Shooting Down Trade: The Impact of Russian Sanctions on Turkish Exports and Exporters

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Motivation

- Economic sanctions have been used as a foreign policy tool to impose costs on the adversaries and induce behavioural changes.
- Sanctions can take many forms:
  - economic and trade sanctions
  - restrictions on bank activities or financial operations
  - travel bans
  - arms embargoes
- Recent examples include sanctions imposed on Iran, North Korea or Russia.

This paper

- **Context**: Russian sanctions on Turkey (Jan 2016 - Nov 2017)
- **Asks**: What is the impact of the unexpected sanctions on Turkish exports and exporters?
- **Data**: Turkish customs and firm data
- **Empirical Approach**:
  - Triple Difference (DDD) estimation strategy at product and firm-level
  - Exploit the natural experiment for identification

Structure of the talk

- Literature
- Background
- Data
- Product-level analysis
- Firm-level analysis
- Conclusion

Literature

- Effectiveness of trade policies such as economic sanctions, embargoes and boycotts (Eaton and Engers, 1999; Kaempfer and Lowenberg, 1988; Hufbauer et al., 2008; Bapat et al.,2013; Michaels and Zhi, 2010)
- Recent literature using firm-level data to study the impact of sanctions on Russia (Crozet and Hinz, 2020; Miromanova, WP) or Iran (Haidar, 2017).

What makes this context special?

- An embargo imposed unexpectedly and suddenly
  - as a result of a unexpected military conflict
  - announced in one week and imposed 5 weeks after the event
- imposed by a single country (Russia): many outside options for Turkey
- to a large exporting partner
- no reciprocity: trade effects arising only from Russian sanctions

Background: Russian jet crisis

The Guardian

Why did it take Turkey just 17 seconds to shoot down Russian jet?

Mark Galeotti

Ankara has delivered an incendiary message to Moscow, and while there may be too much at stake for the conflict to spill out of control it also won't go away

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Turkey downing of Russia jet 'stab in the back' - Putin

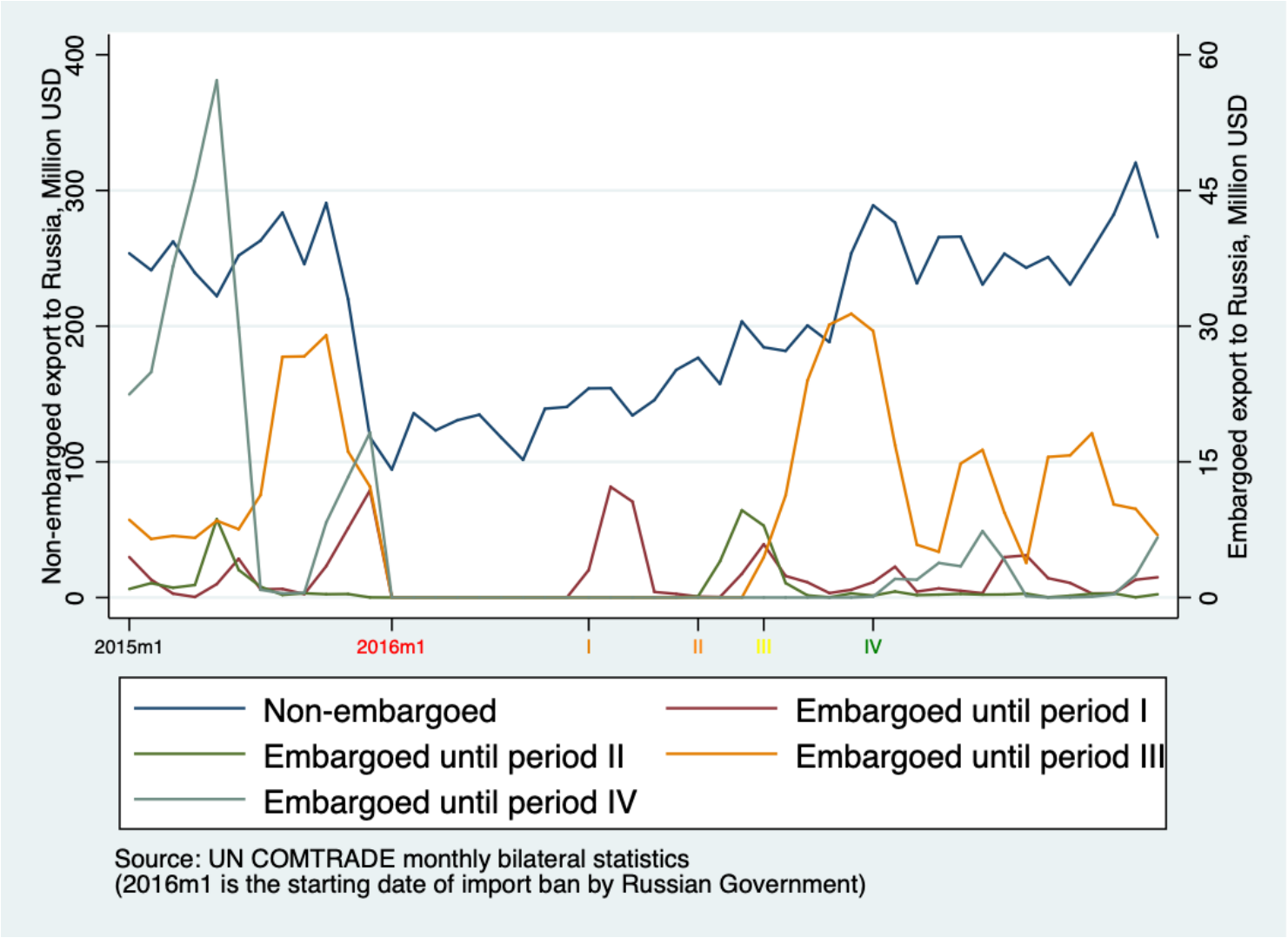
Background: Russian embargo on Turkish exports

