

Who is to suffer? Quantifying the impact of sanctions on German firms

3rd KIEL-CEPR Conference on Geoeconomics

Holger Görg¹, Anna Jacobs^{1,2} & Saskia Meuchelböck^{1,3}

October 17, 2024

¹Kiel Institute for the World Economy

²Bielefeld University

³Aarhus University

- | Economic sanctions are a frequently used instrument of foreign policy (see Hufbauer et al., 2009; Felbermayr et al., 2020).
 - Most recently – adding to measures in place since 2014 – the EU and other countries imposed unprecedented sanctions against Russia, following the invasion in Ukraine.

- I Economic sanctions are a frequently used instrument of foreign policy (see Hufbauer et al., 2009; Felbermayr et al., 2020).
 - Most recently – adding to measures in place since 2014 – the EU and other countries imposed unprecedented sanctions against Russia, following the invasion in Ukraine.
- II Meant to hurt its target, the measures imply costs for imposing countries as well.
 - Studies on Germany are scarce despite its role as the world's third largest exporter.

This Paper

We investigate the effects of sanctions on firm performance in Germany.

This Paper

We investigate the effects of sanctions on firm performance in Germany.

- We ask:
 - What is the impact of sanctions on firms' export activity and general performance?
 - Are effects heterogeneous across firms and product groups?

This Paper

We investigate the effects of sanctions on firm performance in Germany.

- We ask:
 - What is the impact of sanctions on firms' export activity and general performance?
 - Are effects heterogeneous across firms and product groups?
- We use:
 - Novel micro data at the firm level on goods trade and general performance.
 - A difference-in-differences framework and event study design.

This Paper

We investigate the effects of sanctions on firm performance in Germany.

- We ask:
 - What is the impact of sanctions on firms' export activity and general performance?
 - Are effects heterogeneous across firms and product groups?
- We use:
 - Novel micro data at the firm level on goods trade and general performance.
 - A difference-in-differences framework and event study design.
- We find:
 - Firms reduced exports to Russia by 17%, also of non-sanctioned products.
 - The probability of exporting dropped by 13%, on average.
 - Negative effects on firm performance are concentrated on firms with high exposure to the shock, with peak negative effects of -4.2% on sales and -6.4% on employment.

Overview

Literature and Background

Data

Effects on Trade

Effects on Firm Performance

Summary

Literature and Background

Related Literature

Studies investigate the economic impact of sanctions on

- i the **sanctioned** country, e.g. Ahn and Ludema (2020), Haidar (2017), Hinz and Monastyrenko (2022), Kim et al. (2021), and Lee (2018)
- ii the **sanctioning** country, e.g. Besedeš et al. (2021, 2022), Crozet and Hinz (2020), Crozet et al. (2021), Gullstrand (2020), and Jäkel et al. (2024)
 - Intensive vs extensive margin of trade
 - Indirect effects on non-sanctioned products
 - Heterogeneities across firms and type of sanctions
 - Financial sanctions and firm performance

This paper: novel micro data for Germany to evaluate impact of trade sanctions on export *and* firm performance

- iii third countries, e.g. Chupilkin et al. (2023) and Corsetti et al. (2024)

Background: Sanctions in 2014

2013	2014	
December	February	March
		August
Political tensions increase	Invasion and annexation of Crimea by Russia	Economic sanctions by EU & retaliation by Russia (embargo)
		First “smart” sanctions by EU

Background: Sanctions in 2014

2013	2014	
December	February	March
		August
Political tensions increase	Invasion and annexation of Crimea by Russia	Economic sanctions by EU & retaliation by Russia (embargo)
		First “smart” sanctions by EU

I Direct effects: Trade restrictions

- Sanctioned products: defence and dual use goods, energy equipment, selected capital goods.
- Russian embargo on agricultural and food products.

Background: Sanctions in 2014

2013	2014	
December	February	March
		August
Political tensions increase	Invasion and annexation of Crimea by Russia	Economic sanctions by EU & retaliation by Russia (embargo)
		First “smart” sanctions by EU

- I Direct effects: Trade restrictions
 - Sanctioned products: defence and dual use goods, energy equipment, selected capital goods.
 - Russian embargo on agricultural and food products.
- II Indirect effects: Uncertainty, rise in information costs, impact of financial sanctions

Data



- Novel customs dataset for German foreign trade in goods provided by the Federal Statistical Office.
- Monthly data at the level of the firm on the direction of trade, the product category (8-digit code), the partner country, as well as the value and quantity of the shipment.
- Yearly data on firm characteristics and outcomes (e.g. sales, employment).

