

The economic impact of the reciprocal EU-Russia sanctions on the EU

Plausibility check of existing studies using a simple estimation

- Financed by the Federal Ministry for Economic Affairs and Energy -

Second version: 30 May 2017

Dr Ricardo Giucci, Woldemar Walter

Summary

Estimation results

- EU export to Russia has decreased by **EUR 47 bn** in 2016 (vs 2013)
- The sanctions-related exports decrease amounts to **EUR 11-20 bn**, respectively 23%-43%, in 2016
- The negative impact of the sanctions-related export decrease on the EU GDP is estimated at **EUR 4-7 bn**, respectively 0.03-0.05%, in 2016

Plausibility check of existing studies

- WIFO 2016: Estimation of sanctions-related export decrease is reasonable, estimation of impact on EU GDP (**EUR 18 bn**) not
- Other studies: Estimation of impact on EU GDP between **EUR 33-90 bn**; this is many times our maximum value of EUR 7 bn
→ not plausible

Content

- I. Objective
 - II. From the EU-Russia sanctions to the EU GDP: Two steps
 - III. Step 1: Estimation of sanctions-related decrease of EU export to Russia
 - IV. Step 2: Estimation of the impact on the EU GDP
 - V. Comparison to existing studies
 - VI. Plausibility check of existing studies
- Annex 1: Structure of export decrease by countries and commodities
- Annex 2: Is our assumption on the adjustment factor plausible?
- Annex 3: Adjustment in machinery-building and transportation sectors

I. Objective

2014

- EU sanctions against Russia, targeting mainly the financial sector and “dual use” goods
- In response: Russian sanctions against EU, especially import ban on many agricultural products and foodstuffs
- Together: “Reciprocal EU-Russia sanctions”

Objectives of this presentation

- Simple estimation of the impact of reciprocal EU-Russia sanctions on the EU GDP
- Plausibility check of existing studies

II. From the sanctions to the EU GDP: Two steps

Observation

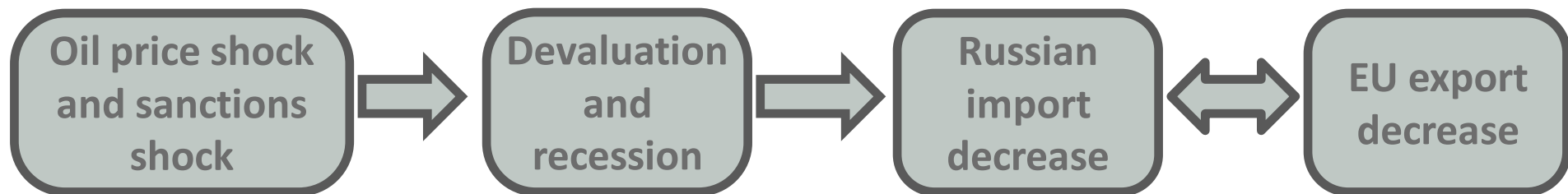
- EU export to Russia has decreased sharply after the implementation of the reciprocal sanctions
- This has affected many companies in the EU
- Consequence: Negative impact on the EU GDP

Analysis: Two steps



III. Sanctions-related export decrease (step 1)

Economic events since 2014



Step 1: Estimation of the sanctions-related export decrease

- Estimation of the decrease of EU exports to Russia, which can be attributed solely to the sanctions shock; filtering out the oil price shock

In the following: Three approaches

- i. Comparison of EU exports to Russia and Kazakhstan
- ii. Comparison of EU exports to Russia to the export of non-sanctioning countries to Russia
- iii. Taking over the results of a gravity model (WIFO 2016)

Approach i. Comparison of EU exports to RUS and KAZ

EU exports to Russia

- Decline due to oil price shock and sanctions shock (“double shock”)

EU exports to Kazakhstan

- Decline mainly due to oil price shock (“simple shock”)
- Only indirect effect of sanctions shock
- Also: Extent of impact of oil price shock similar to Russia, as both countries export comparable quantities of energy
 - Kazakhstan: 76%, Russia: 71% of total exports (2013)

→ Comparison of EU exports to both countries is suitable to isolate and estimate the sanctions-related decrease in exports to Russia

Years to be compared: 2013 vs 2016

- 2013: Before the shocks
- 2016: After the adjustment to the shocks in both countries

Note: Russia devaluated already at the end of 2014, Kazakhstan only in Aug 2015. Therefore it is reasonable to use 2016 (not 2015) for comparison.

Estimation of the sanctions-related export decrease

	EU export in EUR bn		Export decrease in EUR bn	Export decrease in %
	2013	2016	2016 vs 2013	2016 vs 2013
Russia	119.4	72.4	47.0	-39.4%
Kazakhstan	7.5	5.2	2.3	-30.4%

Source: Eurostat; trade in goods

Approach i: Without sanctions EU exports to Russia would have developed like those to Kazakhstan, i.e. would have decreased by 30.4% instead of 39.4%.

Sanctions-related export decrease (approach i)

Decrease of EU exports to Russia 2016 vs 2013	EUR 47 bn
Sanctions-related share 2016	23%
Sanctions-related export decrease 2016	EUR 11 bn

Source: Own calculations based on Eurostat; trade in goods

Approach ii. Comparison with the export of non-sanctioning countries to Russia

EU exports to Russia

- Decrease due to a double shock (oil price shock and sanctions shock)

Export of non-sanctioning/sanctioned countries to Russia

(China, South Korea, Vietnam, Brazil, India, etc.)

- Decrease mainly due to oil price shock
- Only indirect effect of sanctions shock (positive and negative)

→ Comparison of exports to Russia from both country groups is suitable to estimate the sanctions-related decrease of EU exports to Russia

	Exports to RUS, EUR bn		Export decrease, EUR bn	Export decrease, %
	2013	2016	2016 vs 2013	2016 vs 2013
EU countries	119.4	72.4	47.0	39.4%
Countries without sanctions	109.8	82.0	27.7	25.3%

Source: Own estimations based on Eurostat and Federal Customs Agency of Russia; export data of countries without sanctions from Russian import data; trade in goods

Estimation of the sanctions-related export decrease

Approach ii

- Without sanctions, EU exports to Russia would have developed like exports from non-sanctioning/sanctioned countries
- Thus: Export decrease by 25.3% instead of 39.4%

Sanctions-related export decrease

EU export decrease to Russia 2016 vs 2013	EUR 47 bn
Sanctions-related share 2016	36%
Sanctions-related export decrease 2016	EUR 17 bn

Source: Own estimations based on Eurostat and Federal Customs Agency of Russia; trade in goods

Approach iii. Results of a gravity model

Study WIFO 2016

- Estimation of sanctions-related export decrease to Russia with a gravity model
- Result: 43% of decrease can be attributed to sanctions (for 2015)

In the following

- We use this result in the further course of our estimation (step 2)

Sanctions-related export decrease (approach iii)

EU export decrease to Russia 2016 vs 2013	EUR 47 bn
---	-----------

Sanctions-related share 2016	43%
------------------------------	-----

Sanctions-related export decrease 2016	EUR 20 bn
--	-----------

Source: Own estimations based on Eurostat and WIFO 2016; trade in goods

Sanctions-related export decrease: Overview

	Approach i	Approach ii	Approach iii
	EU exports to RUS vs EU exports to KAZ	EU exports to RUS vs exports to RUS from countries without sanctions	Employing the results from a gravity model (WIFO 2016)
EU export decrease to RUS 2016 vs 2013	EUR 47 bn	EUR 47 bn	EUR 47 bn
Sanctions-related share 2016	23%	36%	43%
Sanctions-related export decrease 2016	EUR 11 bn	EUR 17 bn	EUR 20 bn

Source: Own estimations based on Eurostat and Federal Customs Agency of Russia and WIFO 2016; trade in goods

IV. Impact on the EU GDP (step 2)

Step 2 → Two aspects to be taken into account: Adjustment factor and import share

Aspect 1: Adjustment factor (see also annex 2 and annex 3)

Short term: Little adjustment

- Goods: Finding new markets is not easy for exporters
- Production factors: Vacant resources of affected companies cannot immediately move to other companies or industries

Mid-term: Adjustment becomes much easier

- Goods: Exporters can enter alternative markets (reorientation of export)
- Production factors: Labour and capital partly move to other industries

Our estimation: Mid-term perspective, as sanctions are in place since 2014

Implications: “Adjustment factor“ in the estimation

- It can be assumed that adjustment takes place to a certain extent, which has to be deducted from the sanctions-related export decrease
- For simplification we assume an adjustment factor of 50%

