A Geopolitical Shock to Bank Assets and Monetary Policy Transmission

Falko Fecht, Stefan Greppmair, Björn Imbierowicz

(all Deutsche Bundesbank)

Background

Motivation & research questions

- **Beginning in the 1990's**, the world saw three decades with **moderate geopolitical risk** during which **economic integration** rose to a historically unprecedented global scale.

- The level of globalization and interconnectedness is still unprecedentedly high, but **geopolitical shocks** and related repercussions do not necessarily remain locally confined but may well **propagate from its origin to elsewhere**.

<u>This paper:</u>

- What are the effects of a geopolitical shock in a globalized world?

- How are banks affected by a geopolitical shock to their assets?

- What are the implications for monetary policy transmission through banks?

Motivation & research questions

Geopolitical Economic Shock = Russia's war against the Ukraine since 2022

- primarily perceived as a shock to **aggregate supply** due to, for example, supply chain disruptions or stark increases of energy prices

→monetary policy should in general follow a "look-through" approach to these transitory supply driven inflation surges

- **But:** potential second round effects such as the de-anchoring of inflation expectations or wage-price spirals possible! (e.g., Chen 2025)

→it is important to understand if and how a geopolitical shock also affects **aggregate demand**, thereby mitigating inflation, as well as how it affects the transmission of (subsequent, tightening) monetary policy

The Shock:

- We use a bank's credit exposure to Russian and Belarusian borrowers prior to the shock.
- *Assumption: Banks have to write down credit issued previously to Russian and Belarusian firms.*
- identify direct demand-side effects through banks' funding and lending

Data

Data – Deutsche Bundesbank

Transaction-level data at bank-firm level

- MMSR – Unsecured Segment: Corporate **deposit** transactions
- Anacredit: **Loans** to non-financial companies
- SHS-G: **Bond** portfolios of banks

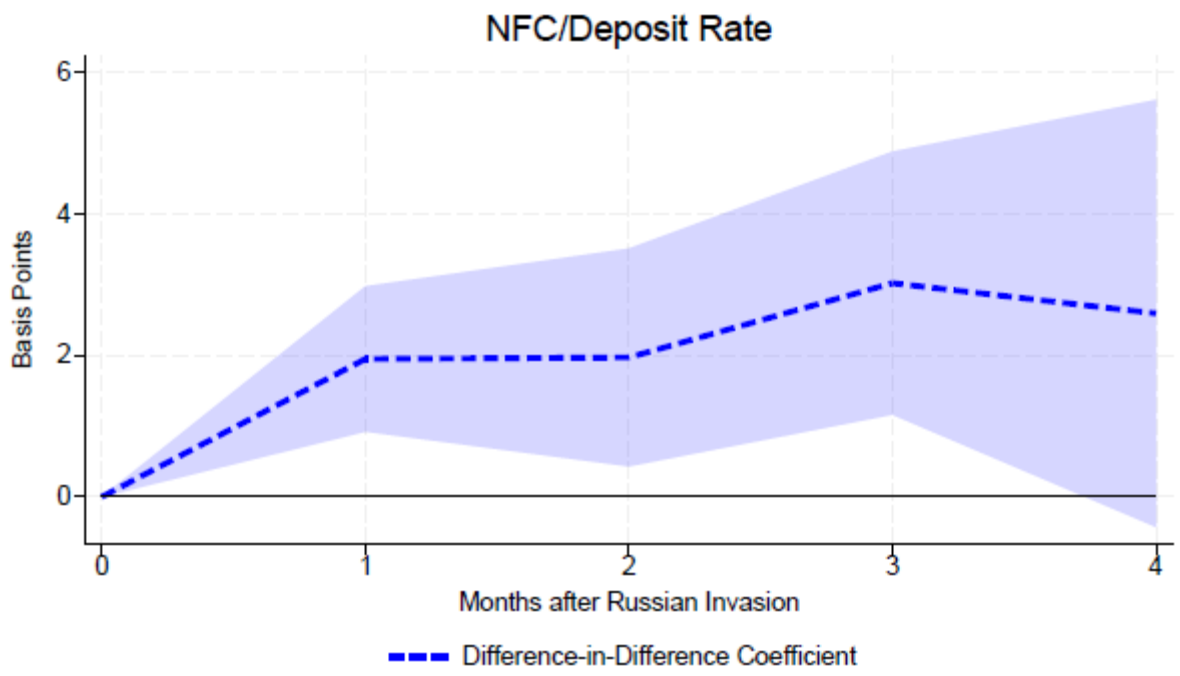
- iMIR: Monthly **total deposit** and **loan** volumes and rates for new business
- iBSI: Monthly **bank characteristics**
- The data range from **2021:M3 to 2023:M2**, where the Russian invasion of Ukraine started on February 24, 2022.
- Data used at the **German** as well as the **European** level.
- Bank exposure measured by the ratio of credit (loans and bonds) exposure to Russian + Belarusian borrowers over bank equity in 2021 (avrg.= 7%, median 1.47%)