Effects on Trade

Empirical Strategy: Effects on Trade

Difference-in-differences regressions at the firm(-product)-destination level based on monthly/half-yearly data from 2013-2015:

$$\begin{aligned}\Delta \ln Y_{f(p)dt} = & \beta_1(\text{Dec}'13\text{-Jul}'14 \times \text{Russia}) + \\ & \beta_2(\text{Post-Aug}'14 \times \text{Russia}) + \\ & \delta_{f(p)t} + \delta_{f(p)d} + X_{dt} + \epsilon_{f(p)dt}\end{aligned}$$

- $Y_{f(p)dt}$: export outcome, i.e. value in euros, quantity in kg, price (unit values), number of products exported, export status
- Dummy variable = 1 for t December 2013 - July 2014 ($\text{Dec.}'13$) and t after July 2014 ($\text{Jul}'14$)
- Fixed effects (FE): $\delta_{f(p)d}$, $\delta_{f(p)t}$
- X_{dt} : Additional control variables for macro-developments in export markets

Regression results: Effects on Trade

Level of analysis	Extensive margin details		Intensive margin details	
	Firm-destination (FD)		FD	FPD
Dep. variable	Export	$\Delta \ln(\# \text{products})$	$\Delta \ln(\text{value})$	$\Delta \ln(\text{value})$
Dec.'13 $\times$ Russia	-0.067*** (0.004)	-0.020*** (0.006)	-0.075*** (0.014)	-0.033*** (0.016)
Aug.'14 $\times$ Russia	-0.126*** (0.003)	-0.049*** (0.006)	-0.169*** (0.013)	-0.134*** (0.018)
Controls	Yes	Yes	Yes	Yes
Fixed effects	FT, FD	FT, FD	FT, FD	FPD, FPT
# observations	2,402,364	5,232,421	5,232,421	27,077,776
# firms	15,192	11,940	11,940	10,251
R^2	0.731	0.225	0.194	0.305

Heterogeneity and Robustness of Effects

- i Direct versus indirect exposure [details](#)
 - Exports of directly exposed firms decrease stronger only after trade restrictions were imposed compared to indirectly exposed firms.
- ii Accounting for shifts in international competitiveness [details](#)
 - Controlling for inward multilateral resistance (MRT) of destination countries.
- iii Different comparison groups [fc](#) [fpc](#)
 - Drop in exports stronger compared to other sanctioning countries.
 - Competition vs. “close allies”
- iv Heterogeneity of indirect effect across products
 - Exports drop for all product groups but energy and agriculture. [details](#)
 - Exports of “core products” fall more. [details](#)
- v Parallel trends assumption [figures](#)

Effects on Firm Performance

Empirical Strategy: Effects on Firm Performance

Event study design at the firm level based on yearly data from 2011-2017:

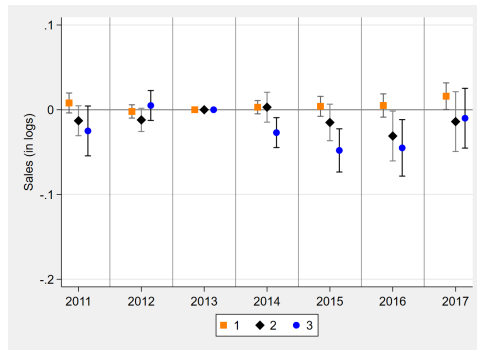
$$\ln Y_{ft} = \sum_{\tau=2011}^{2017} \beta_c^\tau Time_{\tau,t} \times Treated_f^c + \delta_f + \delta_s + \delta_t + \epsilon_{ft},$$

- $\ln Y_{ft}$: Yearly measure of firm performance
- $Treated_f^c$: Dummy variable = 1 if a firm exports to Russia in 2013
- $Time_{t,\tau}$: Dummy variable = 1 τ periods before/after the shock
- Fixed effects (FE): Firm, sector, year
- Estimation based on around 9,000 firms
- Differentiate by c , which is a category based on (i) exposure to the Russian market, or (ii) exposure to the sanctions

Effects on Firm Performance I

By export dependence to Russia:

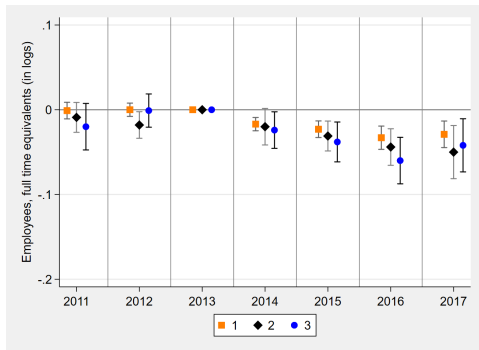
- Category 1: Russia accounts for $> 0\%$ but $\leq 2\%$ of a firm's total sales
- Category 2: $> 2\%$ but $\leq 5\%$
- Category 3: $> 5\%$
- Control group: Other exporters



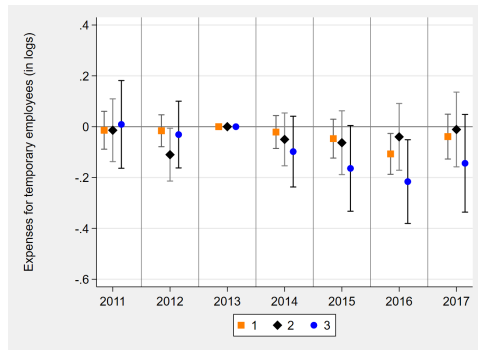
Effect on total sales

Effects on Firm Performance II

By export dependence on Russia:



Effect on employment (FTE)

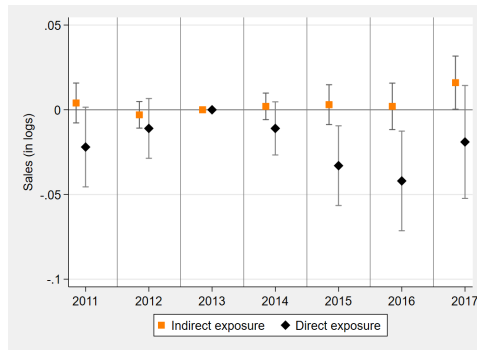


Effect on temporary work

Effects on Firm Performance III

By exposure to sanctions:

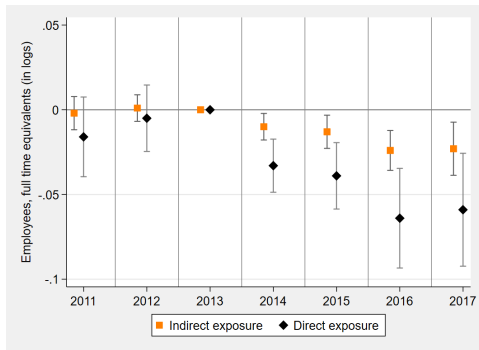
- Direct exposure: Firm exports at least one product to Russia in 2013 that is subject to sanctions from August 2014 onward.
- Indirect exposure: Firm exports products not subject to sanctions to Russia in 2013.
- Control group: Other exporters



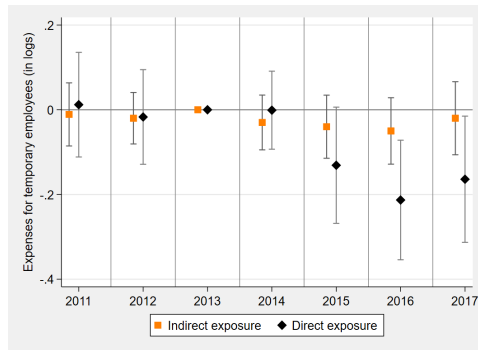
Effect on total sales

Effects on Firm Performance IV

By exposure to sanctions:



Effect on employment (FTE)



Effect on temporary work

Summary

Summary

- We use a novel dataset on German firms to investigate the effect of the 2014 Russia sanctions on
 - firm exports using monthly customs data,
 - firm performance using annual data.
- As a response to the sanctions, firms reduced exports to Russia at the extensive and intensive margin, also of non-sanctioned products (indirect effect of sanctions).
- Sanctions led to reductions in employment and sales, but effects were concentrated on few firms highly exposed to the shock.
- The cost of sanctions is heterogeneous across firms but overall modest.

Thank you!