Aspect 2: Import share in exports

- Export = gross value; turnover
- GDP = net value; value added

Implications

- “Impact on GDP = export decrease / GDP” is incorrect
 - Also: The export value includes the value added of the suppliers
→ an “additional” impact can not be added
 - Finally: The export value includes also imports from non-EU countries that are used in the production of goods for exports (energy, raw materials, etc.)
→ These imports have to be deducted from the export value
 - The average import share in EU products is 28% (OECD 2011)
- The import share (28%) is deducted from the sanctions-related export decrease

Impact on the EU GDP

EU export to Russia vs Kazakhstan (approach i)

Impact on EU GDP, approach i

Sanctions-related export decrease	EUR 11 bn
Deducting the adjustment factor (assumption)	50%
Sanctions-related export decrease after adjustment	EUR 5 bn
Deducting the import share of EU exports	28%
Impact on EU GDP	EUR 4 bn
EU GDP 2016	EUR 14,820 bn
Impact of sanctions on EU GDP 2016	0.03%

Source: Own calculations based on Eurostat and OECD; trade in goods

Impact on the EU GDP

Exports of the EU to Russia vs export of non-sanctioning countries to Russia (approach ii)

Impact on EU GDP, approach ii

Sanctions-related export decrease	EUR 17 bn
Deducting the adjustment factor (assumption)	50%
Sanctions-related export decrease after adjustment	EUR 8 bn
Deducting the import share of EU exports	28%
Impact on EU GDP	EUR 6 bn
EU GDP 2016	EUR 14,820 bn
Impact of sanctions on EU GDP 2016	0.04%

Source: Own calculations based on Eurostat, Federal Customs Agency of Russia and OECD; trade in goods

Impact on the EU GDP

Taking over the results of a gravity model, WIFO 2016
(approach iii)

Impact on EU GDP, approach iii	
Sanctions-related export decrease	EUR 20 bn
Deducting the adjustment factor (assumption)	50%
Sanctions-related export decrease after adjustment	EUR 10 bn
Deducting the import share of EU exports	28%
Impact on EU GDP	EUR 7 bn
EU GDP 2016	EUR 14,820 bn
Impact of sanctions on EU GDP 2016	0.05%

Source: Own calculations based on Eurostat, Federal Customs Agency of Russia and OECD; trade in goods

V. Comparison to existing studies

Estimation	Impact on EU export to RUS (step 1)		Impact on EU GDP (step 2)	
	EUR bn	%	EUR bn	% of GDP 2016
Berlin Economics 2017				
<i>Export to RUS vs KAZ</i>	11	23	4	0.03
<i>Export EU vs countries without sanctions</i>	17	36	6	0.04
<i>Taking over step 1 of WIFO 2016</i>	20	43	7	0.05
WIFO 2016	20	43	18	0.12
WIFO 2015				
<i>short-term impact</i>			33	0.22*
<i>long-term impact</i>			90	0.61*
Study on request of the EU Commission 2014 ^t			50	0.34*
Russian Academy of Science 2015 ^{tt}				0.5**

*Absolute impact refers to EU GDP 2016; **Year of reference unknown; ^tunpublished; ^{tt}Institute for Economic Forecasting at the Russian Academy of Science

VI. Plausibility check of existing studies

Simple estimation by Berlin Economics

- Impact on EU GDP 2016 amounts to EUR 4-7 bn
- This equals 0.03-0.05% of the EU GDP

Interpretation of the results of our study

- Simple estimation, thus results not to be interpreted exactly
- But: Three different approaches lead to similar results
- Thus: Estimation can be used for a plausibility check of existing studies

Plausibility check

- WIFO 2016: Step 1 is plausible, but step 2 not
- Other studies: EUR 33-90 bn of EU GDP
- Even if we assume that the export decrease can be attributed solely to the sanctions, our estimation result of EUR 17 bn of the EU GDP is much smaller

→ **Not plausible**

Reasons for the overestimation by other studies

Note

- Methodology of other studies is partly not known
- Still we can perceive problematic assumptions/approaches

Estimation of the sanctions-related export decrease (step 1)

- The export decrease is partly set equal to the sanctions-related decrease (e.g. WIFO 2015); the impact of the oil price shock is thus not taken into account

Impact of the sanctions-related export decrease on the EU GDP (step 2)

- No reorientation of exports and no reallocation of factors of production, partly because input-output model is used (e.g. WIFO 2015 and 2016)
- Short-term perspective; impact intensified by “multiplier”
- Import share is not deducted from exports to Russia; in consequence turnover values and value added are improperly equated

Main reason for overestimation: Problematic assumptions/methodology in step 2

Annex 1: Structure of export decrease by countries and commodities

1.1 Structure of the decrease of EU exports by countries

1.2 Impact on the GDP of EU countries

1.3 Structure of the EU export decrease by commodities

1.4 Structure of the German export decrease by commodities

1.1 Structure of the decrease of EU exports by countries

	EU exports in EUR bn		Decrease in EUR bn	Decrease in %	Decrease, % of GDP	% of total decrease
	2013	2016	2016 vs 2013	2016 vs 2013	2016	2016 vs 2013
Lithuania	4.87	3.05	1.82	37%	4.71%	3.9%
Estonia	1.41	0.78	0.64	45%	3.04%	1.4%
Latvia	1.76	1.24	0.52	29%	2.06%	1.1%
Slovakia	2.55	1.48	1.08	42%	1.33%	2.3%
Finland	5.36	2.98	2.38	44%	1.11%	5.1%
Slovenia	1.19	0.79	0.40	34%	1.01%	0.9%
Hungary	2.53	1.41	1.11	44%	0.99%	2.4%
Czech Republic	4.47	2.78	1.70	38%	0.97%	3.6%
Poland	8.11	5.21	2.91	36%	0.68%	6.2%
Austria	4.31	1.95	2.36	55%	0.67%	5.0%
Bulgaria	0.58	0.34	0.24	41%	0.50%	0.5%
Netherlands	7.96	4.69	3.26	41%	0.47%	6.9%
Germany	35.79	21.67	14.12	39%	0.45%	30.0%
Belgium	5.11	3.39	1.72	34%	0.41%	3.7%
Malta	0.04	0.00	0.03	91%	0.33%	0.1%
EU-28	119.45	72.41	47.04	39%	0.32%	100.0%

Source: Eurostat; trade in goods

1.1 (cont'd) Structure of the decrease of EU exports by countries

	EU exports in EUR bn		Decrease in EUR bn	Decrease in %	Decrease, % of GDP	% of total decrease
	2013	2016	2016 vs 2013	2016 vs 2013	2016	2016 vs 2013
EU-28	119.45	72.41	47.04	39%	0.32%	100.0%
Denmark	1.56	0.73	0.83	53%	0.30%	1.8%
Sweden	2.73	1.54	1.18	43%	0.26%	2.5%
Romania	1.38	0.97	0.41	30%	0.24%	0.9%
Italy	10.77	6.72	4.05	38%	0.24%	8.6%
Croatia	0.28	0.19	0.09	32%	0.20%	0.2%
France	7.72	4.94	2.78	36%	0.12%	5.9%
Spain	2.81	1.60	1.21	43%	0.11%	2.6%
Greece	0.40	0.22	0.19	47%	0.11%	0.4%
Ireland	0.63	0.36	0.27	43%	0.10%	0.6%
Cyprus	0.02	0.01	0.01	58%	0.08%	0.0%
Great Britain	4.67	3.08	1.58	34%	0.07%	3.4%
Portugal	0.26	0.14	0.12	46%	0.06%	0.3%
Luxembourg	0.16	0.13	0.03	17%	0.05%	0.1%

Source: Eurostat; trade in goods

Structure of export decrease by countries: Conclusions

In absolute terms: In EUR

- Largest absolute decrease of exports in Germany
- Germany accounts for 30% of the total decrease of EU exports to Russia

In relative terms: As % of a country's GDP (\neq GDP decrease!)

