The 2014 Russia shock and its effects on Italian firms and banks

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Background

- ▶ Dual shock suffered by Russia in 2014 after Crimea crisis:

  1. Sanctions levied by EU, US and other countries (March and July 2014). Counter-embargo levied by Russia on imports of various agricultural products (August 2014)

  2. Sharp fall in oil prices (almost -50% in second half of 2014)

- ▶ Significant contraction in Russia's imports from the rest of the world: -35% over two years for Italian exports to Russia.

- ▶ This exogenous demand shock reduced export market opportunities for Italian firms

Motivation

Key questions: *What is the role of the banking system in response to a negative trade shock? Does it help cushion the shock or does it propagate it? Which borrowers end up being more affected?*

▶ Identify Italian firms relatively more exposed ("*hit borrowers*"): around 3,100 firms with at least 9% of sales from Russia in at least one pre-shock year. Around 0.45% of total NFCs.

▶ Construct bank level measure of lending exposure towards Italian firms exporting to Russia ("*bank exposure*")

▶ Diff-in-diff strategy (before and after the shock) to estimate the effect of the Russia shock on the lending strategies of more exposed banks with respect to different borrowers

Overview of the results

- **Hit borrowers**
  1. Lower turnover (especially in export markets)
  2. Increase in financial vulnerability and default rates

- **Banks exposed to the Russia shock**
  1. Overall tightening credit supply, especially towards risky borrowers
  2. Reallocation: credit supply decreases vis-à-vis high-hit borrowers and non-hit borrowers, while credit support is provided to moderately hit-borrowers (exports to Russia <30% of sales)

Literature review

- **Trade shocks and banks**: Federico, Hassan and Rappoport (2020), Correa, di Giovanni, Goldberg and Miniou (2022)

  Complementary evidence (export vs import competition shock, sudden vs. gradual shock)

- **Bank shocks and credit spillovers to hit/non-hit borrowers:** Favara and Giannetti (2017), Giannetti and Saidi (2018) and Galaasen et al. (2020)

  Broadly consistent with the highlighted mechanisms

- **How banks and firms react to firms' liquidity shortfalls (e.g. after Covid-19 shock)**: Chodorow-Reich et al. (2021), Li et al. (2020), Kapan and Minoiu (2020)

  Smaller but cleaner shock (without confounding factors related to policy measures such as public guarantees, etc.)

Data

▶ Four main datasets:

1. Credit registry: matched bank-firm data with detail on credit granted/drawn by instrument, collateral and export purpose.

2. Customs data on exports at firm-product-country-year level

3. Banks' balance sheets: size, capital, loan-to-deposits, asset quality, sovereign debt ratio, share of loans to HHs and NFCs

4. Firms' balance sheets: turnover, assets, liquidity, leverage, risk

▶ Sample period: data from 2012 to 2016.

Exporters hit by the Russia shock

▶ Russia was the third extra-EU market for Italy's exports of goods before the shock

▶ Main sectors: industrial machinery, fashion, furniture, electrical equipment

▶ For 3,100 firms the share of Russian exports was above 9% of total sales (incl. domestic sales) in at least one of the three pre-shock years: "hit borrowers"

▶ Ex ante: relatively healthy firms (larger, more liquid, less leveraged, less risky than other manufacturing firms)

▶ Ex post: worse outcomes (decline in sales, increase in financial vulnerability)

Hit-borrowers' performance

Table: **Hit firms' post-shock outcomes**

	(1)	(2)	(3)	(4)	(5)
	Δ Sales	Δ Leverage	Δ Liquid ratio	Bad debt	Other NPL
HITBORROWER	-0.1667***	3.5221***	-0.0119***	0.0190***	0.0176***
	(0.0445)	(1.1099)	(0.0035)	(0.0047)	(0.0066)
Firm controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes
N	305312	316971	299810	346335	346335
adj. R^2	0.063	0.087	0.019	0.046	0.069

Table: **Hit firms' post-shock domestic sales and exports**

	(1)	(2)	(3)	(4)	(5)
	Δ Total sales	Δ Domestic sales	Δ Exports	Δ Exports to Russia	Δ Exports to ROW
HITBORROWER	-0.1726***	-0.0843*	-0.4019***	-0.7470***	-0.1067***
	(0.0360)	(0.0445)	(0.0554)	(0.0692)	(0.0332)
Firm controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes
N	61838	61327	61833	9826	61436
adj. R^2	0.038	0.026	0.009	0.014	0.008