Saskia Meuchelböck

Aarhus University | Kiel Institute for the World Economy

saskia.meuchelboeck@ifw-kiel.de

References i

-  Ahn, D. P., & Ludema, R. D. (2020). The sword and the shield: The economics of targeted sanctions. *European Economic Review*, 130, 103587.
-  Besedeš, T., Goldbach, S., & Nitsch, V. (2021). Cheap talk? financial sanctions and non-financial firms. *European Economic Review*, 134, 103688.
-  Besedeš, T., Goldbach, S., & Nitsch, V. (2022). *Smart or smash? the effect of financial sanctions on trade in goods and services* (tech. rep.). Bundesbank Discussion Paper.
-  Chupilkin, M., Javorcik, B., & Plekhanov, A. (2023). The eurasian roundabout: Trade flows into russia through the caucasus and central asia.
-  Corsetti, G., Demir, B., & Javorcik, B. (2024). Trading around geopolitics.
-  Crozet, M., & Hinz, J. (2020). Friendly fire: The trade impact of the Russia sanctions and counter-sanctions. *Economic Policy*, 35(101), 97–146.
-  Crozet, M., Hinz, J., Stammann, A., & Wanner, J. (2021). Worth the pain? Firms' exporting behaviour to countries under sanctions. *European Economic Review*, 134, 103683.

References ii

-  Felbermayr, G., Kirilakha, A., Syropoulos, C., Yalcin, E., & Yotov, Y. V. (2020). The global sanctions data base. *European Economic Review*, 129, 103561.
-  Gullstrand, J. (2020). What goes around comes around: The effects of sanctions on Swedish firms in the wake of the Ukraine crisis. *World Economy*, 9(43), 2315–2342.
-  Haidar, J. I. (2017). Sanctions and export deflection: Evidence from Iran. *Economic Policy*, 90(32), 319–355.
-  Hinz, J., & Monastyrenko, E. (2022). Bearing the cost of politics: Consumer prices and welfare in Russia. *Journal of International Economics*, 137, 103581.
-  Hufbauer, G., Schott, J., & Elliott, K. (2009). *Economic sanctions reconsidered, 3rd edition*. Peterson Institute for International Economics.
-  Jäkel, I. C., Østervig, S., & Yalcin, E. (2024). The effects of heterogeneous sanctions on exporting firms: Evidence from denmark. *Review of International Economics*, 32(1), 161–189.



Kim, J., Kim, K., Park, S., & Sun, C. (2021). The Economic Costs of Trade Sanctions: Evidence from North Korea.



Lee, Y. S. (2018). International isolation and regional inequality: Evidence from sanctions on North Korea. *Journal of Urban Economics*, (103), 34–51.

Appendix

1. Firm-destination level estimates
2. Firm-product-destination level estimates
3. Firm-product-destination level event study graphs

Firm-Destination Level: Trade Effects by Sanction Status [back](#)

Dep. variable	$\Delta \ln(\text{value})$	$\Delta \ln(\text{quantity})$	$\Delta \ln(\text{uv})$	$\Delta \ln(\# \text{prod.})$
Dec'13 $\times$ Russia	-0.067*** (0.014)	-0.085*** (0.017)	0.019** (0.008)	-0.018*** (0.006)
Dec'13 $\times$ Russia $\times$ Sanction	-0.058 (0.046)	-0.075 (0.055)	0.017 (0.023)	-0.016 (0.021)
Aug'14 $\times$ Russia	-0.154*** (0.014)	-0.170*** (0.016)	0.015** (0.007)	-0.039*** (0.006)
Aug'14 $\times$ Russia $\times$ Sanction	-0.101** (0.042)	-0.135*** (0.050)	0.034* (0.020)	-0.069*** (0.020)
Controls	Yes	Yes	Yes	Yes
δ_{fd}	Yes	Yes	Yes	Yes
δ_{ft}	Yes	Yes	Yes	Yes
# observations	5,232,421	5,232,421	5,232,421	5,232,421
# firms	11,940	11,940	11,940	11,940
R^2	0.194	0.184	0.173	0.225

Firm-Destination Level: Accounting for Inward Multilateral Resistance

[back](#)

	(1)	(2)	(3)	(4)
Dependent variable	$\Delta \ln(\text{value})$	$\Delta \ln(\text{quantity})$	$\Delta \ln(\text{uv})$	$\Delta \ln(\# \text{products})$
Dec'13 $\times$ Russia	-0.063*** (0.014)	-0.082*** (0.016)	0.019*** (0.007)	-0.017*** (0.006)
Aug'14 $\times$ Russia	-0.152*** (0.013)	-0.170*** (0.016)	0.018** (0.007)	-0.044*** (0.006)
Controls	Yes	Yes	Yes	Yes
δ_{fd}	Yes	Yes	Yes	Yes
δ_{ft}	Yes	Yes	Yes	Yes
# observations	5,232,421	5,232,421	5,232,421	5,232,421
# firms	11,940	11,940	11,940	11,940
R^2	0.194	0.184	0.173	0.225

Firm-Destination Level: Effects on the Extensive Margin [back](#)