- Baltic countries experienced the largest relative export decline
- E.g.: Impact on Lithuania more than 10x larger than EU average
- Germany: Only slightly above EU average

→ Results in relative terms are quite different than in absolute terms

1.2 Impact on the GDP of the EU countries

	EU exports in EUR bn		Export decrease in EUR bn	Step 1: Sanctions-related export decrease in EUR bn	Step 2: Impact on GDP, EUR bn	Step 2: Impact on GDP, % of GDP
	2013	2016	2016 vs 2013	2016	2016	2016
Lithuania	4.87	3.05	1.82	0.41 - 0.79	0.15 - 0.28	0.39 - 0.73
Estonia	1.41	0.78	0.64	0.14 - 0.28	0.05 - 0.10	0.25 - 0.47
Latvia	1.76	1.24	0.52	0.12 - 0.22	0.04 - 0.08	0.17 - 0.32
Slovakia	2.55	1.48	1.08	0.25 - 0.47	0.09 - 0.17	0.11 - 0.21
Finland	5.36	2.98	2.38	0.54 - 1.03	0.19 - 0.37	0.09 - 0.17
Slovenia	1.19	0.79	0.40	0.09 - 0.17	0.03 - 0.06	0.08 - 0.16
Hungary	2.53	1.41	1.11	0.25 - 0.48	0.09 - 0.17	0.08 - 0.15
Czech Republic	4.47	2.78	1.70	0.39 - 0.74	0.14 - 0.26	0.08 - 0.15
Poland	8.11	5.21	2.91	0.66 - 1.26	0.24 - 0.45	0.06 - 0.11
Austria	4.31	1.95	2.36	0.54 - 1.02	0.19 - 0.37	0.06 - 0.10
Bulgaria	0.58	0.34	0.24	0.05 - 0.10	0.02 - 0.04	0.04 - 0.08
Netherlands	7.96	4.69	3.26	0.74 - 1.41	0.27 - 0.51	0.04 - 0.07
Germany	35.79	21.67	14.12	3.22 - 6.12	1.16 - 2.20	0.04 - 0.07
Belgium	5.11	3.39	1.72	0.39 - 0.74	0.14 - 0.27	0.03 - 0.06
Malta	0.04	0.00	0.03	0.01 - 0.01	0.00 - 0.01	0.03 - 0.05
EU-28	119.45	72.41	47.04	10.72 - 20.38	3.85 - 7.32	0.03 - 0.05

Source: Eurostat; trade in goods

1.2 (cont'd) Impact on the GDP of the EU countries

	EU exports in EUR bn		Export decrease in EUR bn	Step 1: Sanctions- related export decrease in EUR bn	Step 2: Impact on GDP, EUR bn	Step 2: Impact on GDP, % of GDP
	2013	2016	2016 vs 2013	2016	2016	2016
EU-28	119.45	72.41	47.04	10.72 - 20.38	3.85 - 7.32	0.03 - 0.05
Denmark	1.56	0.73	0.83	0.19 - 0.36	0.07-0.13	0.02 - 0.05
Sweden	2.73	1.54	1.18	0.27 - 0.51	0.10 - 0.18	0.02 - 0.04
Romania	1.38	0.97	0.41	0.09 - 0.18	0.03 - 0.06	0.02 - 0.04
Italy	10.77	6.72	4.05	0.92 - 1.76	0.33 - 0.63	0.02 - 0.04
Croatia	0.28	0.19	0.09	0.02 - 0.04	0.01 - 0.01	0.02 - 0.03
France	7.72	4.94	2.78	0.63 - 1.20	0.23 - 0.43	0.01 - 0.02
Spain	2.81	1.60	1.21	0.28 - 0.52	0.10 - 0.19	0.01 - 0.02
Greece	0.40	0.22	0.19	0.04 - 0.08	0.02 - 0.03	0.01 - 0.02
Ireland	0.63	0.36	0.27	0.06 - 0.12	0.02 - 0.04	0.01 - 0.02
Cyprus	0.02	0.01	0.01	0.00 - 0.01	0.00 - 0.00	0.01 - 0.01
Great Britain	4.67	3.08	1.58	0.36 - 0.69	0.13 - 0.25	0.01 - 0.01
Portugal	0.26	0.14	0.12	0.03 - 0.05	0.01 - 0.02	0.01 - 0.01
Luxembourg	0.16	0.13	0.03	0.01 - 0.01	0.00 - 0.00	0.00 - 0.01

Source: Eurostat; trade in goods

Impact on the GDP of EU countries: Conclusions

Baltic states: By far the strongest negative impact on GDP

- Lithuania: 0.39-0.73% of GDP; strongest impact of all EU countries
- Impact on Lithuania more than 10x larger than the EU average (0.03-0.05%)

Germany: Rank 13 out of 28 countries

- Absolute impact (rounded down): EUR 1-2 bn
- Relative impact: 0.04-0.07% of the GDP, slightly above EU average

Summing up

- Large differences between EU countries
- Rule: The nearer a country is to Russia, the stronger is the shock; as expected

Methodical comments

- EU estimations used in steps 1 and 2; thus approximate estimation
- Services (esp. tourism and financial products) were not taken into account; thus the effect on Spain or Great Britain is underestimated

1.3 Structure of the EU export decrease by commodities

	EU exports in EUR bn		Export decrease in EUR bn	Export decrease in %	% of total decrease	Examples
	2013	2016	2016 vs 2013	2016 vs 2013	2016	
Machinery (incl. electrical machinery)	37.73	21.75	15.98	42%	34%	Telephones, computers
Transportation	19.41	9.82	9.59	49%	20%	Cars and accessories
Chemical products	16.98	13.35	3.62	21%	8%	
Animal products	3.35	0.35	3.00	90%	6%	
Metals	5.79	3.42	2.37	41%	5%	
Vegetable products	3.30	1.28	2.02	61%	4%	
Plastics/Rubbers	5.81	4.25	1.56	27%	3%	
Textiles	4.42	2.91	1.50	34%	3%	
Checking and precision instruments	4.31	2.95	1.36	31%	3%	
Foodstuffs	4.88	3.59	1.29	26%	3%	
Others	13.47	8.72	4.75	35%	10%	
Total	119.45	72.41	47.04	39%	100%	

Source: Eurostat; trade in goods

1.4 Structure of German export decrease by commodities

	EU exports in EUR bn		Export decrease in EUR bn	Export decrease in %	% of total decrease	examples
	2013	2016	2016 vs 2013	2016 vs 2013		
Machinery (incl. electrical machinery)	12.50	7.21	5.30	42%	37%	Printers, pumps
Transportation	8.31	3.87	4.44	53%	31%	Cars and accessoires
Chemical products	4.48	3.64	0.84	19%	6%	
Checking and precision instruments	1.94	1.23	0.71	37%	5%	
Metals	1.61	1.02	0.59	37%	4%	
Plastics/Rubbers	1.92	1.43	0.49	26%	3%	
Animal products	0.54	0.05	0.48	90%	3%	
Textiles	0.98	0.57	0.41	42%	3%	
Foodstuffs	0.84	0.65	0.19	23%	1%	
Vegetable products	0.19	0.18	0.01	6%	0%	
Others	2.47	1.82	0.65	26%	5%	
Total	35.79	21.67	14.12	39%	100%	

Source: Eurostat; trade in goods

Commodity structure of the export decrease: Conclusions

In absolute terms: Machine-building and means of transportation dominate

- EU: These two categories account for 54% of the total export decrease
- DEU: Share of these categories even amounts to 68%; more than 2/3
- When absolute perspective relevant? Aggregated impact, jobs

In relative terms : Agriculture most strongly affected

- Meat producers: 90% of export decrease in the EU (and in DEU)
- Vegetable products (e.g. apples): 61% decrease in the EU; for German exports to Russia this product category plays a minor role
- When relative perspective relevant? Sectoral impact, support by the EU

Summing up

- Large differences also in product categories
- Strongest sectoral impact: Agriculture; see annex 2.3

Annex 2: Is our assumption on the adjustment factor plausible?

2.1 Basic ideas on the adjustment factor

2.2 Plausibility check based on the development of economic indicators

2.3 Plausibility check for the agricultural sector: Estimation of the adjustment factor for agricultural raw products

2.1 Basic ideas on the adjustment factor

Adjustment at firm and at macroeconomic level

- Reorientation of exports: Goods no longer exported to Russia can partly be sold in other countries
- Reallocation of factors of production: Vacant labour and capital partly move to other companies and industries

Inclusion into our estimation (step 2): Adjustment factor

- The adjustment factor increases over time
- The more flexible and competitive a country is, the higher is the adjustment factor
- Adjustment also depends on the sector

Assumption in our estimation of the sanctions' impact on the EU GDP

- Adjustment factor of 50%

Question: Is this assumption plausible?

- Annex 2.2: Plausibility check based on economic indicators
- Annex 2.3: Plausibility check for the agricultural sector / agricultural raw products

2.2 Plausibility check based on economic indicators

Undisputed

- EU exports to Russia have decreased sharply
- Export decrease has a macroeconomic impact

Disputed: How strong is this impact?

- Full impact because no adjustment takes place?
- Or is the impact weakened due to significant adjustment?

