRODUCTS NOT ELSEWHERE SPECIFIED OR INCLUDED	Agri-food
15	ANIMAL OR VEGETABLE FATS AND OILS AND THEIR CLEAVAGE PRODUCTS; PREPARED EDIBLE FATS; ANIMAL OR VEGETABLE WAXES	Agri-food
16	PREPARATIONS OF MEAT, OF FISH OR OF CRUSTACEANS, MOLLUSCS OR Others AQUATIC INVERTEBRATES	Agri-food
17	SUGARS AND SUGAR CONFECTIONERY	Agri-food
18	COCOA AND COCOA PREPARATIONS	Agri-food
19	PREPARATIONS OF CEREALS, FLOUR, STARCH OR MILK; PASTRYCOOKS' PRODUCTS	Agri-food
20	PREPARATIONS OF VEGETABLES, FRUIT, NUTS OR Others PARTS OF PLANTS	Agri-food
21	MISCELLANEOUS EDIBLE PREPARATIONS	Agri-food
22	BEVERAGES, SPIRITS AND VINEGAR	Agri-food
23	RESIDUES AND WASTE FROM THE FOOD INDUSTRIES; PREPARED ANIMAL FODDER	Agri-food
24	TOBACCO AND MANUFACTURED TOBACCO SUBSTITUTES	Agri-food
2501	SALT	Agri-food
27	MINERAL FUELS, MINERAL OILS AND PRODUCTS OF THEIR DISTILLATION; BITUMINOUS SUBSTANCES; MINERAL WAXES	Raw materials
41	RAW HIDES AND SKINS (Others THAN FURSKINS) AND LEATHER	Raw materials
42	ARTICLES OF LEATHER; SADDLERY AND HARNESS; TRAVEL GOODS, HANDBAGS AND SIMILAR CONTAINERS; ARTICLES OF ANIMAL GUT (Others THAN SILKWORM GUT)	Raw materials
43	FURSKINS AND ARTIFICIAL FUR; MANUFACTURES THEREOF	Raw materials
44	WOOD AND ARTICLES OF WOOD; WOOD CHARCOAL	Raw materials
45	CORK AND ARTICLES OF CORK	Raw materials
47	PULP OF WOOD OR OF Others FIBROUS CELLULOSIC MATERIAL; RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD	Raw materials
48	PAPER AND PAPERBOARD; ARTICLES OF PAPER PULP, OF PAPER OR OF PAPERBOARD	Raw materials
67	PREPARED FEATHERS AND DOWN AND ARTICLES MADE OF FEATHERS OR OF DOWN; ARTIFICIAL FLOWERS; ARTICLES OF HUMAN HAIR	Raw materials
68	ARTICLES OF STONE, PLASTER, CEMENT, ASBESTOS, MICA OR SIMILAR MATERIALS	Raw materials
69	CERAMIC PRODUCTS	Raw materials
70	GLASS AND GLASSWARE	Raw materials
71	NATURAL OR CULTURED PEARLS, PRECIOUS OR SEMI-PRECIOUS STONES, PRECIOUS METALS, METALS CLAD WITH PRECIOUS METAL, AND ARTICLES THEREOF; IMITATION JEWELLERY; COIN	Raw materials
72	IRON AND STEEL	Raw materials
73	ARTICLES OF IRON OR STEEL	Raw materials
74	COPPER AND ARTICLES THEREOF	Raw materials
75	NICKEL AND ARTICLES THEREOF	Raw materials
76	ALUMINIUM AND ARTICLES THEREOF	Raw materials
78	LEAD AND ARTICLES THEREOF	Raw materials