	(1)	(2)	(3)	(4)
Dependent variable	Export	Entry	Exit	Frequency
Dec'13 $\times$ Russia	-0.067*** (0.004)	-0.083*** (0.008)	0.028*** (0.003)	-0.101*** (0.008)
Aug'14 $\times$ Russia	-0.126*** (0.003)	-0.118*** (0.006)	0.054*** (0.003)	-0.140*** (0.008)
Controls	Yes	Yes	Yes	Yes
δ_{fd}	Yes	Yes	Yes	Yes
δ_{ft}	Yes	Yes	Yes	Yes
# observations	2,402,364	1,003,287	1,550,797	1,427,574
# firms	15,192	14,840	14,473	13,750
R^2	0.731	0.305	0.494	0.943

Firm-Destination Level: Effects on Exports [back](#)

	(1)	(2)	(3)	(4)
Dependent variable	$\Delta \ln(\text{value})$	$\Delta \ln(\text{quantity})$	$\Delta \ln(\text{uv})$	$\Delta \ln(\# \text{products})$
Dec'13 $\times$ Russia	-0.075*** (0.014)	-0.096*** (0.016)	0.021*** (0.007)	-0.020*** (0.006)
Aug'14 $\times$ Russia	-0.169*** (0.013)	-0.190*** (0.016)	0.020*** (0.007)	-0.049*** (0.006)
Controls	Yes	Yes	Yes	Yes
δ_{fd}	Yes	Yes	Yes	Yes
δ_{ft}	Yes	Yes	Yes	Yes
# observations	5,232,421	5,232,421	5,232,421	5,232,421
# firms	11,940	11,940	11,940	11,940
R^2	0.194	0.184	0.173	0.225

Firm-Product-Destination Level: Effects on Exports [back](#)

Dependent variable	$\Delta \ln(\text{value})$	$\Delta \ln(\text{quant.})$	$\Delta \ln(\text{uv})$	$\Delta \ln(\text{value})$	$\Delta \ln(\text{quant.})$	$\Delta \ln(\text{uv})$
Dec'13 $\times$ Russia	-0.049*** (0.013)	-0.045*** (0.013)	-0.005 (0.006)	-0.033** (0.016)	-0.021 (0.015)	-0.012* (0.006)
Aug'14 $\times$ Russia	-0.129*** (0.015)	-0.132*** (0.015)	0.003 (0.005)	-0.134*** (0.018)	-0.137*** (0.018)	0.003 (0.006)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
δ_{fd}	Yes	Yes	Yes			
δ_{pt}	Yes	Yes	Yes			
δ_{fpd}				Yes	Yes	Yes
δ_{fpt}				Yes	Yes	Yes
# observations	29,650,254	29,650,254	29,650,254	27,077,776	27,077,776	27,077,776
# firms	13,503	13,503	13,503	10,251	10,251	10,251
R^2	0.0515	0.0494	0.0282	0.305	0.301	0.283

Firm-Country-Level: Sub-samples for $\Delta \ln(\text{value})$ [back](#)

	(1)	(2)	(3)
Control group	Sanction countries	No sanction countries	Eastern Europe
Dependent variable	$\Delta \ln(\text{value})$	$\Delta \ln(\text{value})$	$\Delta \ln(\text{value})$
Dec'13 $\times$ Russia	-0.098*** (0.015)	-0.042*** (0.016)	-0.079*** (0.017)
Aug'14 $\times$ Russia	-0.155*** (0.017)	-0.126*** (0.016)	-0.082*** (0.021)
Controls	Yes	Yes	Yes
δ_{fd}	Yes	Yes	Yes
δ_{ft}	Yes	Yes	Yes
# observations	4,070,400	1,233,729	1,667,815
# firms	11,134	8,863	9,491
R^2	0.231	0.241	0.298

Firm-Country Level: Sub-samples for $\Delta \ln(uv)$ [back](#)

	(1)	(2)	(3)
Control group	Sanction countries	No sanction countries	Eastern Europe
Dependent variable	$\Delta \ln(uv)$	$\Delta \ln(uv)$	$\Delta \ln(uv)$
Dec'13 $\times$ Russia	0.031*** (0.008)	0.010 (0.009)	0.018** (0.009)
Aug'14 $\times$ Russia	0.037*** (0.009)	0.009 (0.009)	0.024** (0.012)
Controls	Yes	Yes	Yes
δ_{fd}	Yes	Yes	Yes
δ_{ft}	Yes	Yes	Yes
# observations	4,070,400	1,233,729	1,667,815
# firms	11,134	8,863	9,491
R^2	0.205	0.237	0.277