Economic indicators since the introduction of the sanctions (2014)

- i. Exports: General increase in spite of decrease in exports to Russia
- ii. GDP: “Normal” development, no irregularities observed
- iii. Employment: Positive development, no shock observed

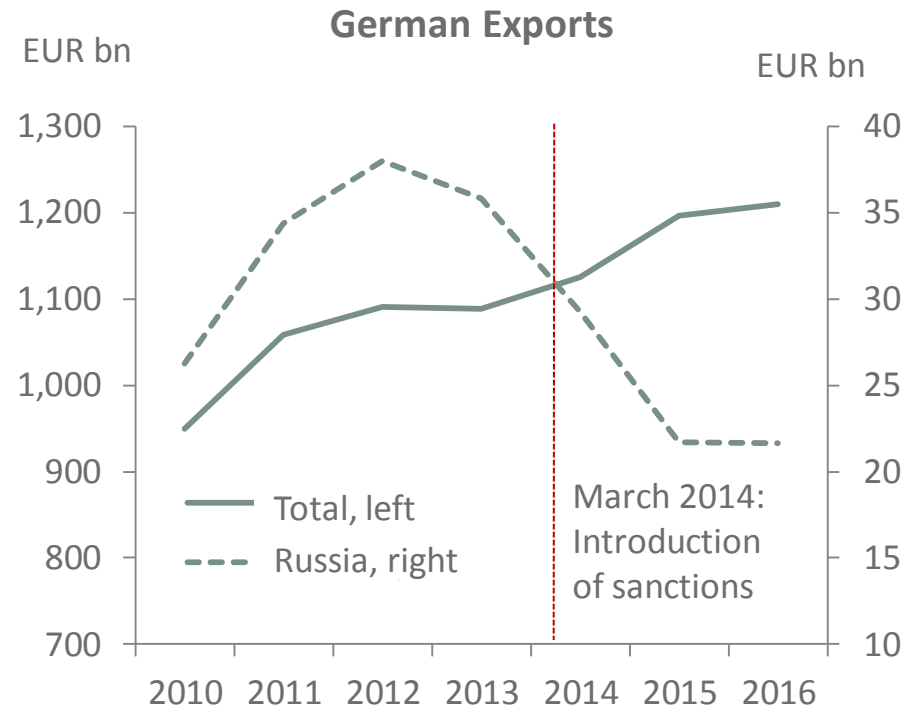
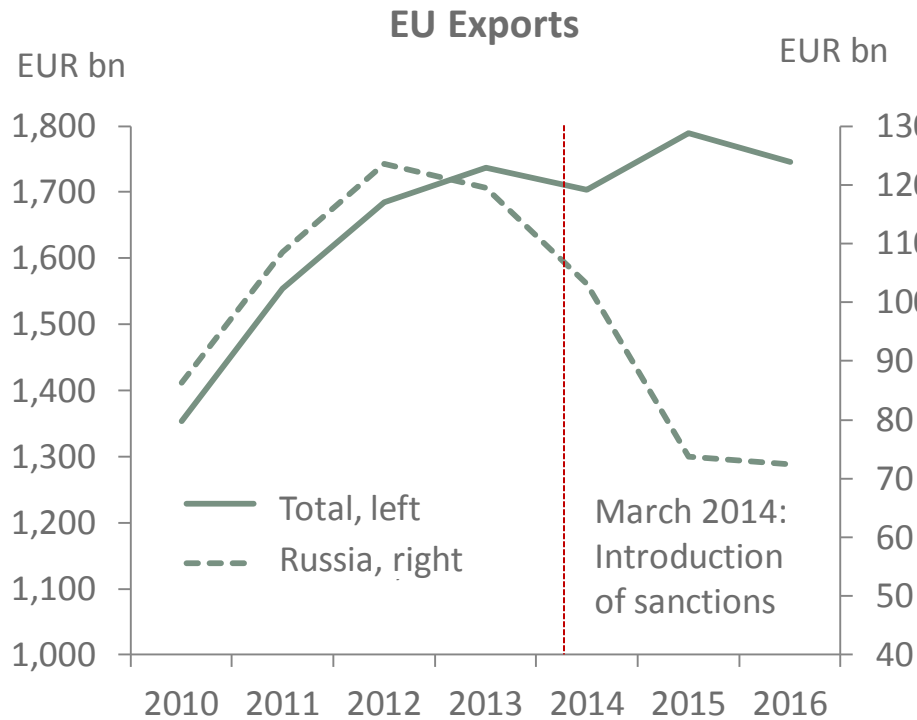
Additional evidence: Talks with companies

- “Sanctions are not good for us, but we learned to live with them”

→ Economic indicators suggest significant adjustment

→ Adjustment factor is plausible

i. Development of exports (EU and DEU)

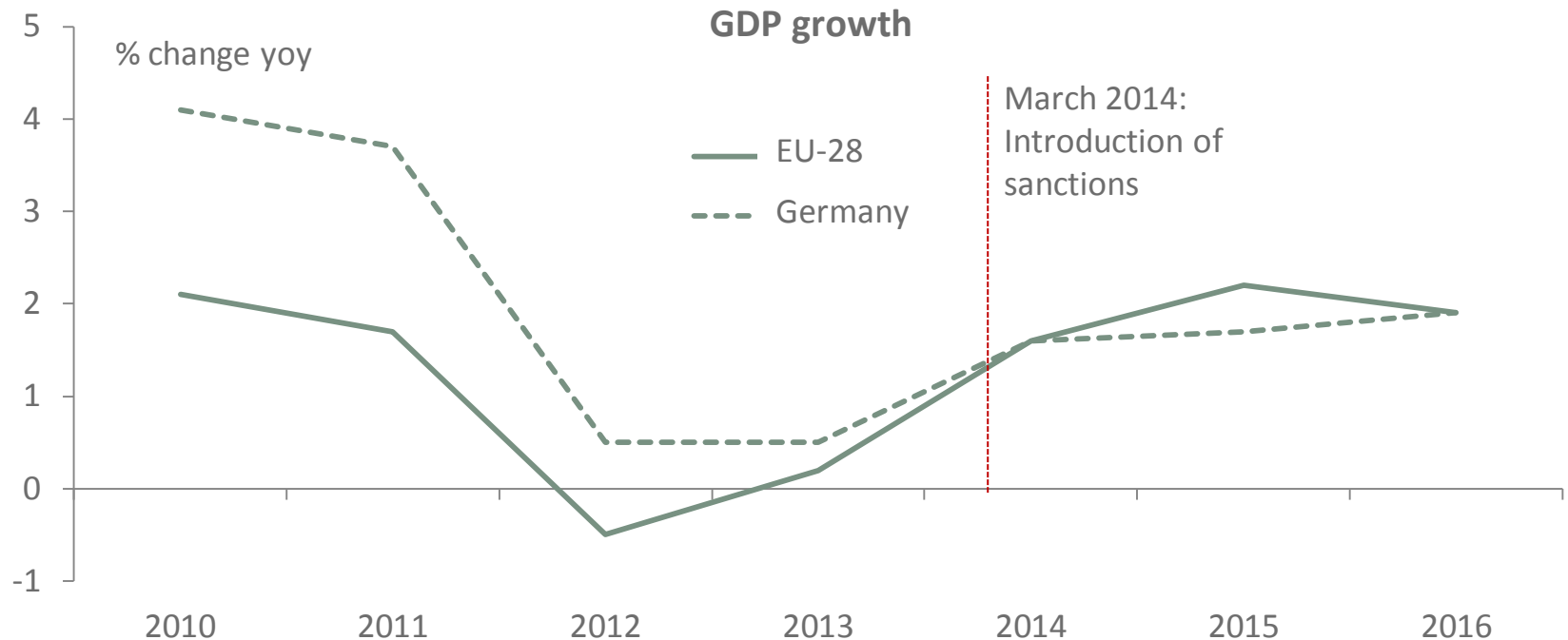


Source: Eurostat; trade in goods

- After the sanctions: Quick recovery of exports (EU) respectively normal development (DEU); former exports to Russia reorientate

→ Adjustment occurs through export reorientation

ii. GDP development in the EU and DEU



Source: Eurostat

- Growth rates since 2014 do not exhibit any irregularities

→ Full impact unlikely, data suggest adjustment

iii. Development of employment in the EU and DEU



Source: Eurostat

- Since 2014 employment in the EU and DEU have been increasing
→ Also on the labour market no (full) impact observed

