

Friendly fire:  
The trade impact of the Russia sanctions and  
counter-sanctions

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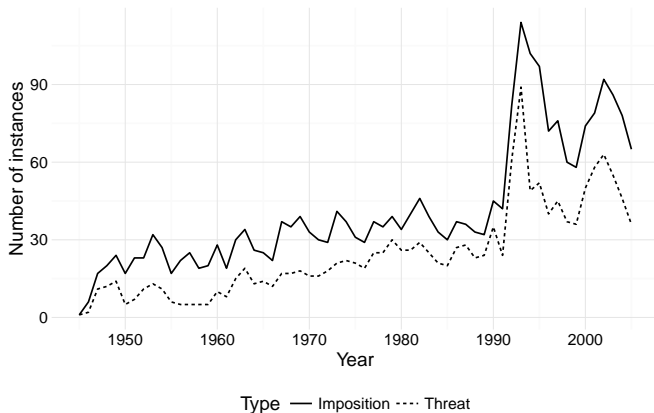
FIW Conference - December 2016

# Sanctions

- Sanctions are instrument of coercion on foreign governments

# Sanctions

Figure: # of sanctions by year of notification - Threat and Imposition of Sanctions (TIES) database



## Sanctions

- Despite the fact that their efficiency is questioned by political scientists, sanctions are popular tools of foreign policy (“sanction paradox”, Drezner, 1999)
- They present some great advantages
  - Non-violent: Can be kept under control / Limited risk of dramatic escalation
  - Flexible: Intensity can be fine-tuned
  - May easily obtain popular support
  - Do not engender direct cost for public finance

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    - Flexible: Intensity can be fine-tuned
    - May easily obtain popular support
    - Do not engender direct cost for public finance
- but they are not free: indirectly costly for sanctioning country's private agents = “Friendly fire”

## What we do

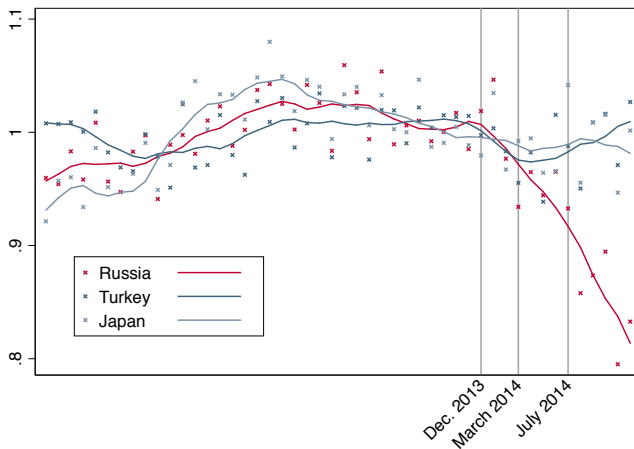
- We study the consequences of the recent diplomatic conflict between Russia and Western countries (37 countries), following Russian involvement in separatist movements in eastern Ukraine and the annexation of Crimea
- We use monthly trade data to quantify the trade loss by Western countries
- We use French firm-level data to investigate the underlying mechanisms through which sanctions have impacted trade flows

## What we do not do

- We focus on trade and do not evaluate the macro-economic and monetary impacts of the sanction, but control for it
- see e.g. Dreger et al. (2015) DIW Discussion paper
- We focus on economic consequences and we do not make a statement on whether sanctions achieved their intended political aims

# Overview of the results

Figure: Number of French exporters (normalized trends)



## Overview of the results

We find a sizable impact of the diplomatic turmoil on trade with Russia

- Export loss = \$114 billion from December '13 to end-'15
  - ▶ \$70 billion borne by Russia (15% of predicted exports)
  - ▶ \$44 billion borne by Western sanctioning countries
    - ▷ \$4.1 billion for embargoed products
    - ▷ \$39.9 billion for non-embargoed products

About 91% of Western loss are the consequences of Western decisions = friendly fire

- We suspect that a major cause of export drop is the disruption of the provision of trade finance services

# Road map

- 1 Literature overview
- 2 The Western sanctions and Russian counter-sanctions
- 3 Impact on country-level trade
- 4 Firm-level response: Evidence from French custom data

## Related Literature

- The Embargo Act (Jefferson 1807-1809)
  - Frankel (1982), Irwin (2005), O'Rourke (2007)
  - Irwin (2005) estimates the trade loss reduced US GDP by 8%
  - O'Rourke (2007)'s analysis is based on commodity prices changes
    - Loss for France: 2 - 4 % of GDP
    - Loss for UK: 1.5 - 2 % of GDP
    - Loss for USA: 3 - 6% of GDP

## Related Literature

- Gravity based estimates
  - Hufbauer and Oegg (2004), Hufbauer et al. (2014), Yang et al. (2004)
  - Hufbauer and Oegg (2004) estimate the impact on the US economy of about 30 sanctions imposed during the 1990's

**Table 4 Mechanical estimate of US merchandise exports lost due to economic sanctions in place in 1999** (millions of dollars)

Target country	Sanction level	Model-predicted exports	Counterfactual exports	Estimated reduction in US exports
Afghanistan	Ext	6.3 <sup>a</sup>	113.0 <sup>a</sup>	-106.7 <sup>a</sup>
Angola	Mod	54.7	51.9	2.8
Azerbaijan	Lim	40.4	31.9	8.5
Cambodia	Lim	31.1	24.6	6.5
China	Mod	6,800.0	6,440.0	360.0
Cuba	Ext	107.0 <sup>a</sup>	1,920.0 <sup>a</sup>	-1,813.0 <sup>a</sup>
Guatemala	Lim	1,920.0	1,520.0	400.0
India	Lim	5,260.0	4,150.0	1,110.0
Indonesia	Lim	1,020.0	803.0	217.0
Iran	Ext	55.8 <sup>a</sup>	1,000.0 <sup>a</sup>	-944.2 <sup>a</sup>
Iraq	Ext	39.9 <sup>a</sup>	717.0 <sup>a</sup>	-677.1 <sup>a</sup>
Libya	Ext	55.1 <sup>a</sup>	991.0 <sup>a</sup>	-935.9 <sup>a</sup>
Myanmar (Burma)	Mod	44.0	41.7	2.3
Niger	Lim	15.6	12.3	3.3
North Korea	Ext	6.4 <sup>a</sup>	115.0 <sup>a</sup>	-108.6 <sup>a</sup>
Pakistan	Mod	848.0	804.0	44.0
Sierra Leone	Lim	21.2	16.7	4.5
Sudan	Ext	4.9 <sup>a</sup>	87.8 <sup>a</sup>	-82.9 <sup>a</sup>
Syria	Mod	222.0	211.0	11.0
Yugoslavia, Federal Republic of	Ext	8.6 <sup>a</sup>	154.0 <sup>a</sup>	-145.4 <sup>a</sup>
<b>Total</b>		<b>16,560.9</b>	<b>19,204.9</b>	<b>-2,644.0</b>
<b>Total excluding nonsignificant coefficients</b>		<b>284.0</b>	<b>5,097.8</b>	<b>-4,813.8</b>

a. These coefficients are statistically significant at the 95 percent confidence level. The coefficients for limited (Lim) and moderate (Mod) sanctions are not statistically significant, but positive in 1999, thus leading to the counterintuitive result that US exports increase to countries under limited and moderate sanctions.