- 24/11/2015: Turkey shoots down a Russian aircraft
- 24/11/2015: President Putin calls it a "stab in the back"
- 26/11/2015: PM Medvedev announces a broad set of economic sanctions against Turkey as a retaliation
- 28/11/2015: President Putin approves a presidential decree that provides the legal ground for imposing economic embargos on Turkish goods and services
- 30/11/2015: Sanctions are announced
- 01/01/2016: Sanctions begin

Background: Sanctions

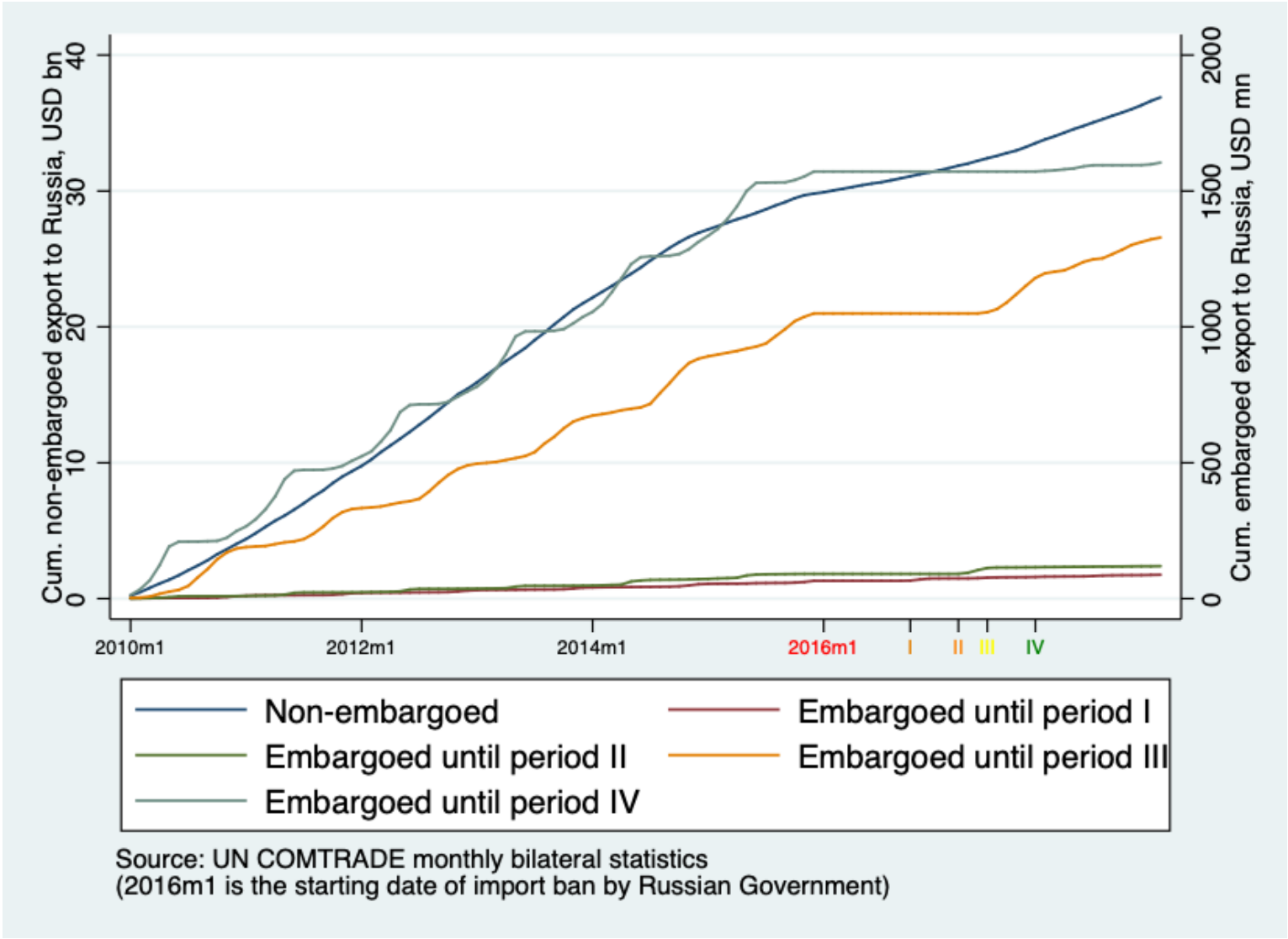
- Banning of sale of charter holidays for Russians to Turkey
- Reduction of construction projects with Turkish firms
- Visa-free travel agreement suspended
- Embargo on the importation of 17 agricultural products from Turkey (e.g. vegetables, fruits, salt and poultry).
- Embargo on these products were gradually removed:
  - Period 1: 10/16 where 5 products are removed
  - Period 2: 03/17 where 5 products are removed
  - Period 3: 06/17 where 6 products are removed
  - Period 4: 11/17 where the last product (tomato) is removed

Raw data:Turkish export flows to Russia



Source: UN COMTRADE monthly bilateral statistics
(2016m1 is the starting date of import ban by Russian Government)

Raw data:Turkish (cumulative) exports to Russia



Source: UN COMTRADE monthly bilateral statistics
(2016m1 is the starting date of import ban by Russian Government)

Data: Product-level analysis

UN COMTRADE

- Monthly export data for Turkey
- 6-digit HS classification
- 232 partner countries and 5306 products
- We eliminate all origin-destination-product triads for which we do not observe any trade over the sample period

Sample: $>$ 4 million observations

Data: Firm-level analysis

Customs data (Dış Ticaret İstatistikleri):

- Transaction-level customs data for the complete universe of exporting firms
- Monthly exports at firm - HS-8 product - destination level

Annual Business Registers (Yıllık Sanayi ve Hizmet İstat.):

- Data on number of employees, gross fixed capital formation, production, wages and more

Sample: Firm-level data for the universe of exporting firms (perfect match)

Empirical Analysis

- **Product-level analysis**: the impact of the embargo varies conditional on whether the product *faces embargo* and is *traded with Russia*
- **Firm-level analysis**: the impact of the embargo varies conditional on whether the firm *trades in embargoed goods* and *with Russia*.