2.3 Plausibility check for the agricultural sector:

Estimating the adjustment factor for agricultural raw products

Agriculture: Largest sectoral export decrease esp. due to countersanctions

Differentiation: Agricultural raw products vs processed agri-products

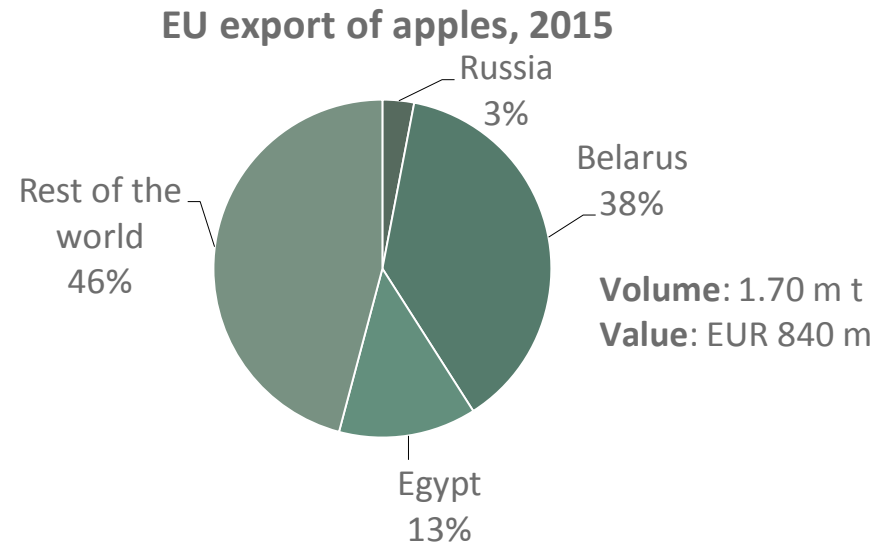
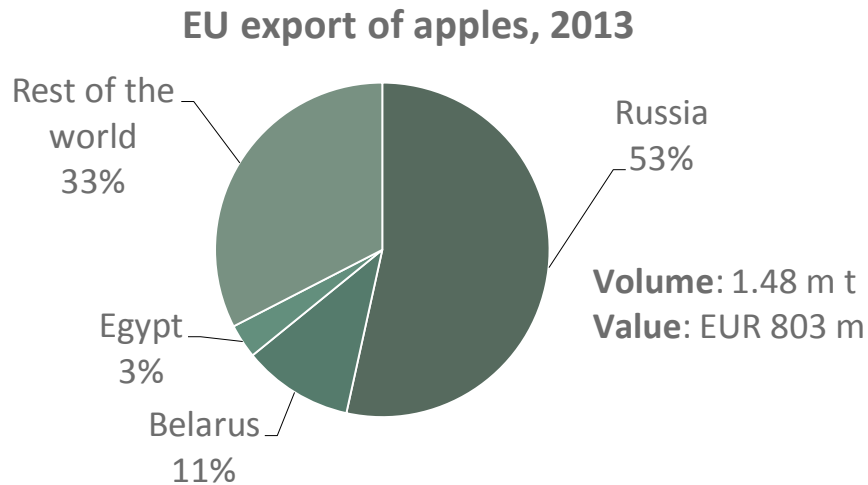
	2013	2015	Change
Agricultural raw products*	EUR 6.2 bn	EUR 1.2 bn	-80%
Processed agri-products**	EUR 5.6 bn	EUR 4.2 bn	-25%
Other products***	EUR 108.2 bn	EUR 67.4 bn	- 38 %
Sum	EUR 120.0 bn	EUR 72.8 bn	- 39 %

Source: Own calculation based on ITC Trade Map, 2017, *HS Codes 1-10, **HS Codes 11-24, ***HS Codes 25-99

- Above-average decrease only in agricultural raw products (-80%)
- Main products: Apples, pork, beef, butter and cheese

In the following: Estimation of the adjustment factor for five main products

The example of apples



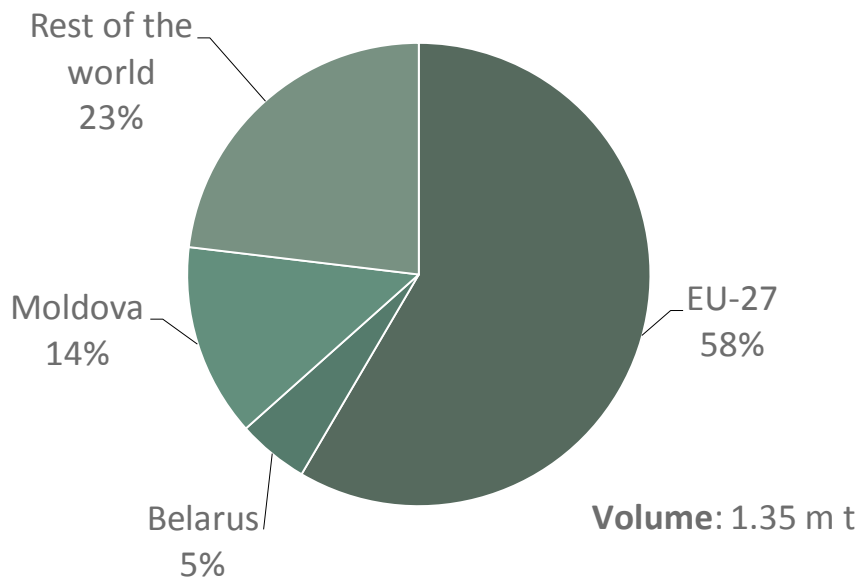
Source: ITC Trade Map 2017; Shares by weight

- **Export volume:** Significant increase; no negative impact on production
- **Thus:** Export volume to Russia from 2013 amounting to 0.79 m t completely replaced
- **How?** Additional export to Belarus, Egypt and other countries
- **But:** \emptyset price for this volume has decreased from 434 to 343 EUR/t
- **Thus:** Negative price effect

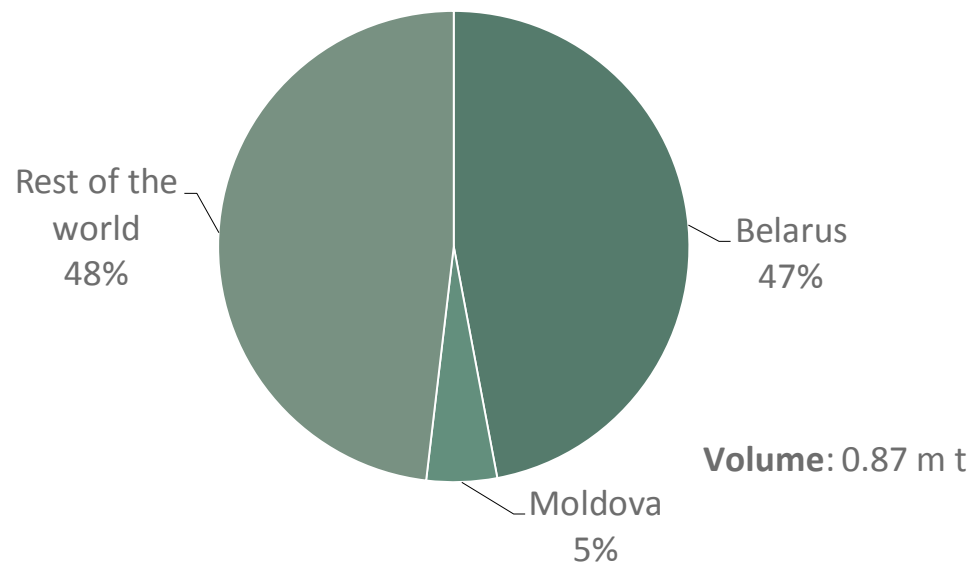
→ **Estimated adjustment factor: 79%**

The example of apples: Russian imports

RUS import of apples, 2013



RUS import of apples, 2015



Source: ITC Trade Map 2017; Shares by weight

- **Russia:** Sanctions vis-à-vis the EU lead to increased imports from Belarus
- **Thus:** Reorientation of EU exports to Russia via Belarus

Int. trade flows: EU exports to BLR↑ & RUS↓; export BLR to RUS↑

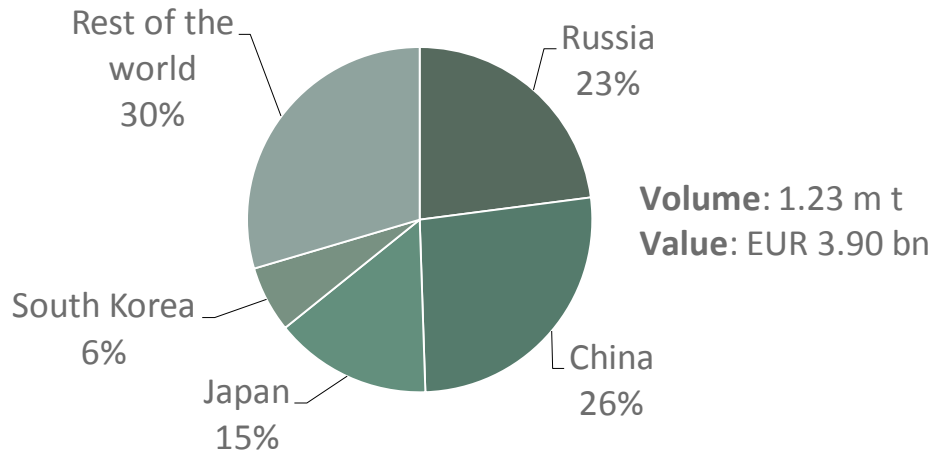
Calculating the adjustment factor for apples