→ Total US export losses in 1999 = 0.4%

## Related Literature

- Fuchs and Klann (2013): Dalai Lama
  - Official Dalai Lama visits lead to a reduction of exports to China by on average 16.9 percent
  - The impact disappears quickly (second year after a meeting took place)
- Etkes and Zimring (2015): Gaza blockade
  - Use household expenditure and firm production data
  - Welfare declined by 14% to 27%, labor productivity by 20%
- Haidar (2014): Iranian firm-level trade data
  - Trade to sanctioning countries dropped by 33% (more for stronger sanctions)
  - Small exporters more impacted
  - Trade diversion effect: Large firms diverted 75% of their exports

## Related Literature

- Michaels and Zhi (2010), Pandya and Venkatesan (2016): Diplomatic conflict and worsening attitude of consumers
  - Examine the consequence of the deterioration US public opinion of France resulting from the diplomatic conflict over Iraq in 2002-2003.
- Heilmann (2016): Boycotts
  - Danish products by Muslim countries (2005/2006) = - 18.8%
  - Japanese products by China (2012) = -2.7%
  - French products by USA (2003) = -1.7%

## Timeline of the Ukrainian crisis

- November 21, 2013: Ukrainian President, Viktor Yanukovic, refuses to sign a association treaty between Ukraine and the EU
- November 21, 2013: Demonstrations in Kiev and the Western part of the country
- February 22, 2014: Yanukovic's government is removed
- February 23, 2014: Demonstrations in the Eastern part of the country
- February 26, 2014: Pro-Russian armed men progressively take over Crimea
- Beginning of March 2014: Escalation of the tension in the Dombass and civil conflict between a separatist force and the Ukrainian government
- March 16, 2014: Referendum in Crimea
- July 17, 2014: Malaysia Airlines flight MH17 is shot down over eastern Ukraine (killing 298)
- September 16, 2014: Minsk protocol

## Timeline of the Ukrainian crisis

- Note that the Ukrainian conflict was (and still is) a serious war, with usage of heavy weapons
- More than 9,000 people were killed



## Timeline of the sanctions

- Spring 2014: Smart sanctions
  - March 2014: USA, Canada and EU introduce first “smart” sanctions against Russia. Followed by Japan, Australia, Norway, Ukraine, Albania, Iceland, Montenegro, etc.
  - April 2014: second wave of “smart” Western sanctions

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  - April 2014: second wave of “smart” Western sanctions
- Summer 2014: Financial sanctions and Russian retaliation
  - July 2014: Third wave of Western sanctions and restrictions on strategic products, extension of the financial sanctions
  - August 2014: Russia bans imports of listed agricultural and agrifood products (definitive list adopted on August 20)



## Western sanctions - EU

- Asset freezes and visa bans for 149 persons and 37 entities
- Ban on imports of goods originating from Crimea or Sevastopol unless they have Ukrainian certificates
- Prohibition to invest in Crimea
- Ban on providing tourism services in Crimea or Sevastopol
- Goods and technology for the transport, telecommunications and energy sectors or the exploration of oil, gas and mineral resources may not be exported to Crimean companies or for use in Crimea and technical assistance is prohibited

## Western sanctions - EU

- Financial sanctions: EU nationals and companies may *no longer buy or sell new bonds, equity or similar financial instruments* with a maturity exceeding 30 days, issued by *five major state-owned Russian banks*, three major Russian energy companies, three major Russian defence companies. Loans with a maturity exceeding 30 days to these entities are banned
- *Embargo* on the import and export of *arms and related material* from/to Russia
- Prohibition on exports of *dual use* goods and technology for military use in Russia or to Russian military end-users
- Exports of certain *energy-related equipment* and technology to Russia are *subject to prior authorisation*

## Russian sanctions

- Russian counter-sanction are plain import embargo on listed agricultural and food products
- Number of Western politicians and activists with travel bans

## Russian sanctions

Code	Simplified description	Code	Simplified description
0201	Meat of bovine animals, fresh or chilled	0202	Meat of bovine animals, frozen
0203	Meat of swine, fresh, chilled or frozen	0207	Meat and offal, fresh, chilled or frozen
0210*	Meat and offal, salted, in brine etc	0301*	Live fish
0302	Fish, fresh or chilled	0303	Fish, frozen
0304	Fish fillets and other fish meat, etc	0305	Fish, dried, salted, smoked or in brine
0306	Crustaceans, etc.	0307	Molluscs, etc.
0308	Other aquatic invertebrates	0401*	Milk and cream
0402*	Milk and cream, concentrated or containing sweetening matter	0403*	Buttermilk, yogurt and other fermented milk and cream
0404*	Whey ; products consisting of natural milk constituents	0405*	Butter and fats derived from milk; dairy spreads
0702	Tomatoes, fresh or chilled	0703*	Onions, leeks etc , fresh or chilled
0704	Cabbages and similar edible brassicas, fresh or chilled	0705	Lettuce and chicory , fresh or chilled
0706	Carrots and similar edible roots, fresh or chilled	0707	Cucumbers and gherkins, fresh or chilled

## Russian sanctions

Code	Simplified description	Code	Simplified description
0708	Leguminous vegetables, fresh or chilled	0709	Other vegetables, fresh or chilled
0710	Vegetables, frozen	0711	Vegetables provisionally preserved
0712*	Dried vegetables, whole, cut, sliced etc	0713*	Dried leguminous vegetables, shelled
0714	Manioc, arrowroot and similar roots	0801	Coconuts, Brazil nuts etc
0802	Other nuts, fresh or dried	0803	Bananas, including plantains, fresh or dried
0804	Dates, figs, pineapples, avocados, guavas, mangoes	0805	Citrus fruit, fresh or dried
0806	Grapes, fresh or dried	0807	Melons and papayas, fresh
0808	Apples, pears and quinces, fresh	0809	Apricots, cherries, peaches, etc fresh
0810	Other fruit, fresh	0811	Fruit and nuts, frozen
0813	Fruit and nuts, provisionally preserved	1601	Sausages and similar products, of meat, meat offal or blood
1901*	Malt extract; food preparations of flour, groats, meal, starch or malt extract, etc.	2106*	Food preparations not elsewhere specified or included