	Russia	other countries
Embargoed product	Direct effect	Substitution effect
Non-embargoed product	Spillover effect	None

Empirical Strategy: Example

- A Turkish firm exports poultry to Russia

Embargo

- Poultry (embargoed product) from Turkey are restricted: Direct effect
- Firm diverts its poultry exports to another country: Substitution effect
- Firm starts exporting another (non-embargoed product) to Russia: Positive spillover effect
- Firm cuts ties with Russia and stops exporting even products that are not sanctioneda: Negative spillover effect

Empirical Strategy: Product-Level Analysis

$$ln(Trade)_{pkt} = \beta Direct_{pkt} + \gamma Substitution_{pkt} + \mu Spillover_{pkt} \\ \eta_{pk} + \lambda_{py} + \gamma_{ky} + \alpha m_{pt} + \vartheta_t + \varepsilon_{pkt} \quad (1)$$

1. Direct effect: expect $\beta < 0$

   $Direct_{pkt} = D_{p=embargoed} \times D_{k=Russia} \times D_{t=post-embargo}$

2. Substitution effect: expect $\gamma > 0$

   $Substitution_{pkt} = D_{p=embargoed} \times D_{k\neq Russia} \times D_{t=post-embargo}$

3. Spillover effect: expect $\mu < 0$

   $Spillover_{pkt} = D_{p\neq embargoed} \times D_{k=Russia} \times D_{t=post-embargo}$

Results: Product-Level Analysis

Table: Total Trade: Specification Choice

VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) PPML	(5) PPML	(6) PPML
Direct	-13.789***	-13.419***	-13.608***	-13.811***	-13.747***	-14.957***
	(0.361)	(0.365)	(0.458)	(0.100)	(0.182)	(0.366)
Substitution	0.065	0.059	-0.075	0.054	0.054	-0.327
	(0.053)	(0.052)	(0.164)	(0.147)	(0.133)	(0.345)
Spillover	-0.396***	-0.124***	-0.127***	-0.286***	-0.269*	-0.250*
	(0.018)	(0.029)	(0.029)	(0.057)	(0.146)	(0.151)
Constant	9.840***	9.731***	9.736***	14.402***	14.321***	14.325***
	(0.003)	(0.005)	(0.005)	(0.022)	(0.021)	(0.018)
Observations	4,142,580	4,142,565	4,142,032	4,142,580	4,142,565	4,142,032
R^2	0.711	0.713	0.717			
Psuedo R^2				0.908	0.912	0.917
Period FE	Yes	Yes	Yes	Yes	Yes	Yes
Partner-product FE	Yes	Yes	Yes	Yes	Yes	Yes
Partner-year FE	No	Yes	Yes	No	Yes	Yes
Product-year FE	No	No	Yes	No	No	Yes

*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors clustered at HS-6 product-level in parentheses.

All estimates also include total product import of each partner.

What are these magnitudes?

1. Direct effect:
   - Exports of sanctioned product decreased by **99.9%** $(100 \times (e^{14.957} - 1))$
   - A decline in trade around **USD1.1 billion** over 22 months
2. Spillover effect:
   - Non-sanctioned exports to Russia dropped by **28.4%**
   - A decline in trade around **USD2.7 billion** over 22 months
3. Total trade lost:
   - 1.1 (29%) + 2.7 (71%) = **USD3.8 billion**

Firm-Level Analysis: Micro-evidence

- Following the embargo: Firms can stay, exit or enter the market for the embargoed goods
- Trade can be affected at two margins:
  - **extensive margin**: Number of firms can change
  - **intensive margin**: Traded volumes can change

Do firms exit the markets of the embargoed products?

Firms may decide to exit the market following the embargo as exporting may be less attractive.

$$exit_{fk} = \underbrace{\beta D_{k=S}}_{embargo} + \vartheta_h + \eta_f + \varepsilon_{fk} \tag{2}$$

where:

- *exit* is a dummy variable: taking value 1 if a firm exports product k in 2015 and leaves that market in 2016.
- $D_{k=S}$: embargoed products
- ϑ_h: HS-2 level fixed-effect
- η_f: firm fixed-effect

Do firms exit the markets for the embargoed products?