EU exports of apples

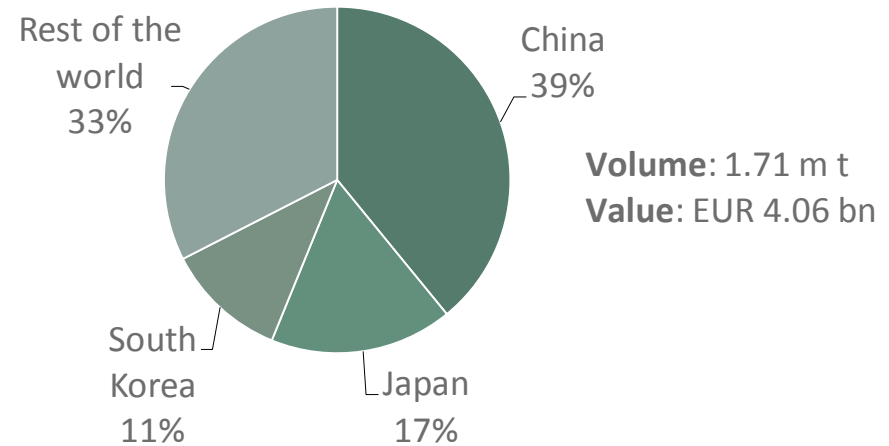
2013	m t	Value, EUR m	Average price EUR/t
Total exports	1.48	803	543
Total exports excl. Russia	0.69	460	667
Exports to Russia	0.79	343	434
2015	m t	Value, EUR m	Average price EUR/t
Total exports	1.70	840	494
Total export at constant volumes as of 2013	1.48	731	494
Total exports excl. Russia as of 2013	0.69	460	667
Replacement for 2015 exports to Russia	0.79	271	343
Adjustment factor (Replaced export/export RUS 2013)		79%	

The example of pork

EU exports of pork, 2013



EU exports of pork, 2015



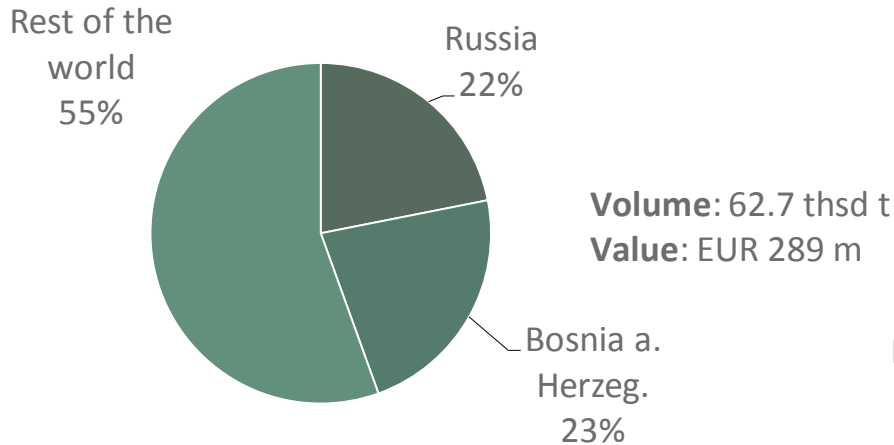
Source: ITC Trade Map 2017; Shares by weight

- **Export volume:** Significant increase; no negative impact on production
- **Thus:** Export volume to Russia from 2013 amounting to 0.37 m t completely replaced
- **How?** Additional export to China, South Korea and Japan
- **But:** \emptyset price for this volume has decreased from 2,616 to 2,343 EUR/t; negative price effect → **Estimated adjustment factor: 90%**

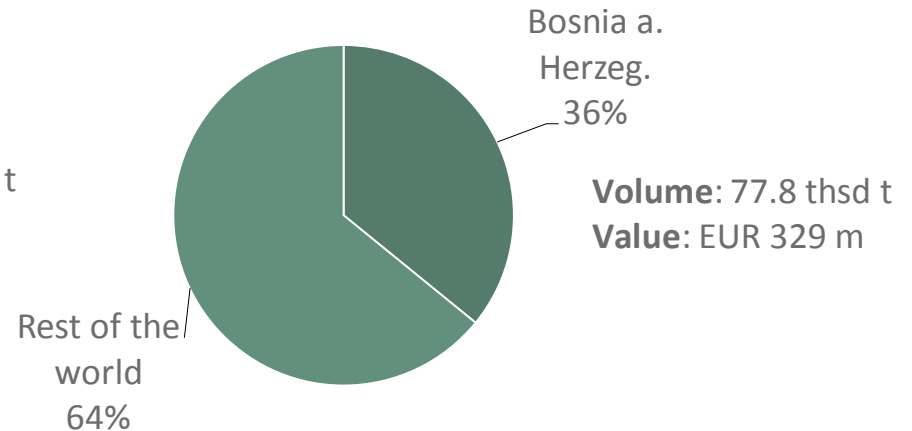
Int. trade flows: Reorientation of Brazilian exports from Ukraine to Russia

The example of beef (cooled)

EU exports of beef, 2013



EU exports of beef, 2015



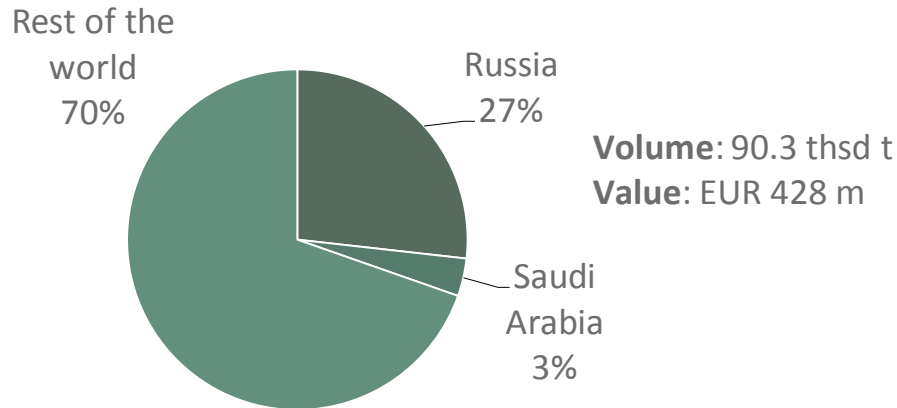
Source: ITC Trade Map 2017; Shares by weight

- **Export volume:** Increase of exports; no negative impact on production
- **Thus:** Export volume to Russia from 2013 amounting to 14 thsd t completely replaced
- **How?** Additional export to Bosnia and Herzegovina and other countries
- **But:** \emptyset price for this volume has decreased from 3,890 to 2,185 EUR/t
- **Thus:** Negative price effect → **Estimated adjustment factor: 56%**

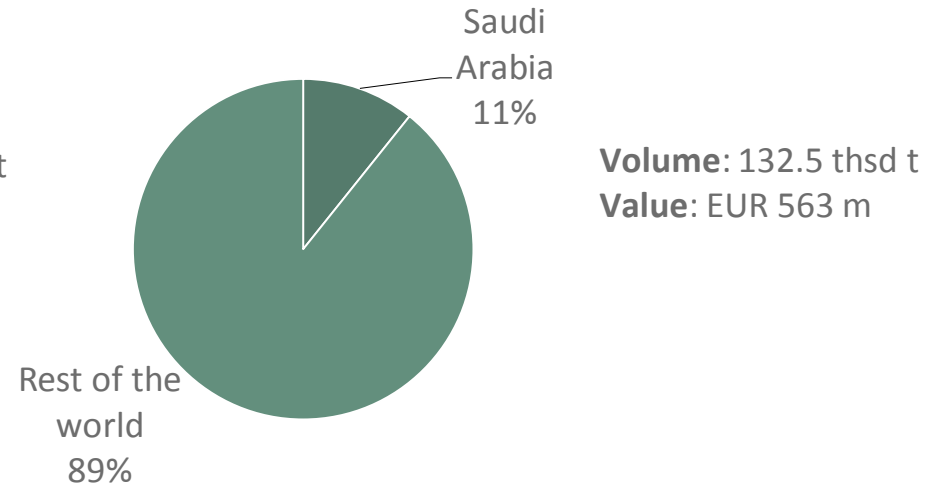
Int. trade flows: EU export to B&H↑, Belarus export to RUS↑