## Country-level analysis

## Country-level analysis - Data

- COMTRADE bilateral monthly trade
- Russia + All sanctioning countries + 40 other largest exporters to Russia
- Exclude goods banned by Western sanctions (very granular)
- Distinguish between embargoed products by the Russian embargo and the non-embargoed ones

## Country-level analysis - Method

- Structural gravity model (Head and Mayer, 2014). Trade between countries  $i$  and  $j$  at time  $t$ :

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

where  $Y_{it} = \sum_j X_{ijt}$  = value of production in  $i$  at time  $t$ ,  $X_{jt} = \sum_i X_{ijt}$  = value of expenditure in  $j$  time  $t$ , and  $\Omega_{it}$  and  $\Phi_{jt}$  respective multilateral resistance terms,  $\phi_{ijt}$  are bilateral trade impediments, including diplomatic sanctions

## Country-level analysis - Method

- Allowing the bilateral trade costs to vary by calendar months and taking logs, we estimate:

$$\ln X_{odkt} = \psi_{okt} + \Theta_{dkt} + \phi_{odkm} + \beta S_{odt} + \epsilon_{odkt}. \quad (1)$$

where  $\psi_{okt}$ ,  $\Theta_{dkt}$  and  $\phi_{odkm}$  are fixed effects capturing all exporter  $\times$  time, importer  $\times$  time and exporter  $\times$  importer  $\times$  calendar month characteristics

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- Sanctions $_{ijt} = 3$  dummies:
  - Dec '13 - Feb '14 = Conflict in Ukraine but no sanctions
  - March '14 - July '14 = Smart sanctions
  - August '14 - December '15 = Financial sanctions + Russian embargo

# Country-level analysis - Benchmark results

Table: Effect on value of trade with Russia by type of product and period

Dependent variable	log(exports) OLS			Exports PPML		
Products	All	Embargoed	Non embargoed	All	Embargoed	Non embargoed
	(1)	(2)	(3)	(4)	(5)	(6)
West → Russia x Dec'13–Feb'14	−0.150 (0.126)	−0.080 (0.178)	−0.207 <sup>c</sup> (0.121)	−0.205 <sup>a</sup> (0.072)	−0.200 <sup>a</sup> (0.070)	−0.173 <sup>b</sup> (0.078)
West → Russia x Mar'14–Jul'14	−0.198 <sup>a</sup> (0.080)	−0.099 (0.129)	−0.212 <sup>b</sup> (0.101)	−0.153 <sup>a</sup> (0.059)	−0.302 <sup>a</sup> (0.065)	−0.121 <sup>c</sup> (0.064)
West → Russia x since Aug'14	−0.350 <sup>a</sup> (0.054)	−2.235 <sup>a</sup> (0.130)	−0.164 <sup>a</sup> (0.057)	−0.284 <sup>a</sup> (0.042)	−2.021 <sup>a</sup> (0.077)	−0.134 <sup>a</sup> (0.044)
Russia → West x Dec'13–Feb'14	0.215 (0.186)	−0.116 (0.241)	0.212 (0.185)	−0.015 (0.088)	−0.168 (0.183)	−0.016 (0.090)
Russia → West x Mar'14–Jul'14	−0.223 <sup>c</sup> (0.126)	−0.060 (0.199)	−0.229 <sup>c</sup> (0.127)	−0.030 (0.063)	0.413 <sup>c</sup> (0.212)	−0.035 (0.064)
Russia → West x since Aug'14	−0.065 (0.089)	−0.273 <sup>b</sup> (0.115)	−0.072 (0.090)	−0.214 <sup>a</sup> (0.054)	0.203 (0.144)	−0.222 <sup>a</sup> (0.054)
Observations	146,837	100,242	146,194	156,148	156,148	156,148
R <sup>2</sup>	0.956	0.931	0.955			

## Country-level analysis - GE counterfactual

- Estimates above are the marginal treatment effects
- i.e. the impact of the sanctions on sanctioning countries' exports to Russia, relative to the ones of non-sanctioning countries
- does not consider the potential impact of the sanctions on the fixed effects

## Country-level analysis - GE counterfactual

- We conduct a counterfactual general equilibrium analysis à la Dekle et al. (2007) and Anderson et al. (2015)
  - re-estimate gravity equation *without* treated observations
- consistent estimation without assumption on sanctions
- PPML estimates
- Using the estimated fixed effects, the predicted *partial equilibrium* flows can be constructed simply as

$$\hat{X}_{odt} = \exp \left( \hat{\psi}_{ot} + \hat{\Theta}_{dt} + \hat{\phi}_{odm} \right).$$

## Country-level analysis - GE counterfactual

Partial equilibrium (pseudo-) production and (pseudo-) expenditure figures can be backed out of the estimated fixed effects as

$$\hat{Y}_{ot}^{\text{PE}} = \sum_{l \in d} \exp \left( \hat{\psi}_{ot} + \hat{\theta}_{lt} + \hat{\phi}_{olm} \right) \quad \text{and analogously}$$

$$\hat{X}_{dt}^{\text{PE}} = \sum_{l \in o} \exp \left( \hat{\psi}_{lt} + \hat{\theta}_{dt} + \hat{\phi}_{ldm} \right),$$

where  $PE$  denotes partial equilibrium, while inward and outward multilateral resistance terms can be constructed as

$$\hat{\Omega}_{ot}^{\text{PE}} = \sum_{l \in d} \exp \left( \hat{\theta}_{lt} + \hat{\phi}_{olm} \right) \quad \text{and}$$

$$\hat{\Phi}_{dt}^{\text{PE}} = \sum_{l \in o} \exp \left( \hat{\psi}_{lt} + \hat{\phi}_{ldm} \right).$$

## Country-level analysis - GE counterfactual

- The conditional general equilibrium impact (= the change in trade flows due to the sanctions-induced change in multilateral resistance terms) is obtained by recomputing the multilateral resistance terms
- This is done via a contraction mapping algorithm, i.e. iteratively solving the following system of matrix equations

$$\hat{\Omega}_t = \hat{\phi}_m \left( \hat{X}_t \otimes \hat{\Phi}_t^{-1} \right); \hat{\Phi}_t = \hat{\phi}_m^T \left( \hat{Y}_t \otimes \hat{\Omega}_t^{-1} \right),$$