Firm-Country Level: Sub-samples for $\Delta \ln(\text{quantity})$ [back](#)

	(1)	(2)	(3)
Control group	Sanction countries	No sanction countries	Eastern Europe
Dependent variable	$\Delta \ln(\text{quantity})$	$\Delta \ln(\text{quantity})$	$\Delta \ln(\text{quantity})$
Dec'13 $\times$ Russia	-0.129*** (0.018)	-0.052*** (0.020)	-0.098*** (0.020)
Aug'14 $\times$ Russia	-0.192*** (0.020)	-0.135*** (0.019)	-0.105*** (0.025)
Controls	Yes	Yes	Yes
δ_{fd}	Yes	Yes	Yes
δ_{ft}	Yes	Yes	Yes
# observations	4,070,400	1,233,729	1,667,815
# firms	11,134	8,863	9,491
R^2	0.221	0.234	0.290

Firm-Country Level: Sub-samples for $\Delta \ln(\# \text{products})$ [back](#)

	(1)	(2)	(3)
Control group	Sanction countries	No sanction countries	Eastern Europe
Dependent variable	$\Delta \ln(\# \text{products})$	$\Delta \ln(\# \text{products})$	$\Delta \ln(\# \text{products})$
Dec'13 $\times$ Russia	-0.026*** (0.007)	-0.016** (0.007)	-0.023*** (0.008)
Aug'14 $\times$ Russia	-0.051*** (0.008)	-0.037*** (0.007)	-0.034*** (0.010)
Controls	Yes	Yes	Yes
δ_{fd}	Yes	Yes	Yes
δ_{ft}	Yes	Yes	Yes
# observations	4,070,400	1,233,729	1,667,815
# firms	11,134	8,863	9,491
R^2	0.283	0.247	0.332

Firm-Product-Destination Level: Effects on Exports [back](#)

Dependent variable	$\Delta \ln(\text{value})$	$\Delta \ln(\text{quant.})$	$\Delta \ln(\text{uv})$	$\Delta \ln(\text{value})$	$\Delta \ln(\text{quant.})$	$\Delta \ln(\text{uv})$
Dec'13 $\times$ Russia	-0.049*** (0.013)	-0.045*** (0.013)	-0.005 (0.006)	-0.033** (0.016)	-0.021 (0.015)	-0.012* (0.006)
Aug'14 $\times$ Russia	-0.129*** (0.015)	-0.132*** (0.015)	0.003 (0.005)	-0.134*** (0.018)	-0.137*** (0.018)	0.003 (0.006)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
δ_{fd}	Yes	Yes	Yes			
δ_{pt}	Yes	Yes	Yes			
δ_{fpd}				Yes	Yes	Yes
δ_{fpt}				Yes	Yes	Yes
# observations	29,650,254	29,650,254	29,650,254	27,077,776	27,077,776	27,077,776
# firms	13,503	13,503	13,503	10,251	10,251	10,251
R^2	0.0515	0.0494	0.0282	0.305	0.301	0.283

Firm-Product-Country Level: Sub-samples for $\Delta \ln(\text{value})$

[back](#)

	(1)	(2)	(3)
Control group	Sanction countries	No sanction countries	Eastern Europe
Dependent variable	$\Delta \ln(\text{value})$	$\Delta \ln(\text{value})$	$\Delta \ln(\text{value})$
Dec'13 $\times$ Russia	-0.051*** (0.019)	0.009 (0.015)	-0.032 (0.024)
Aug'14 $\times$ Russia	-0.123*** (0.021)	-0.093*** (0.016)	-0.084*** (0.027)
Controls	Yes	Yes	Yes
δ_{fpd}	Yes	Yes	Yes
δ_{fpt}	Yes	Yes	Yes
# observations	22,693,699	4,282,720	7,786,943
# firms	9,772	7,162	8,267
R^2	0.339	0.303	0.390

Firm-Product-Destination Level:

Sub-samples for $\Delta \ln(uv)$ [back](#)

	(1)	(2)	(3)
Control group	Sanction countries	No sanction countries	Eastern Europe
Dependent variable	$\Delta \ln(uv)$	$\Delta \ln(uv)$	$\Delta \ln(uv)$
Dec'13 $\times$ Russia	-0.007 (0.007)	-0.010 (0.006)	-0.016** (0.008)
Aug'14 $\times$ Russia	0.031*** (0.007)	-0.013** (0.006)	0.004 (0.008)
Controls	Yes	Yes	Yes
δ_{fpd}	Yes	Yes	Yes
δ_{fpt}	Yes	Yes	Yes
# observations	22,693,699	4,282,720	7,786,943
# firms	9,772	7,162	8,267
R^2	0.307	0.332	0.361