CN2	Description	Sector
79	ZINC AND ARTICLES THEREOF	Raw materials
80	TIN AND ARTICLES THEREOF	Raw materials
81	Others BASE METALS; CERMETS; ARTICLES THEREOF	Raw materials
83	MISCELLANEOUS ARTICLES OF BASE METAL	Raw materials
25	SULPHUR; EARTHS AND STONE; PLASTERING MATERIALS, LIME AND CEMENT	Mining, chemicals
26	ORES, SLAG AND ASH	Mining, chemicals
28	INORGANIC CHEMICALS; ORGANIC OR INORGANIC COMPOUNDS OF PRECIOUS METALS, OF RARE-EARTH METALS, OF RADIOACTIVE ELEMENTS OR OF ISOTOPES	Mining, chemicals
29	ORGANIC CHEMICALS	Mining, chemicals
30	PHARMACEUTICAL PRODUCTS	Mining, chemicals
31	FERTILISERS	Mining, chemicals
32	TANNING OR DYEING EXTRACTS; TANNINS AND THEIR DERIVATIVES; DYES, PIGMENTS AND Others COLOURING MATTER; PAINTS AND VARNISHES; PUTTY AND Others MASTICS; INKS	Mining, chemicals
33	ESSENTIAL OILS AND RESINOIDS; PERFUMERY, COSMETIC OR TOILET PREPARATIONS	Mining, chemicals
34	SOAP, ORGANIC SURFACE-ACTIVE AGENTS, WASHING PREPARATIONS, LUBRICATING PREPARATIONS, ARTIFICIAL WAXES, PREPARED WAXES, POLISHING OR SCOURING PREPARATIONS, CANDLES AND SIMILAR ARTICLES, MODELLING PASTES, 'DENTAL WAXES' AND DENTAL PREPARATION	Mining, chemicals
35	ALBUMINOIDAL SUBSTANCES; MODIFIED STARCHES; GLUES; ENZYMES	Mining, chemicals
36	EXPLOSIVES; PYROTECHNIC PRODUCTS; MATCHES; PYROPHORIC ALLOYS; CERTAIN COMBUSTIBLE PREPARATIONS	Mining, chemicals
38	MISCELLANEOUS CHEMICAL PRODUCTS	Mining, chemicals
39	PLASTICS AND ARTICLES THEREOF	Mining, chemicals
40	RUBBER AND ARTICLES THEREOF	Mining, chemicals
82	TOOLS, IMPLEMENTS, CUTLERY, SPOONS AND FORKS, OF BASE METAL; PARTS THEREOF OF BASE METAL	Manufacturing
84	NUCLEAR REACTORS, BOILERS, MACHINERY AND MECHANICAL APPLIANCES; PARTS THEREOF	Manufacturing
85	ELECTRICAL MACHINERY AND EQUIPMENT AND PARTS THEREOF; SOUND RECORDERS AND REPRODUCERS, TELEVISION IMAGE AND SOUND RECORDERS AND REPRODUCERS, AND PARTS AND ACCESSORIES OF SUCH ARTICLES	Manufacturing
86	RAILWAY OR TRAMWAY LOCOMOTIVES, ROLLING STOCK AND PARTS THEREOF; RAILWAY OR TRAMWAY TRACK FIXTURES AND FITTINGS AND PARTS THEREOF; MECHANICAL (INCLUDING ELECTROMECHANICAL) TRAFFIC SIGNALLING EQUIPMENT OF ALL KINDS	Manufacturing
87	VEHICLES Others THAN RAILWAY OR TRAMWAY ROLLING STOCK, AND PARTS AND ACCESSORIES THEREOF	Manufacturing
88	AIRCRAFT, SPACECRAFT, AND PARTS THEREOF	Manufacturing
89	SHIPS, BOATS AND FLOATING STRUCTURES	Manufacturing
90	OPTICAL, PHOTOGRAPHIC, CINEMATOGRAPHIC, MEASURING, CHECKING, PRECISION, MEDICAL OR SURGICAL INSTRUMENTS AND APPARATUS; PARTS AND ACCESSORIES THEREOF	Manufacturing
91	CLOCKS AND WATCHES AND PARTS THEREOF	Manufacturing
92	MUSICAL INSTRUMENTS; PARTS AND ACCESSORIES OF SUCH ARTICLES	Manufacturing
93	ARMS AND AMMUNITION; PARTS AND ACCESSORIES THEREOF	Manufacturing
94	FURNITURE; BEDDING, MATTRESSES, MATTRESS SUPPORTS, CUSHIONS AND SIMILAR STUFFED FURNISHINGS; LAMPS AND LIGHTING FITTINGS, NOT ELSEWHERE SPECIFIED OR INCLUDED; ILLUMINATED SIGNS, ILLUMINATED NAMEPLATES AND THE LIKE; PREFABRICATED BUILDINGS	Manufacturing
95	TOYS, GAMES AND SPORTS REQUISITES; PARTS AND ACCESSORIES THEREOF	Manufacturing
96	MISCELLANEOUS MANUFACTURED ARTICLES	Manufacturing
50	SILK	Textiles
51	WOOL, FINE OR COARSE ANIMAL HAIR; HORSEHAIR YARN AND WOVEN FABRIC	Textiles
52	COTTON	Textiles
53	Others VEGETABLE Textiles FIBRES; PAPER YARN AND WOVEN FABRICS OF PAPER YARN	Textiles
54	MAN-MADE FILAMENTS; STRIP AND THE LIKE OF MAN-MADE Textiles MATERIALS	Textiles
55	MAN-MADE STAPLE FIBRES	Textiles
56	WADDING, FELT AND NONWOVENS; SPECIAL YARNS; TWINE, CORDAGE, ROPES AND CABLES AND ARTICLES THEREOF	Textiles
57	CARPETS AND Others Textiles FLOOR COVERINGS	Textiles
58	SPECIAL WOVEN FABRICS; TUFTED Textiles FABRICS; LACE; TAPESTRIES; TRIMMINGS; EMBROIDERY	Textiles