- where  $\hat{\Omega}_t$  and  $\hat{\Phi}_t$  are vectors of outward and inward multilateral resistances at time  $t$  and  $\hat{\phi}_m$  the trade cost matrix for calendar month  $m$ . The conditional general equilibrium counterfactual trade flows can then be computed as

$$\hat{X}_{odt}^{CE} = \frac{\hat{Y}_{ot}^{PE}}{\hat{\Omega}_{ot}^{CE}} \cdot \frac{\hat{X}_{dt}^{PE}}{\hat{\Phi}_{dt}^{CE}} \cdot \hat{\phi}_{odm},$$

## Country-level analysis - GE counterfactual

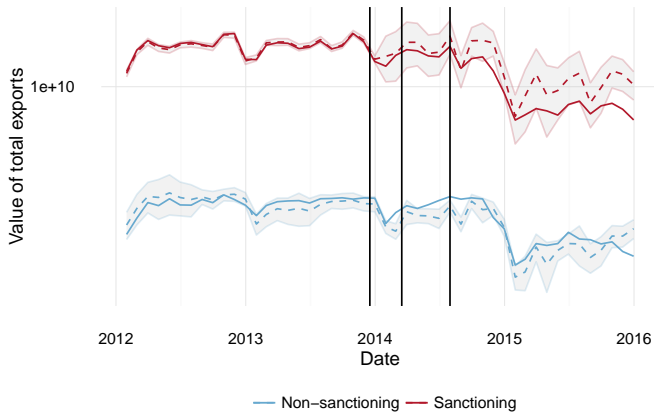
- The *conditional* general equilibrium effect still omits changes in the production and expenditures of exporters and importers due to the sanctions.
- Following Anderson et al. (2015) production and expenditures are adjusted, such that:

$$\hat{Y}_{ot}^{GE} = \hat{Y}_{ot}^{PE} \cdot \left( \frac{\hat{\Psi}_{ot}^{GE}}{\hat{\Psi}_{ot}} \right)^{\frac{1}{1-\sigma}} \quad \text{and} \quad \hat{X}_{dt}^{GE} = \hat{X}_{dt}^{PE} \cdot \left( \frac{\hat{\Psi}_{dt}^{GE}}{\hat{\Psi}_{dt}} \right)^{\frac{1}{1-\sigma}},$$

We set  $\sigma = 5$  and solve iteratively the system to obtain the counterfactual flows between all countries.

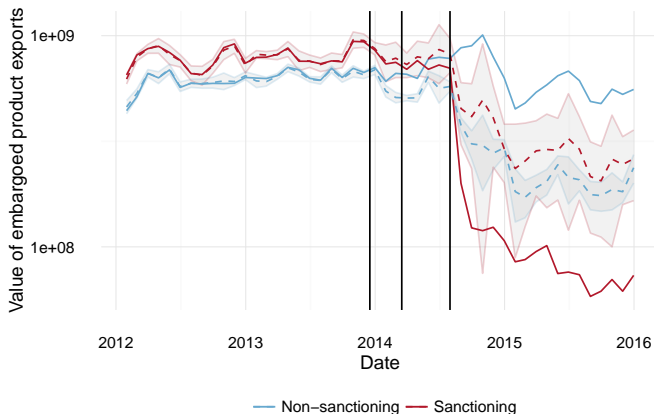
# Predicted and observed export values

Figure: All products



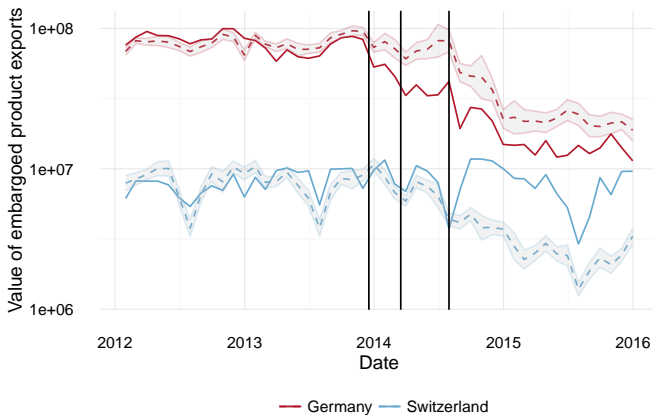
# Predicted and observed export values

Figure: Embargoed products



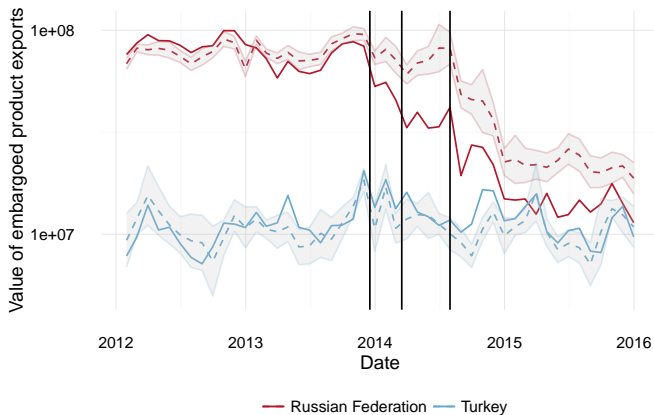
## Robustness tests

Figure: Placebo with treated/non-treated exporter (embargoed products)



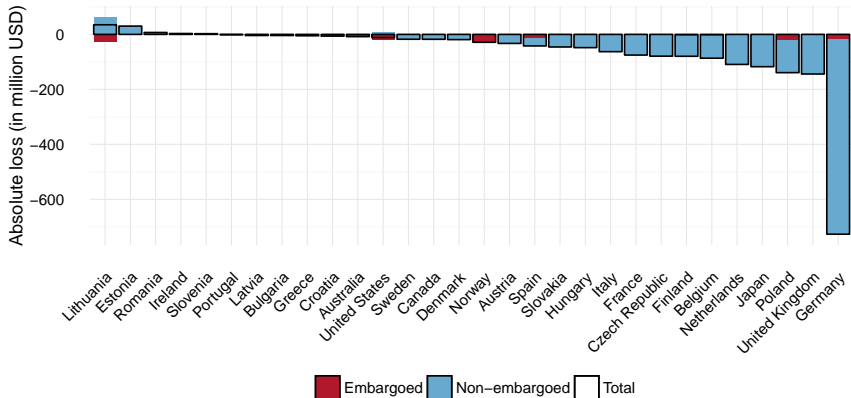
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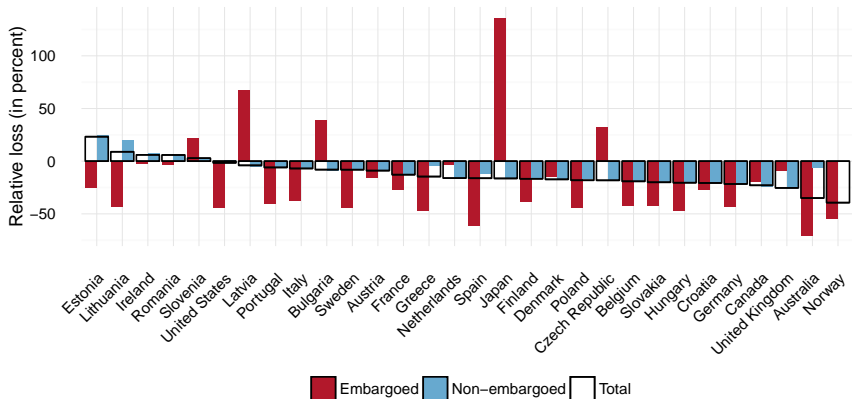
# Quantification of “Lost trade”