Firm-Product-Destination Level: Sub-samples for $\Delta \ln(\text{quantity})$

[back](#)

	(1)	(2)	(3)
Control group	Sanction countries	No sanction countries	Eastern Europe
Dependent variable	$\Delta \ln(\text{quantity})$	$\Delta \ln(\text{quantity})$	$\Delta \ln(\text{quantity})$
Dec'13 $\times$ Russia	-0.043** (0.019)	0.019 (0.015)	-0.016 (0.024)
Aug'14 $\times$ Russia	-0.153*** (0.021)	-0.081*** (0.016)	-0.088*** (0.028)
Controls	Yes	Yes	Yes
δ_{fpd}	Yes	Yes	Yes
δ_{fpt}	Yes	Yes	Yes
# observations	22,693,699	4,282,720	7,786,943
# firms	9,772	7,162	8,267
R^2	0.335	0.302	0.387

Firm-Product-Destination Level: Product Groups for $\Delta \ln(\text{value})$

[back](#)

	(1)	(2)	(3)	(4)	(5)	(6)
Product group	Agriculture	Intermediate	Investment	Non-durable	Durable	Energy
Dep. variable	$\Delta \ln(\text{value})$	$\Delta \ln(\text{value})$	$\Delta \ln(\text{value})$	$\Delta \ln(\text{value})$	$\Delta \ln(\text{value})$	$\Delta \ln(\text{value})$
Dec'13 $\times$ Russia	0.151 (0.122)	-0.034** (0.014)	-0.043** (0.020)	-0.055 (0.037)	-0.084*** (0.028)	-0.096 (0.091)
Aug'14 $\times$ Russia	-0.066 (0.118)	-0.109*** (0.016)	-0.124*** (0.024)	-0.155*** (0.035)	-0.176*** (0.029)	-0.072 (0.082)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
δ_{fd}	Yes	Yes	Yes	Yes	Yes	Yes
δ_{pt}	Yes	Yes	Yes	Yes	Yes	Yes
# observations	80,297	15,056,955	8,189,860	1,083,869	4,562,208	123,415
# firms	387	9,346	8,859	2,769	5,332	911
R^2	0.128	0.0536	0.0612	0.0803	0.0654	0.123

Firm-Product-Destination Level: Product Groups for $\Delta \ln(uv)$

[back](#)

	(1)	(2)	(3)	(4)	(5)	(6)
Product group	Agriculture	Intermediate	Investment	Non-durable	Durable	Energy
Dep. variable	$\Delta \ln(uv)$	$\Delta \ln(uv)$	$\Delta \ln(uv)$	$\Delta \ln(uv)$	$\Delta \ln(uv)$	$\Delta \ln(uv)$
Dec'13 $\times$ Russia	0.023 (0.054)	-0.016* (0.009)	-0.008 (0.009)	0.004 (0.019)	-0.009 (0.010)	-0.099* (0.055)
Aug'14 $\times$ Russia	0.072 (0.049)	0.005 (0.007)	0.005 (0.009)	0.012 (0.019)	-0.007 (0.011)	-0.003 (0.032)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
δ_{fpd}	Yes	Yes	Yes	Yes	Yes	Yes
δ_{fpt}	Yes	Yes	Yes	Yes	Yes	Yes
# observations	68,465	13,689,949	7,615,982	1,002,959	4,136,583	114,037
# firms	215	7,023	5,883	1,708	3,565	511
R^2	0.368	0.292	0.252	0.290	0.334	0.332

Firm-Product-Destination Level: Product Groups for $\Delta \ln(\text{quantity})$ [back](#)