The example of butter

EU exports of butter, 2013



EU exports of butter, 2015



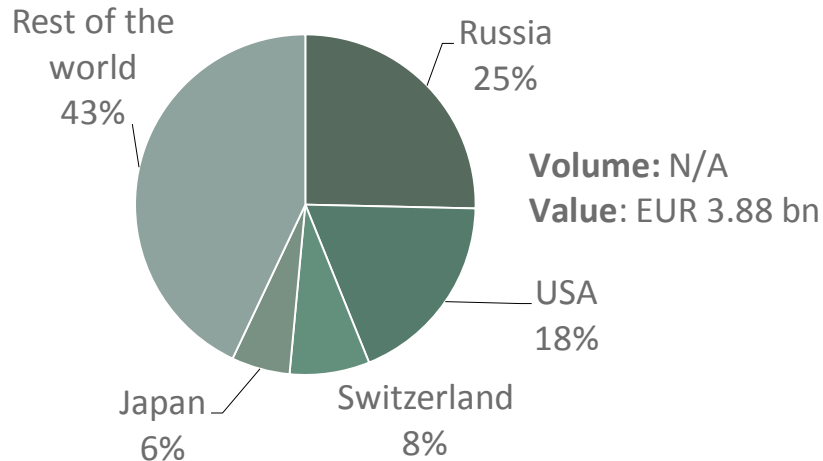
Source: ITC Trade Map 2017; shares by weight

- **Export volume:** Significant increase; no negative impact on production
- **Thus:** Export volume to Russia from 2013 amounting to 24 thsd t completely replaced
- **How?** Additional export to Saudi Arabia and other countries
- **But:** \emptyset price for this volume has decreased from 4,039 to 2,234 EUR/t
- **Thus:** Negative price effect → **Estimated adjustment factor: 55%**

Int. trade flows: EU export to Saudi Arabia ↑, Belarus export to RUS ↑

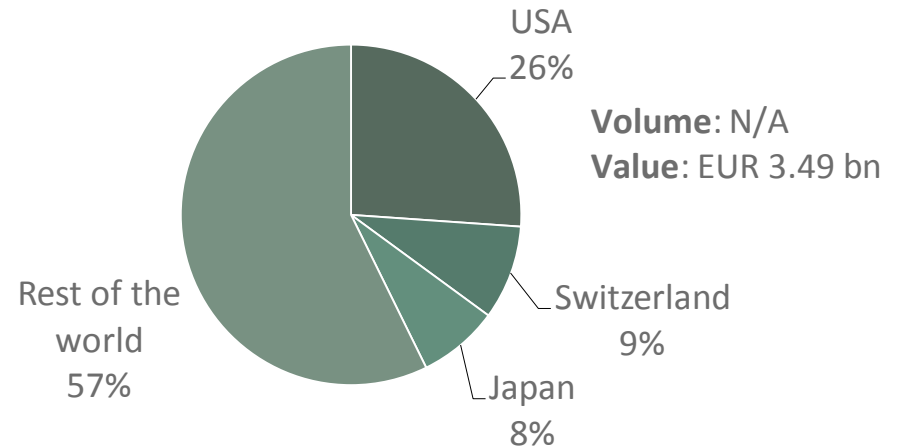
The example of cheese

EU exports of cheese, 2013



Source: ITC Trade Map 2017; shares by value

EU exports of cheese, 2015



- **Export volume:** No reliable data for volumes
- **Assumption for the estimation:** Export volumes did not change
- **Reorientation of trade flows:** Strong increase in EU exports to USA and other countries

→ **Estimated adjustment factor: 60%**

Estimation of the adjustment factor for agricultural raw products: Overview

	EU exports to Russia 2013 in EUR m	Reoriented export 2015 in EUR m	Adjustment factor
Apples	EUR 343 m	EUR 271 m	79%
Pork	EUR 959 m	EUR 859 m	90%
Cooled beef	EUR 54 m	EUR 30 m	56%
Butter	EUR 98 m	EUR 54 m	55%
Cheese	EUR 983 m	EUR 592 m	60%
Sum	EUR 2,437 m	EUR 1,806 m	74%

- Based on five important agricultural raw products in trade with Russia we estimate an adjustment factor for 2015 vs 2013 of **74%** on average
- These five products cover 40% of exports of agricultural raw products to Russia in 2013 in terms of value

→ **Meaningful estimation for agricultural raw products**

Interpretation of estimation results

For all five products

- Export volumes have increased; no negative impact on production and jobs
- Pure price adjustment with a negative impact on the incomes of farmers
- Adjustment factor is larger than the assumed 50%

→ **50% assumption is plausible respectively conservative for agricultural raw products**

Applicability of the estimation results for other goods?

- Agricultural raw products: Adjustment only in prices, not in volumes
- Reason: In the short term supply cannot be reduced/adjusted; important difference in comparison to industrial goods like e.g. cars
- Thus: Agricultural raw products are a special case

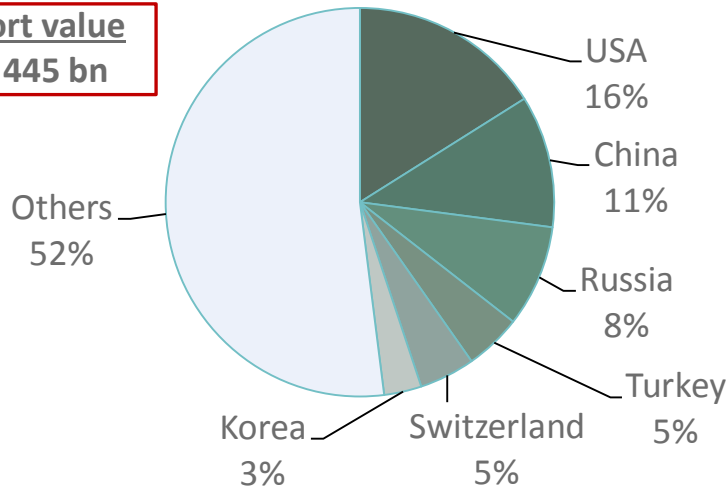
→ **Results are not applicable for the industrial sector**

- **Thus:** Estimation for important industrial sectors would be useful

Annex 3: Adjustment in machine-building in the EU

EU machinery exports, 2013

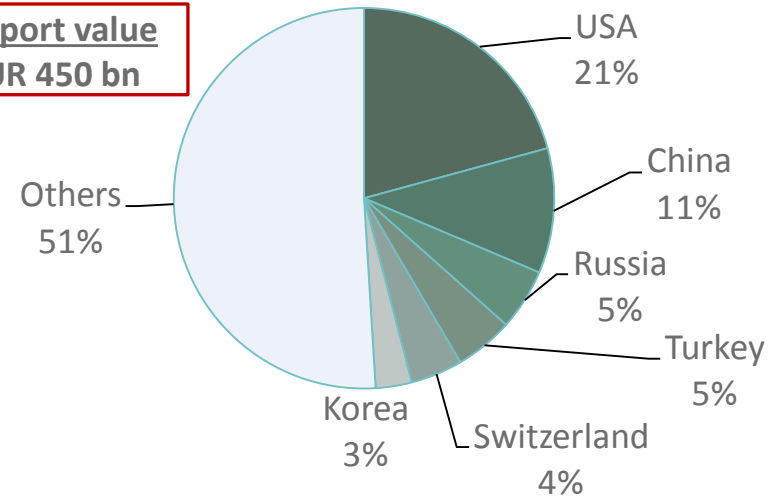
Export value
EUR 445 bn



Source: Eurostat

EU machinery exports, 2016

Export value
EUR 450 bn



Source: Eurostat

Machine-building incl. electrical machinery

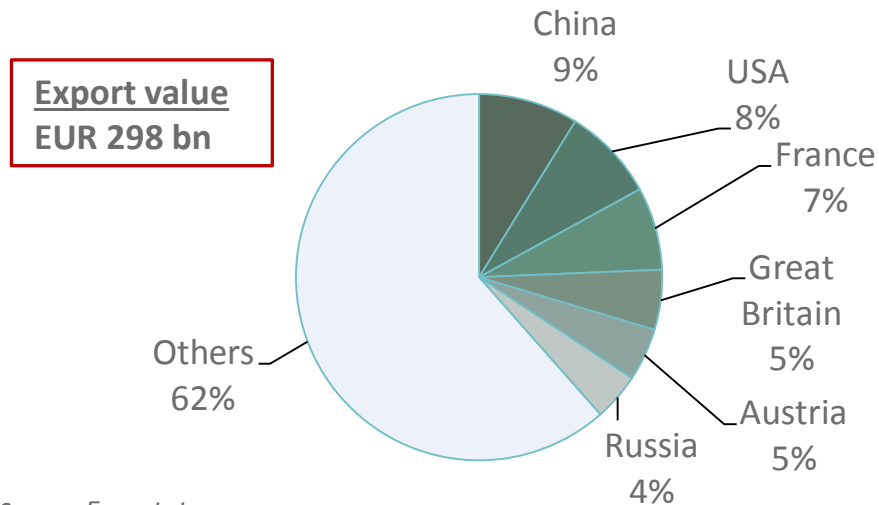
- Export decrease to Russia: From ca. EUR 38 bn (2013) to 22 bn (2016)
- Absolute = EUR -16 bn; relative = -42%; 1/3 of total export decrease