Figure: Average Monthly export loss (\$ Millions)



# Quantification of “Lost trade”

Figure: Average monthly export loss (% of exports to Russia)



## Firm-level analysis

## Firm-level analysis - Data

- Monthly French export declarations
- Aggregated at the HS4 level
- January 2012 - December 2014
- Exclude goods banned by Western sanctions (very granular)
- Keep firms that export to Russia at least once between January 2012 and December 2014
- Final database contains 7,455 firms and covers 995 HS4 products
- There are 22,619 firm-HS4 groups over 36 months and 16 countries in our preferred specification
- 3,914,316 observations (1,127,902 non-zero export flows)

## Firm-level analysis - Method

- We estimate the following difference-in-difference specifications:

$$\ln x_{idkt} = \theta_{idk} + \theta_{itk} + \alpha' \hat{\Theta}_{dt} + \sum_{p=1,2,3} \delta_p \text{Event}_p \times (d = \text{Russia}) + \varepsilon_{idkt},$$

$$P[\Lambda_{idkt} = 1] = P[\theta_{idk} + \theta_{itk} + \alpha' \hat{\Theta}_{dt} + \sum_{p=1,2,3} \delta'_p \text{Event}_p \times (d = \text{Russia}) + \varepsilon'_{idkt} > \ln F_{dkt}].$$

## Firm-level analysis - Method

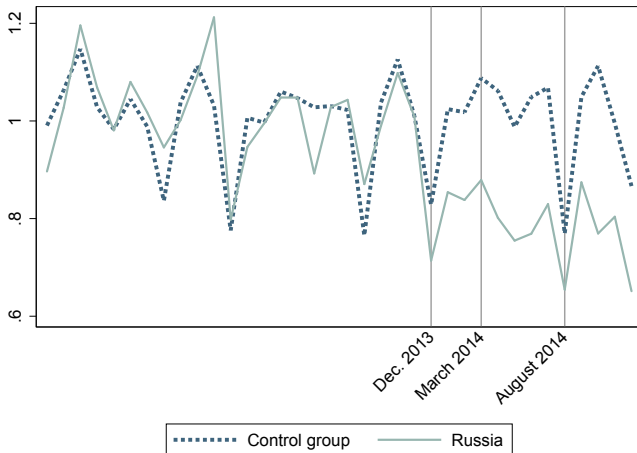
- Diff-in-Diff: We keep firms that exported to Russia at least once during the observation period and compare their trend of exports to Russia to their trend of exports to other countries

## Firm-level analysis - Method

- Diff-in-Diff: We keep firms that exported to Russia at least once during the observation period and compare their trend of exports to Russia to their trend of exports to other countries
- Control group:
  - Exports to all countries are potentially affect by the treatment
    - Positively = Diversion effect (for all countries)
    - Negatively = Crowding out effect (mostly for sanctioning countries)
  - Preferred control group = Sanctioning countries “close” to Russia (Central Eastern EU + Finland + Norway)
- s.e. clustered at Firm  $\times$  HS4 level

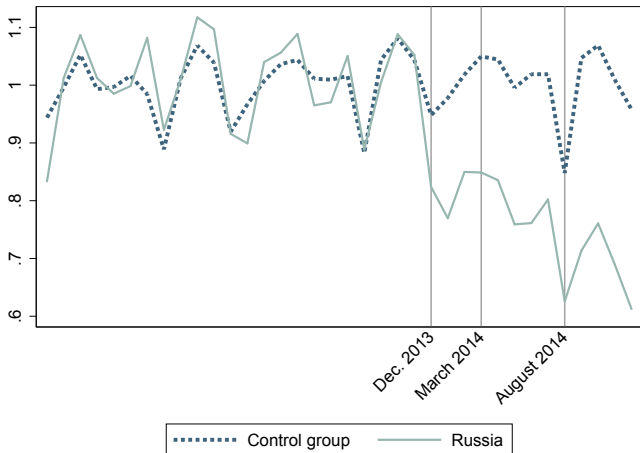
# Quality of the control group

Figure: Export value



# Quality of the control group

Figure: Number of exporters



## Firm-level analysis - Export decision

	(1)	(2)	(3)
HS 4	All	Embargoed	Non-Embargoed
Russia $\times$ Dec'13 - Feb'14	-0.021 <sup>a</sup> (0.002)	-0.042 <sup>b</sup> (0.020)	-0.020 <sup>a</sup> (0.002)
Russia $\times$ Mar'14 - Jul'14	-0.025 <sup>a</sup> (0.002)	-0.096 <sup>a</sup> (0.021)	-0.023 <sup>a</sup> (0.002)
Russia $\times$ Aug'14 - Dec'14	-0.035 <sup>a</sup> (0.002)	-0.285 <sup>a</sup> (0.023)	-0.029 <sup>a</sup> (0.002)
$\hat{\Theta}_{dt}$	0.040 <sup>a</sup> (0.003)	0.067 <sup>a</sup> (0.025)	0.040 <sup>a</sup> (0.003)
Nb. Obs.	3436452	68724	3367728
R <sup>2</sup>	0.595	0.636	0.594
<u>% change in predicted conditional probability of exporting to Russia</u>			
Dec'13 - Feb'14	-8.2	-10.3	-8.1
Mar'14 - Jul'14	-9.4	-23.8	-8.9
Aug'14 - Dec'14	-14.1	-77.3	-11.8