CN2	Description	Sector
59	IMPREGNATED, COATED, COVERED OR LAMINATED Textiles FABRICS; Textiles ARTICLES OF A KIND SUITABLE FOR INDUSTRIAL USE	Textiles
60	KNITTED OR CROCHETED FABRICS	Textiles
61	ARTICLES OF APPAREL AND CLOTHING ACCESSORIES, KNITTED OR CROCHETED	Textiles
62	ARTICLES OF APPAREL AND CLOTHING ACCESSORIES, NOT KNITTED OR CROCHETED	Textiles
63	Others MADE-UP Textiles ARTICLES; SETS; WORN CLOTHING AND WORN Textiles ARTICLES; RAGS	Textiles
64	FOOTWEAR, GAITERS AND THE LIKE; PARTS OF SUCH ARTICLES	Textiles
65	HEADGEAR AND PARTS THEREOF	Textiles
37	PHOTOGRAPHIC OR CINEMATOGRAPHIC GOODS	Others
46	MANUFACTURES OF STRAW, OF ESPARTO OR OF Others PLAITING MATERIALS; BASKETWARE AND WICKERWORK	Others
49	PRINTED BOOKS, NEWSPAPERS, PICTURES AND Others PRODUCTS OF THE PRINTING INDUSTRY; MANUSCRIPTS, TYPESCRIPTS AND PLANS	Others
66	UMBRELLAS, SUN UMBRELLAS, WALKING STICKS, SEAT-STICKS, WHIPS, RIDING-CROPS AND PARTS THEREOF	Others
97	WORKS OF ART, COLLECTORS' PIECES AND ANTIQUES	Others
99	CONFIDENTIAL	Confidential

6.2 Gravity model of international trade and counterfactual simulation

The gravity model of international trade is recognised as one producing the most persistent and stable results of all models applied in the empirical trade literature (Head, K. and Mayer, T., 2014). The theoretical framework is originally based on an observation first stated by (Tinbergen, J.) that countries trade more with other countries, all other things being equal, (1) the larger they themselves as an exporting country are, (2) the larger the importing country is and (3) the closer the two countries are located to each other, i.e. the smaller their so-called bilateral resistance.