Credit supply regressions

▶ Build bank exposure to the Russia shock (i.e. banks with a loan portfolio disproportionately oriented towards exporters to Russia)

$$BankExposure_b = \frac{\sum\limits_i C_{ib} \frac{ExpRussia_i}{Sales_i}}{\sum\limits_i C_{ib}}$$

▶ Estimate credit supply before and after the Russia shock (controlling for firm-time FE, as in Khwaja-Mian regression)

$$lnC_{ibt} = \beta BankExposure_b \times Post_t + \gamma \mathbf{Z}_{ibt} + \alpha_{it} + \alpha_{ib} + \epsilon_{ibt}$$

Overall tightening of credit supply

▶ More exposed banks decrease credit supply to their borrowers after the shock relative to less exposed banks

▶ A one standard deviation increase in bank exposure is associated to a 0.8 p.p. decrease in credit supply

▶ Effect is largely driven by credit lines

| | (1)) | (2) | (3) | (4) | (5) | (6) |
	Total loans	Total loans	Total loans	Credit Lines	Term Loans	Trade finance
BANKEXPOSURE x POST	-0.0438***	-0.0431***	-0.0184***	-0.0311***	-0.0120	-0.0735***
	(0.0043)	(0.0042)	(0.0042)	(0.0048)	(0.0107)	(0.0284)
Bank x firm	Yes	Yes	Yes	Yes	Yes	Yes
Firm x time	Yes	Yes	Yes	Yes	Yes	Yes
Loan-level controls		Yes	Yes	Yes	Yes	Yes
Bank-level controls			Yes	Yes	Yes	Yes
N	5424360	5424360	5424360	4511316	2873813	360555
adj. R^2	0.9482	0.9486	0.9486	0.9280	0.8918	0.8260

Reallocation of credit supply

▶ Negative spillovers to non-hit borrowers (col. 1)

▶ Credit support instead to hit borrowers, but only to those medium-hit (with better prospects for recovery) (col. 2)

▶ Credit supply tightening vis-à-vis riskier firms (col. 3)

	(1) Hit borrowers	(2) Medium and high- hit borrowers	(3) Riskier borrowers
POST X BANKEXPOSURE	-0.0209***	-0.0208***	-0.0071
	(0.0043)	(0.0043)	(0.0053)
POST x BANKEXPOSURE x HITBORROWER	0.0678***		
	(0.0204)		
POST x BANKEXPOSURE x MEDIUMHITBORROWER		0.1071***	
		(0.0314)	
POST x BANKEXPOSURE x HIGHHITBORROWER		-0.0247	
		(0.0341)	
POST x BANKEXPOSURE x RISKIER FIRM			-0.0327***
			(0.0092)
Bank x firm	Yes	Yes	Yes
Firm x time	Yes	Yes	Yes
Loan-level controls	Yes	Yes	Yes
Bank-level controls	Yes	Yes	Yes
N	5424360	5402199	5147793
adj. R^2	0.9486	0.9486	0.9486

Interpretation

Heightened credit risk of exporters to Russia implied higher future losses for more exposed banks.

❶ Overall tightening of credit supply

- *Bank capital channel*: Bernanke and Lown (1991), Peek and Rosengren (1995), Thakor (1996), den Heuvel (2006).

- *De-risking strategy* with overall credit supply reduction: Favara and Giannetti (2017), Giannetti and Saidi (2018), Galaasen et al. (2020), Federico et al. (2020).

❷ Credit reallocation

- Reduce exposures to riskier borrowers, including non-hit borrowers

- Try to limit future losses from firm insolvencies through the granting of new credit to (moderately) hit-borrowers, in an attempt to let them cope with the liquidity shortfall.

Robustness

- ▶ Relationship lending
- ▶ Bank specialization
- ▶ Direct bank exposures to Russia
- ▶ Import linkages
- ▶ Geographical linkages
- ▶ Input-output linkages
- ▶ Bank exposure to energy-intensive sectors
- ▶ Trade in services

Conclusions

What is the role of the banking system in response to a negative trade shock?

▶ Banks **propagate** trade shocks: negative credit spillovers to non-hit borrowers, especially riskier ones

▶ At the same time banks **mitigate** trade shocks, providing support to moderately hit borrowers (with good prospects for recovery)

▶ Implications: Transmission of trade shocks to the financial sector does not necessarily pass through global banks, but also through local banks lending disproportionately to exporters