## Firm-level analysis - Export values

HS 4:	(1) All	(2) Embargoed	(3) Non- Embargoed
Russia $\times$ Dec'13 - Feb'14	-0.036 <sup>c</sup> (0.019)	-0.059 (0.095)	-0.036 <sup>c</sup> (0.019)
Russia $\times$ Mar'14 - Jul'14	-0.058 <sup>a</sup> (0.017)	-0.096 (0.100)	-0.057 <sup>a</sup> (0.017)
Russia $\times$ Aug'14 - Dec'14	-0.077 <sup>a</sup> (0.020)	-0.667 <sup>a</sup> (0.173)	-0.070 <sup>a</sup> (0.020)
$A_{d,t}$	0.256 <sup>a</sup> (0.021)	-0.025 (0.114)	0.263 <sup>a</sup> (0.021)
Nb. Obs.	964820	21985	942835
R <sup>2</sup>	0.877	0.895	0.876

## Channels of trade disruption

- We cannot explicitly determine the nature of the trade impediments generated by the diplomatic sanctions
- But we can have indirect evidence by looking at how the impact differs across firms and products
- Because the Russian embargo had a non-ambiguous effect, we focus on not-targeted HS4
- Three possible channels
  - Change in consumers' preferences ( $\simeq$  boycott)
  - Rise of economic, political and legal instability may hindered business with Russia
  - Disruption of the financing of trade

## Trade finance

- Hypothesis:
  - The impact should be larger for products where firms are more likely to rely on trade finance instruments to secure their international payments
  - The impact should be larger for larger shipments (Niepmann and Schmidt-Eisenlohr 2015: the average international transactions with the USA using letter-of-credit is 18 times larger than the transactions that do not rely on bank intermediation)

## Trade finance

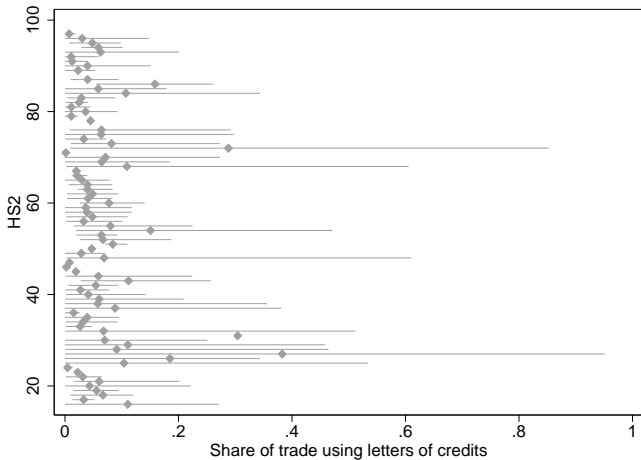
- Hypothesis:
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- Test:
  - Interaction with an index of dependence to trade finance, in the spirit of analyses of external financial dependence based on Rajan and Zingales index (e.g. Manova 2013):
    - Share of trade using letters of credits by HS4
    - Computed from Demir and Javorcik (2014) Turkish data
  - Interaction with a proxy for shipment size

## Trade finance

- Demir and Javorcik (2014) Turkish data
  - Covers the universe of Turkish international trade (tariff line level, 2004-2011)
  - Indicates, for each flow, the financing terms: Open account, cash-in-advance and Letters-of-credit
  - Banu Demir aggregated for us the data in order to provide the average share of trade using letters of credits within each 4-digit HS category over the 2004-2011 period.
- Of course Turkey is not Russia but:
  - The indicator is thus exogenous
  - The countries are comparable in terms of gdp per capita and financial developement (indicators developped by Svirydzenka 2016 ranks Russia in 32nd position, and Turkey 37th)

# Trade Finance

Figure: Share of trade using letters of credits (by HS2) - Turkish trade



## Trade finance

	(1)	(2)	(3)
	$\Lambda = 1$	Value	Price
Russia $\times$ Dec'13 - Feb'14	0.005	0.337	0.027
$\times$ Trade Finance	(0.033)	(0.248)	(0.137)
Russia $\times$ Mar'14 - Jul'14	-0.066 <sup>b</sup>	-0.103	0.052
$\times$ Trade Finance	(0.028)	(0.209)	(0.101)
Russia $\times$ Aug'14 - Dec'14	-0.051 <sup>c</sup>	0.188	0.222 <sup>b</sup>
$\times$ Trade Finance	(0.028)	(0.241)	(0.108)
Russia $\times$ Dec'13 - Feb'14	-0.021 <sup>a</sup>	-0.046 <sup>b</sup>	-0.019 <sup>c</sup>
	(0.002)	(0.019)	(0.010)
Russia $\times$ Mar'14 - Jul'14	-0.021 <sup>a</sup>	-0.053 <sup>a</sup>	-0.030 <sup>a</sup>
	(0.002)	(0.015)	(0.008)
Russia $\times$ Aug'14 - Dec'14	-0.026 <sup>a</sup>	-0.084 <sup>a</sup>	-0.054 <sup>a</sup>
	(0.002)	(0.018)	(0.009)
$A_{d,t}$	0.041 <sup>a</sup>	0.264 <sup>a</sup>	0.037 <sup>a</sup>
	(0.003)	(0.020)	(0.011)
Nb. obs.	3599892	1049526	1049526
R <sup>2</sup>	0.617	0.891	0.926

## Trade finance

	(1) $\Lambda = 1$	(2) Value	(3) Price
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$\times$ Trade Finance	(0.028)	(0.241)	(0.108)

HS4 using more trade finance instruments are more impacted by the sanctions

## Trade finance

- Triple interaction with dependence to trade finance and shipment size
- Now: For each firm-HS4 proxy shipment size with pre-events (strictly positive) average monthly export value

## Trade finance

	(1)	(2)	(3)	(4)	(5)
Dep. Var.: Export probability HS4	All	Q1	Q2	Q3	Q4
Russia ×					
Dec'13 - Feb'14	0.001	-0.000	0.002	0.001	0.000
× Transaction Size	(0.001)	(0.003)	(0.002)	(0.002)	(0.003)
Mar'14 - Jul'14	-0.001	0.002	-0.000	-0.000	-0.004 <sup>c</sup>
× Transaction Size	(0.001)	(0.003)	(0.002)	(0.002)	(0.002)
Aug'14 - Dec'14	-0.004 <sup>a</sup>	-0.005	-0.003	-0.003	-0.006 <sup>b</sup>
× Transaction Size	(0.002)	(0.007)	(0.004)	(0.004)	(0.003)
Dec'13 - Feb'14	-0.021 <sup>a</sup>	-0.011	-0.023 <sup>a</sup>	-0.025 <sup>a</sup>	-0.016 <sup>a</sup>
	(0.002)	(0.007)	(0.004)	(0.004)	(0.006)
Mar'14 - Jul'14	-0.022 <sup>a</sup>	-0.025 <sup>a</sup>	-0.019 <sup>a</sup>	-0.022 <sup>a</sup>	-0.028 <sup>a</sup>
	(0.002)	(0.007)	(0.005)	(0.004)	(0.006)
Aug'14 - Dec'14	-0.028 <sup>a</sup>	-0.030 <sup>a</sup>	-0.028 <sup>a</sup>	-0.028 <sup>a</sup>	-0.027 <sup>a</sup>
	(0.003)	(0.008)	(0.005)	(0.004)	(0.006)
$A_{d,t}$	0.041 <sup>a</sup>	0.021 <sup>c</sup>	0.043 <sup>a</sup>	0.039 <sup>a</sup>	0.053 <sup>a</sup>
	(0.004)	(0.011)	(0.007)	(0.006)	(0.008)
Nb. obs.	3599892	437508	1136880	1363572	661932
R <sup>2</sup>	0.617	0.598	0.633	0.610	0.614