Table: Exit decision

	(1) exit	(2) exit	(3) exit
Embargo	-0.001	0.017**	-0.007
	(0.005)	(0.008)	(0.007)
Constant	0.051***	0.051***	0.050***
	(0.002)	(0.000)	(0.000)
Observations	9629852	9629852	9625739
HS-2 FE	No	Yes	Yes
Firm FE	No	No	Yes

*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors clustered by HS-2 in parentheses.

Do surviving firms switch markets?

Firms may "survive" by switching markets (i.e., diverting trade from Russia to other countries).

$$switching_{fk} = \underbrace{\beta D_{k=S}}_{embargo} + \vartheta_h + \eta_f + \varepsilon_{fk} \tag{3}$$

where:

- $switching_{fk}$ is a dummy variable: 1 if exporter f exported product k before the embargo and still continues during and after the embargo to Russia or to another market.
- $D_{k=S}$: embargoed products
- ϑ_h: HS-2 level fixed-effect
- η_f: firm fixed-effect

Do surviving firms switch markets?

Table: Switching decision

	(1) S to S	(2) S to NS
Embargo	-0.150**	0.170**
	(0.067)	(0.075)
Constant	0.615***	0.119***
	(0.008)	(0.007)
Observations	12402	12402
HS-2 FE	Yes	Yes
Firm FE	Yes	Yes

*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors clustered by HS-6 in parentheses.

Trade volumes: Intensive margin

- Beyond the number of firms operating in the market, the export volumes and their direction can also change.
- To capture the intensive margin, we restrict the sample to firms that are present in the market before and after the embargo.

Empirical Strategy: Intensive Margin

$$ln(Trade)_{fpkt} = \beta Direct_{pkt} + \gamma Substitution_{pkt} + \mu Spillover_{pkt} \\ \eta_{fpk} + \vartheta_t + \varepsilon_{fpkt} \quad (4)$$

1. Direct effect: expect $\beta < 0$

   $Direct_{pkt} = D_{p=embargoed} \times D_{k=Russia} \times D_{t=post-embargo}$

2. Substitution effect: expect $\gamma > 0$

   $Substitution_{pkt} = D_{p=embargoed} \times D_{k\neq Russia} \times D_{t=post-embargo}$

3. Spillover effect: expect $\mu < 0$

   $Spillover_{pkt} = D_{p\neq embargoed} \times D_{k=Russia} \times D_{t=post-embargo}$

Trade volumes: Intensive margin

Table: Log of firm exports

	(1) OLS	(2) OLS	(3) PPML	(4) PPML
Direct	-11.403***	-11.396***	-15.206***	-15.200***
	(0.047)	(0.047)	(0.298)	(0.297)
Substitution	0.082***	0.092***	0.146***	0.154***
	(0.027)	(0.027)	(0.044)	(0.044)
Spillover	-0.076***	-0.068***	-0.062***	-0.055***
	(0.008)	(0.008)	(0.019)	(0.019)
Constant	9.694***	9.693***	13.642***	13.642***
	(0.008)	(0.008)	(0.000)	(0.000)
Observations	3886218	3886218	3220450	3220450
R^2	0.953	0.953		
Psuedo R^2			0.917	0.917
Firm-product-partner FE	Yes	Yes	Yes	Yes
Month FE	Yes	No	Yes	No
Year FE	Yes	No	Yes	No
Period FE	No	Yes	No	Yes

*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors clustered by partnerxHS-6xID in parentheses.

Conclusions

- Large exogenous shock of embargo on exports and exporters
- Product-level: Negative effect on Turkish exports to Russia
  - Complete shut down of trade to Russia of the sanctioned products
  - Total trade loss: 29% is due to decrease in the export while the rest is due to negative spillovers
- Firm-level:
  - No (statistically significant) effect on firm-exits; firms seem to have adjusted by switching to other markets
  - Firms that remained in the market substituted their flows to other markets

Next steps

- Add placebos?
- Explore trade diversion: 4 countries (Armenia, Georgia, Belarus, Kazakhistan)
- Scarring effects in the longer run?

Thank you for listening.

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