In the past two decades the theoretical foundations have been dramatically improved such that almost all modern trade models exhibit a gravity-like expression of bilateral trade flows (Head, K. and Mayer, T., 2013). One of the most influential contributions is that by (Anderson, J.E. and van Wincoop, E.), who derive a structural gravity equation that features – next to bilateral resistance – exporter- and importer-specific multilateral resistance terms (MRT). MRT can be thought of as the importing or exporting countries ease of access to the world market.

The theoretical trade model sketched below follows (Hinz, J.) and provides a general equilibrium counterfactual framework, i.e. it uses a setup that allows the computation of trade flows in a counterfactual situation that takes changes to bilateral resistances, multilateral resistances, expenditure and production figures into account.

Let X_{ijt} describe exports from country i to j at time t as

$$X_{ijt} = \frac{Y_{it}}{\Omega_{it}} \cdot \frac{X_{jt}}{\Phi_{jt}} \cdot \phi_{ijt}$$

where $Y_{it} = \sum_j X_{ijt}$ is the value of export production in i at time t and $X_{jt} = \sum_i X_{ijt}$ is the value of export expenditures in j at time t. The aforementioned MRT are given by Ω_{it} and Φ_{jt}. The term ϕ_{ijt} nests all bilateral trade impediments, including sanctions.

This gravity model can then be estimated using a Poisson Pseudo Maximum Likelihood (PPML) estimator following (Santos Silva, J.M.C. and Tenreyro, S.) as

$$X_{ijt} = \exp(\Psi_{it} + \Theta_{jt} + \phi_{ijm}) + \epsilon_{ijt}$$

where Ψ_{it} and Θ_{jt} are fixed effects that capture everything that is specific to the exporter or importer at a given time that affects all trading partners equally. In the current context this implies that all macroeconomic effects in Russia and sanctioning Western countries are captured. This in turn means that the computed sanctions effects can be cleanly separated from other macroeconomic shocks to Russia, such as the depreciation of the ruble in response to the oil price shock in early 2015 (see also Dreger, C. et al.). The estimated term ϕ_{ijm} captures all bilateral monthly effects, hence it captures the effects of the sanctions.

Following the model setup of (Hinz, J.), counterfactual flows can then be computed as

$$\widetilde{X}_{ijt} = \frac{\widetilde{Y}_{it}}{\widetilde{\Omega}_{it}} \cdot \frac{\widetilde{X}_{jt}}{\widetilde{\Phi}_{jt}} \cdot \phi_{ijt}$$

where $\widetilde{X}_{ijt}$ are the hypothetical flows between countries i and j at time t in absence of sanctions. Counterfactual production $\widetilde{Y}_{it}$, expenditure $\widetilde{X}_{jt}$ and multilateral resistances $\widetilde{\Omega}_t$ and $\widetilde{\Phi}_t$ can be computed as

$$\widetilde{Y}_{it} = \left(\frac{\widetilde{\Omega}_{it}}{\Omega_{it}}\right)^{\frac{1}{1-\sigma}} \sum_{l \in j} \widetilde{X}_{ijt}$$

$$\widetilde{X}_{jt} = \left(\frac{\widetilde{\Omega}_{jt}}{\Omega_{jt}}\right)^{\frac{1}{1-\sigma}} \sum_{l \in i} \widetilde{X}_{ijt}$$

$$\widetilde{\Omega}_t = \hat{\phi}_m{}' \left(\widetilde{X}_t \otimes \widetilde{\Phi}_t^{-1}\right) \quad \text{and} \quad \widetilde{\Phi}_t = \hat{\phi}_m^{T'} \left(\widetilde{Y}_t \otimes \widetilde{\Omega}_t^{-1}\right)$$