## Trade finance

	(1)	(2)	(3)	(4)	(5)
Dep. Var.: Export probability					
HS4	All	Q1	Q2	Q3	Q4
Russia ×					
Dec'13 - Feb'14	0.001	-0.000	0.002	0.001	0.000
× Transaction Size	(0.001)	(0.003)	(0.002)	(0.002)	(0.003)
Mar'14 - Jul'14	-0.001	0.002	-0.000	-0.000	-0.004 <sup>c</sup>
× Transaction Size	(0.001)	(0.003)	(0.002)	(0.002)	(0.002)
Aug'14 - Dec'14	-0.004 <sup>a</sup>	-0.005	-0.003	-0.003	-0.006 <sup>b</sup>
× Transaction Size	(0.002)	(0.007)	(0.004)	(0.004)	(0.003)

Firms with relatively big shipments are more impacted

... especially in HS4 where usage of trade finance instruments  
is more widespread

## Summary of main findings

- Western countries tried to set up smart sanctions to put the Russian authorities under pressure and limit the impact on their own economies
- But had sizable collateral impact on own exports
- Total loss of exports towards Russia by sanctioning countries = \$44 billions over 2 years
- Loss of exports of products targeted by the Russian embargo represent about 10% of the total
- Even for this products, the military conflict and the Western sanctions explain a substantial proportion of the trade loss
- Detailed analysis indicates that the disruption of the provision of trade finance services contributed greatly to the interruption of export flows

Thank you for your attention!

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## Change in consumers' preferences (boycott)

- Hypothesis:
  - Impact is the strongest for goods with “visible” made-in label
  - = for consumption goods
  - = for consumption goods that are highly-branded (Heilmann, JIE 2016)

## Change in consumers' preferences (boycott)

- Hypothesis:
  - Impact is the strongest for goods with “visible” made-in label
  - = for consumption goods
  - = for consumption goods that are highly-branded (Heilmann, JIE 2016)
- Tests:
  - Interaction with dummy for consumption goods (BEC)
  - Interaction with dummy for consumption goods where there are some producers of luxury goods (Martin and Mayneris, JIE 2015)
  - Interaction with dummy for French luxury firms

# Change in consumers' preferences (boycott)

Interaction term Dep. var	(1)	(2)	(3)	(4)	(5)	(6)
	Cons goods $\Lambda = 1$	Value	Goods w. luxury $\Lambda = 1$	Value	Luxury firms $\Lambda = 1$	Value
Ru. $\times$						
Dec'13 - Feb'14	0.003	0.034	-0.003	-0.017	-0.009	-0.024
$\times$ Interaction	(0.005)	(0.045)	(0.011)	(0.081)	(0.010)	(0.090)
Mar'14 - Jul'14	0.008	-0.021	0.012	0.055	-0.003	-0.037
$\times$ Interaction	(0.005)	(0.041)	(0.012)	(0.088)	(0.010)	(0.076)
Aug'14 - Dec'14	-0.001	-0.070	0.014	0.004	-0.007	0.142c
$\times$ Interaction	(0.005)	(0.047)	(0.013)	(0.094)	(0.011)	(0.076)
Dec'13 - Feb'14	-0.021a	-0.048	-0.017	0.003	-0.017a	-0.005
	(0.003)	(0.029)	(0.010)	(0.071)	(0.004)	(0.038)
Mar'14 - Jul'14	-0.026a	-0.049c	-0.029a	-0.110	-0.018a	-0.058
	(0.003)	(0.026)	(0.011)	(0.081)	(0.004)	(0.038)
Aug'14 - Dec'14	-0.028a	-0.045	-0.035a	-0.112	-0.030a	-0.141a
	(0.003)	(0.030)	(0.006)	(0.085)	(0.005)	(0.046)
$A_{d,t}$	0.040a	0.263a	0.035a	0.284a	0.036a	0.284a
	(0.004)	(0.025)	(0.006)	(0.041)	(0.006)	(0.041)
Nb. Obs.	3703896	1078272	1314900	363459	1314900	363459
R <sup>2</sup>	0.617	0.892	0.607	0.905	0.607	0.905

## Change in consumers' preferences (boycott)

Interaction term Dep. var	(1)	(2)	(3)	(4)	(5)	(6)
	<u>Cons goods</u> $\Lambda = 1$	<u>Value</u>	<u>Goods w. luxury</u> $\Lambda = 1$	<u>Value</u>	<u>Luxury firms</u> $\Lambda = 1$	<u>Value</u>
Ru. $\times$						
Dec'13 - Feb'14	0.003	0.034	-0.003	-0.017	-0.009	-0.024
$\times$ Interaction	(0.005)	(0.045)	(0.011)	(0.081)	(0.010)	(0.090)
Mar'14 - Jul'14	0.008	-0.021	0.012	0.055	-0.003	-0.037
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Aug'14 - Dec'14	-0.001	-0.070	0.014	0.004	-0.007	0.142c
$\times$ Interaction	(0.005)	(0.047)	(0.013)	(0.094)	(0.011)	(0.076)

No evidence in favor of boycott effects

# Country risk

- Hypothesis:
  - Larger and more experienced firms are less affected by political instability (they can afford higher exports cost, they have better ability to deal with complex situations in cross-border relationships, their international transactions are based on larger and more stable networks of customers. . . )
  - Cf. Timoshenko (2015), Berman et al. (2015), Bricongne et al. (2012), Haidar (2014)

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  - Cf. Timoshenko (2015), Berman et al. (2015), Bricongne et al. (2012), Haidar (2014)
- Test:
  - Interaction with firm size variable and Russian experience
  - = total export value (all destinations Jan. 2012 - Nov. 2013)
  - = Share of exports to Russia in total exports (Jan. 2012 - Nov. 2013)