Adjustment

- Total EU export increased despite decrease to Russia
- Possible interpretation: Adjustment through reorientation of exports

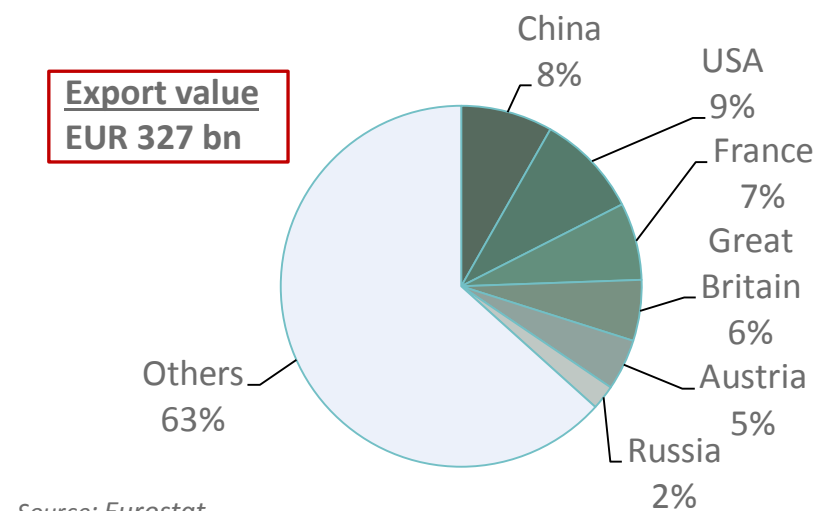
Adjustment in machine-building in DEU

German machinery exports, 2013



Source: Eurostat

German machinery exports, 2016



Source: Eurostat

Machine-building incl. electrical machinery

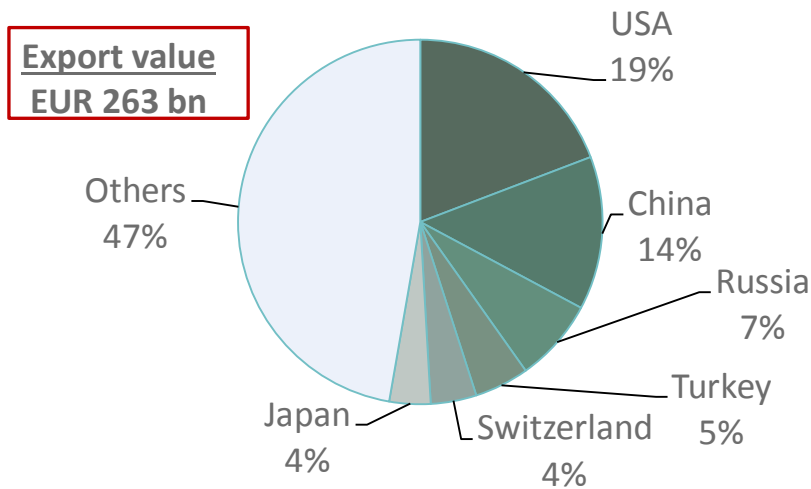
- Export decrease to Russia: From ca. EUR 12 bn (2013) to 7 bn (2016)
- Absolute = EUR -5 bn; relative = -42%; 37% of total export decrease

Adjustment

- Total EU export increased despite decrease of export to Russia
- Also for DEU: Adjustment through reorientation of exports seems likely

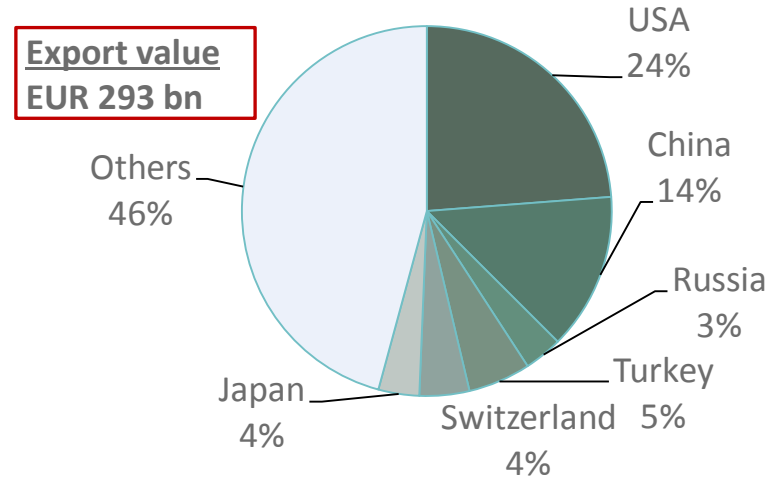
Adjustment in transportation in the EU

EU transportation export, 2013



Source: Eurostat

EU transportation export, 2016



Source: Eurostat

Transportation (incl. vehicles)

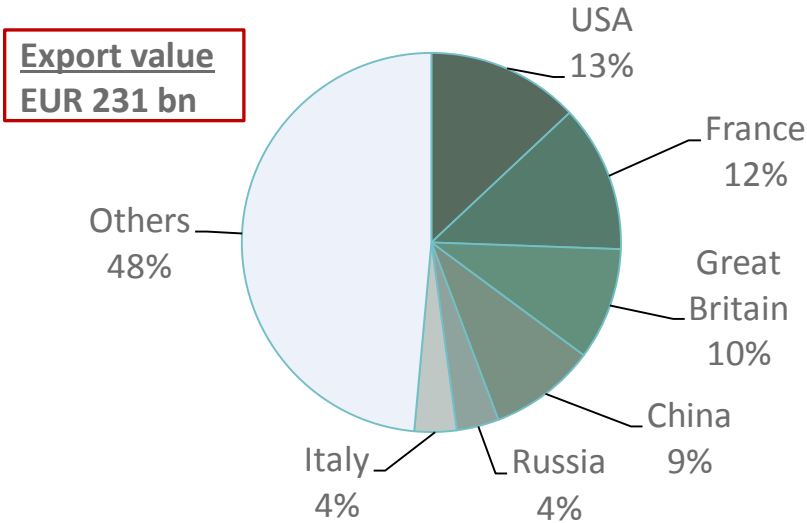
- Export decrease to Russia: From EUR 19 bn (2013) to ca. 10 bn (2016)
- Absolute = EUR -9 bn; relative = -49%; 1/5 of total export decrease

Adjustment

- Total EU export increased despite decrease of export to Russia
- Probably adjustment through reorientation of exports

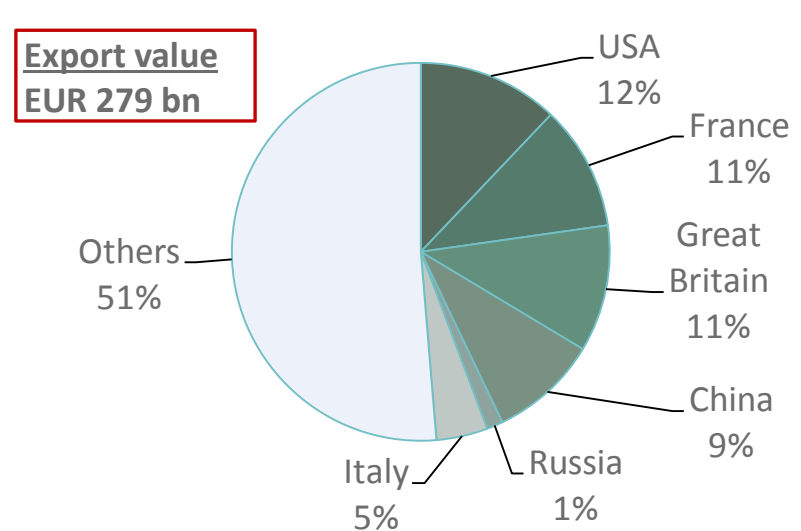
Adjustment in transportation in DEU

German transportation export, 2013



Source: Eurostat

German transportation export, 2016



Source: Eurostat

Transportation

- Export decrease to Russia: From EUR 8 bn (2013) to ca. 4 bn (2016)
- Absolute = EUR -4 bn; relative = -53%; 1/3 of total export decrease

Adjustment

- Total EU export increased despite decrease of export to Russia
- Thus: Probably adjustment through reorientation of exports

Contact

Dr Ricardo Giucci

giucci@berlin-economics.com

BE Berlin Economics GmbH

Schillerstraße 59, D-10627 Berlin

Tel: +49 30 / 20 61 34 64 0

info@berlin-economics.com

www.berlin-economics.com

Twitter: @BerlinEconomics

Facebook: @BE.Berlin.Economics

 Berlin
Economics

Independent Economics
Consultancy in Emerging
and Transition Countries



www.berlin-economics.com