The lost trade between two countries, i.e. in a situation with and without sanctions in the present case, is then easily computed as the difference between observed and predicted trade flows:

$$X_{ijt} - \widetilde{X}_{ijt}.$$

6.3   Workshop programme

DIRECTORATE-GENERAL FOR EXTERNAL POLICIES
POLICY DEPARTMENT

European Parliament

For the Committee on International Trade (INTA)
and the Delegation to the EU-Russia Parliamentary Cooperation Committee

WORKSHOP

Russia's and the EU's sanctions: economic and trade effects, compliance and the way forward

Thursday, 7 September 2017 - 10.00-12.00

Brussels, **Altiero Spinelli building** (ASP), **Room ASP A3E-2**

PROGRAMME

10.00   **Welcome and introductory remarks by**
- **MEP Mr Hannu Takkula**, Standing Rapporteur for Russia in the Committee on International Trade
- **MEP Ms Liisa Jaakonsaari**, First Vice Chair of the Delegation to the EU-Russia Parliamentary Cooperation Committee

10.15   **Presentation of the study of the WIFO Institute**
- **Dr Oliver Fritz**, Senior Research Associate, Österreichisches Institut für Wirtschaftsforschung WIFO

10.30   **Reactions to the study from:**
- **Ms Hilde Hardeman**, Head of the Service for Foreign Policy Instruments, European Commission
- **Mr Petros Sourmelis**, Head of Unit for Trade aspects of European neighbourhood policy & Trade relations with countries of the CIS and Balkans, European Commission, DG TRADE
- **Dr Frank Schauff,** Chief Executive Officer, Association of European Businesses in the Russian Federation (AEB)

11.00   **Questions & Answers / Debate**

11.50   **Concluding remarks by MEP Mr Hannu Takkula**
and MEP Ms Liisa Jaakonsaari

6.4   Workshop presentation slides

WIFO ■ Potential economic costs of the sanctions

- Reduction of trade - aside macroeconomic factors - due to:
  - Specific new barriers to trade
  - More importantly, a general worsening of trade relationships

- Total economic costs of sanctions > sanction-induced decline of EU exports:
  - *Negative spillover effects* on firms part of the supply chain
  - Exporting companies will search for new market opportunities
    → *trade diversion* may mitigate sanction-induced export losses
  - Firms may also engage in *non-compliance* efforts
  - Worsening *investment* opportunities for European firms in Russia

WIFO ■ Sanctions coincide with slowdown of Russian economy

- Factors responsible
  - Drop in oil price
  - Depreciation of ruble
  - Increasing inflation rate
  - Budgetary pressure
  - Outflow of capital

- Challenge of distinguishing
  - sanction-induced impacts
    from
  - impacts due to other factors

WIFO ■ — Sanction-induced export effects

- *Overall decline in exports to Russia* for both sanctioning (SC) and non-sanctioning countries (N-SC) → every country exports less

- *In relative terms:*
    - negative sanction impact for SC
    - positive sanction impact for N-SC
    - 2012: Russian imports from SC twice as much as from N-SC
    - 2016: Russian imports from N-SC > imports from SC

- Sanctions caused **EU exports to Russia to drop by 11 %** (2014/2016)

- **Sanctions** account for more than **40 % of observed overall export loss**

- In absolute terms Germany had the largest loss of exports to Russia, in relative terms other countries like *UK, Greece* and *Croatia* are more affected

WIFO ■ — Potential trade diversion effects

- Some indication that part of the *lost EU agri-food exports to Russia have been partly diverted to other countries* (e.g. China, USA, Switzerland, Japan)

- Trade within *Eurasian Economic Union* increased due to the sanctions

    → In contrast EU exports to EEU countries declined

- Firm-level evidence for French firms shows:
    - Firms hit by embargo cannot compensate for export losses
    - Firms indirectly affected able to partly redirect trade flows

- In total, model results and other evidence suggest that **trade diversion has only marginally compensated for losses in EU exports to Russia**

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