## Country risk

Interaction term Dep. var	(1)	(2)	(3)	(4)	(5)	(6)
	$\Lambda = 1$	Size Value	Price	$\Lambda = 1$	Dependence Value	Price
Ru. $\times$						
Dec'13 - Feb'14	0.002b	-0.009	-0.008	-0.051a	-0.442a	0.022
$\times$ Interaction	(0.001)	(0.011)	(0.007)	(0.007)	(0.085)	(0.048)
Mar'14 - Jul'14	0.001	-0.026b	-0.000	-0.075a	-0.465a	-0.078c
$\times$ Interaction	(0.001)	(0.010)	(0.006)	(0.007)	(0.080)	(0.043)
Aug'14 - Dec'14	0.000	-0.037a	-0.001	-0.106a	-0.627a	-0.166a
$\times$ Interaction	(0.001)	(0.012)	(0.007)	(0.007)	(0.093)	(0.047)
Dec'13 - Feb'14	-0.016a	-0.037	-0.020c	-0.020a	-0.038c	-0.018
	(0.003)	(0.023)	(0.012)	(0.002)	(0.023)	(0.012)
Mar'14 - Jul'14	-0.020a	-0.064a	-0.028b	-0.023a	-0.060a	-0.029b
	(0.004)	(0.021)	(0.011)	(0.002)	(0.021)	(0.011)
Aug'14 - Dec'14	-0.028a	-0.079a	-0.049a	-0.029a	-0.073a	-0.049a
	(0.004)	(0.024)	(0.013)	(0.003)	(0.024)	(0.013)
$A_{d,t}$	0.040a	0.263a	0.038a	0.040a	0.261a	0.038a
	(0.004)	(0.025)	(0.013)	(0.004)	(0.025)	(0.013)
Nb. Obs.	3703896	1078272	1078272	3703896	1078272	1078272
R <sup>2</sup>	0.617	0.892	0.928	0.617	0.892	0.928

## Country risk

Interaction term Dep. var	(1)	(2)	(3)	(4)	(5)	(6)
	Size		Price	Dependence		
	$\Lambda = 1$	Value		$\Lambda = 1$	Value	Price
Ru. $\times$						
Dec'13 - Feb'14	0.002b	-0.009	-0.008	-0.051a	-0.442a	0.022
$\times$ Interaction	(0.001)	(0.011)	(0.007)	(0.007)	(0.085)	(0.048)
Mar'14 - Jul'14	0.001	-0.026b	-0.000	-0.075a	-0.465a	-0.078c
$\times$ Interaction	(0.001)	(0.010)	(0.006)	(0.007)	(0.080)	(0.043)
Aug'14 - Dec'14	0.000	-0.037a	-0.001	-0.106a	-0.627a	-0.166a
$\times$ Interaction	(0.001)	(0.012)	(0.007)	(0.007)	(0.093)	(0.047)

Larger firms are (a bit) less impacted but the Ukrainian conflict  
 But they are more impacted by the sanctions, not less!  
 Consistent with the trade finance channel

Trade diversion

## Trade diversion

- Did French exporters exposed to the Russian conflict deflected their trade to other countries?

# Trade diversion

- Did French exporters exposed to the Russian conflict deflected their trade to other countries?
- We implement a diff-in-diff approach:
  - We focus on two comparable periods: August '13
    - Pre-event = August '13 - Nov '13
    - Event = August '14 - Nov '14
  - We compare exposed firms (= exporting to Russia in pre-event period) to non-exposed ones
  - Matched sample
  - We estimate:

$$Z_{idkt} = \beta[\text{RUexporter}_{ik,t0} \times \text{PostSanctions}_t] + \theta_{idk} + \theta_{dkt} + \varepsilon_{idkt}$$

## Trade diversion - results (1)

Dep. var.	Destinations	Targeted Products		Nb. Obs.	R <sup>2</sup>
		Coef.	s.e.		
$\Lambda = 1$	All	-0.022	(0.026)	33954	0.485
Value	All	0.008	(0.078)	21256	0.945
Price	All	-0.017	(0.025)	21256	0.974
$\Lambda = 1$	Sanctioning	-0.036	(0.028)	25360	0.473
Value	Sanctioning	0.011	(0.097)	17286	0.946
Price	Sanctioning	-0.015	(0.022)	17286	0.974
$\Lambda = 1$	Not Sanctioning	0.008	(0.048)	8594	0.494
Value	Not Sanctioning	-0.003	(0.121)	3970	0.938
Price	Not Sanctioning	-0.026	(0.085)	3970	0.972

## Trade diversion - results (2)

Dep. var.	Destinations	Not Targeted Products		Nb. Obs.	R <sup>2</sup>
		Coef.	s.e.		
$\Lambda = 1$	All	0.024 <sup>a</sup>	(0.008)	769498	0.415
Value	All	-0.005	(0.023)	373888	0.934
Price	All	0.014	(0.014)	373888	0.952
$\Lambda = 1$	Sanctioning	0.019 <sup>b</sup>	(0.009)	530416	0.416
Value	Sanctioning	0.001	(0.025)	294494	0.935
Price	Sanctioning	0.020	(0.015)	294494	0.951
$\Lambda = 1$	Not Sanctioning	0.034 <sup>a</sup>	(0.013)	239082	0.395
Value	Not Sanctioning	-0.022	(0.042)	79394	0.924
Price	Not Sanctioning	-0.006	(0.027)	79394	0.954

## Trade diversion, cont'

- Did French exporters exposed to the Russian lost export sales

## Trade diversion, cont'

- Did French exporters exposed to the Russian lost export sales
- We aggregate all trade at the firm-product-period level (incl. to Russia)
- We estimate:

$$\text{TotalExports}_{ikt} = \beta_2[\text{RUexporter}_{ik,t0} \times \text{PostSanctions}_t] + \theta_{ik} + \theta_{kt} + \varepsilon_{ikt}.$$

## Trade diversion, cont' - Results

Dep. var.	Coef.	s.e.	Nb. Obs.	R <sup>2</sup>	% Exported to Russia
Targeted Products					
Value	-0.278 <sup>a</sup>	(0.112)	5452	0.957	27.89
Quantity	-0.229 <sup>b</sup>	(0.111)	5452	0.962	27.12
Not targeted Products					
Value	-0.131 <sup>a</sup>	(0.028)	113814	0.932	25.26
Quantity	-0.079 <sup>a</sup>	(0.030)	113814	0.946	24.34