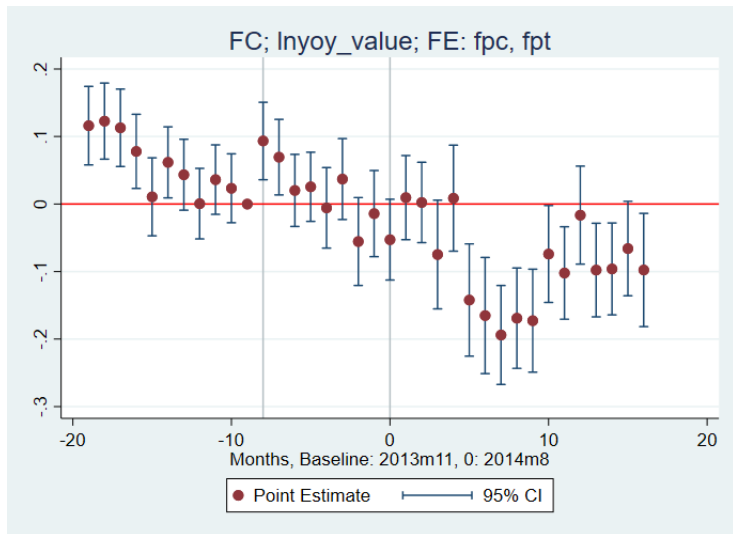
	(1)	(2)	(3)	(4)	(5)	(6)
Product group	Agriculture	Intermediate	Investment	Non-durable	Durable	Energy
Dep. variable	$\Delta \ln(\text{quant.})$	$\Delta \ln(\text{quant.})$	$\Delta \ln(\text{quant.})$	$\Delta \ln(\text{quant.})$	$\Delta \ln(\text{quant.})$	$\Delta \ln(\text{quant.})$
Dec'13 $\times$ Russia	0.140 (0.154)	-0.009 (0.018)	-0.016 (0.026)	-0.056 (0.046)	-0.054* (0.028)	0.134 (0.128)
Aug'14 $\times$ Russia	-0.303** (0.134)	-0.121*** (0.019)	-0.129*** (0.030)	-0.219*** (0.038)	-0.178*** (0.033)	0.047 (0.105)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
δ_{fpd}	Yes	Yes	Yes	Yes	Yes	Yes
δ_{fpt}	Yes	Yes	Yes	Yes	Yes	Yes
# observations	68,465	13,689,949	7,615,982	1,002,959	4,136,583	114,037
# firms	215	7,023	5,883	1,708	3,565	511
R^2	0.313	0.297	0.281	0.312	0.348	0.300

Firm-Product-Destination Level: Product Mix [back](#)

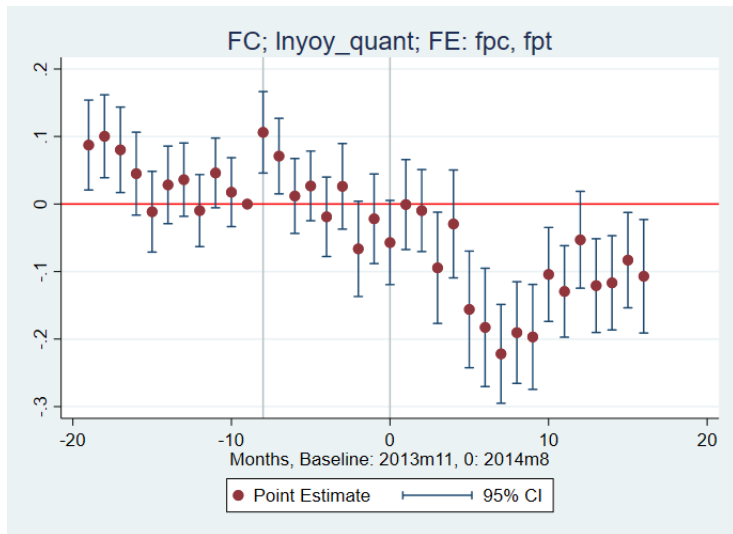
	(1)	(2)	(3)
Dependent variable	$\Delta \ln(\text{value})$	$\Delta \ln(\text{quantity})$	$\Delta \ln(\text{uv})$
Dec'13 $\times$ Russia	-0.041*** (0.014)	-0.035** (0.014)	-0.006 (0.007)
Dec'13 $\times$ Russia $\times$ Core	-0.054*** (0.018)	-0.061*** (0.019)	0.007 (0.009)
Aug'14 $\times$ Russia	-0.124*** (0.017)	-0.124*** (0.017)	0.000 (0.006)
Aug'14 $\times$ Russia $\times$ Core	-0.038** (0.018)	-0.053*** (0.019)	0.015** (0.008)
Controls	Yes	Yes	Yes
δ_{fd}	Yes	Yes	Yes
δ_{pt}	Yes	Yes	Yes
# observations	29,487,188	29,487,188	29,487,188
# firms	13,486	13,486	13,486
R^2	0.050	0.048	0.028

Firm-Product-Destination Level:

Event-study Graphs for $\Delta value$ [back](#)



Firm-Product-Destination Level: Event-study Graphs for $\Delta quantity$

[back](#)

Firm-Product-Destination Level: Event-study Graphs for $\Delta unit$ value [back](#)