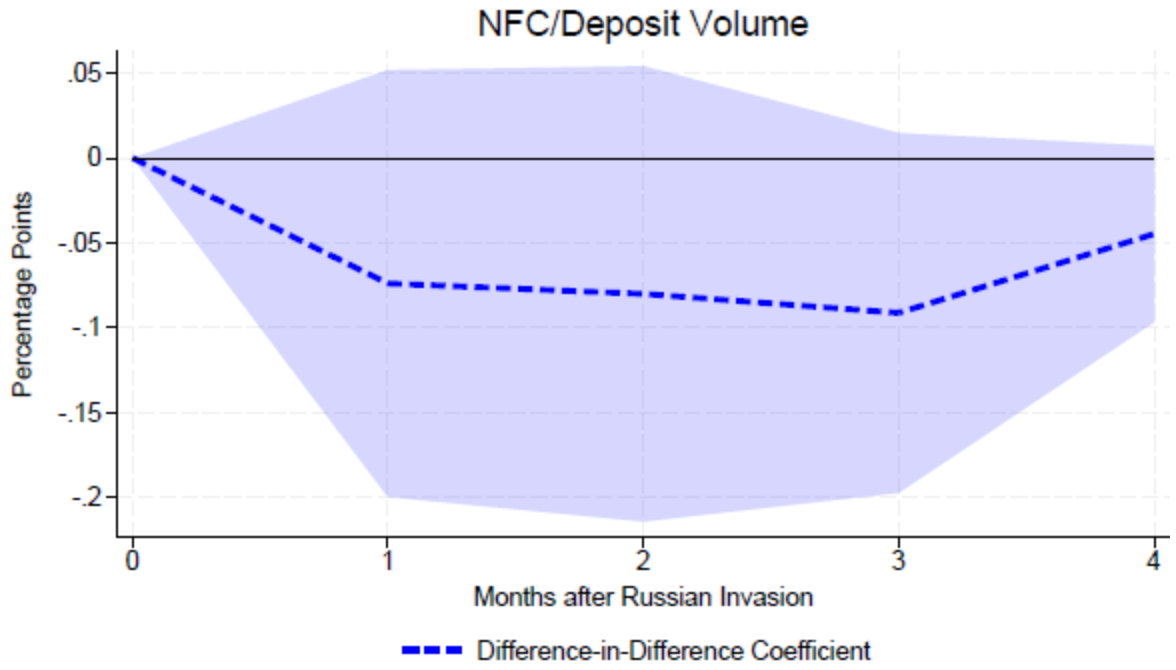
Deposits

Deposits

What is the impact of the asset shock on deposit rates and volumes?

- Higher exposure = higher bank (run) risk → more depositor discipline
- Do we observe higher deposit rates and/or lower deposit volumes?





- confirmed: Banks pay higher deposit interest rates, volumes indicate rather a decrease

Deposits

What is the impact of the asset shock on deposit rates and volumes?

- Higher exposure = higher bank (run) risk → more depositor discipline
- Do we observe higher **deposit rates** and/or lower deposit volumes?

	(1) No FE	(2) Time FE	(3) Bank FE	(4) Firm FE	(5) Bank x Firm FE	(6) Firm x Time FE	(7) WLS
Panel A: Unsecured Deposit Rates							
$Post \times Exp_b^{Russia}$	0.5738***	0.5811***	0.8117***	0.8306***	0.8761***	0.7352***	0.9224***
	(3.41)	(3.57)	(3.23)	(3.42)	(3.93)	(4.57)	(5.15)
Adj. R2	26.67	29.25	65.25	67.39	75.42	73.32	62.48
Obs	6211	6211	6211	6211	6211	6211	6211
Banks	28	28	28	28	28	28	28

- Banks have to pay higher deposit interest rates (on average 5 bps more, compares with a avrg. deposit rate of -56bps at this time)

Deposits

What is the impact of the asset shock on deposit rates and volumes?

- Higher exposure = higher bank (run) risk → more depositor discipline
- Do we observe higher deposit rates and/or lower **deposit volumes**?

Panel C: Unsecured Deposit Volumes - New Deposit Volume

$Post \times Exp_b^{Russia}$	-0.0827	-0.0833	-0.0657	-0.0215	-0.0879	-0.1226	-0.2911**
	(-0.44)	(-0.43)	(-0.42)	(-0.17)	(-0.67)	(-1.26)	(-2.56)
Adj. R2	31.23	31.49	33.17	37.03	42.47	38.95	38.93
Obs	44084	44084	44084	44084	44084	44084	44084
Banks	28	28	28	28	28	28	28

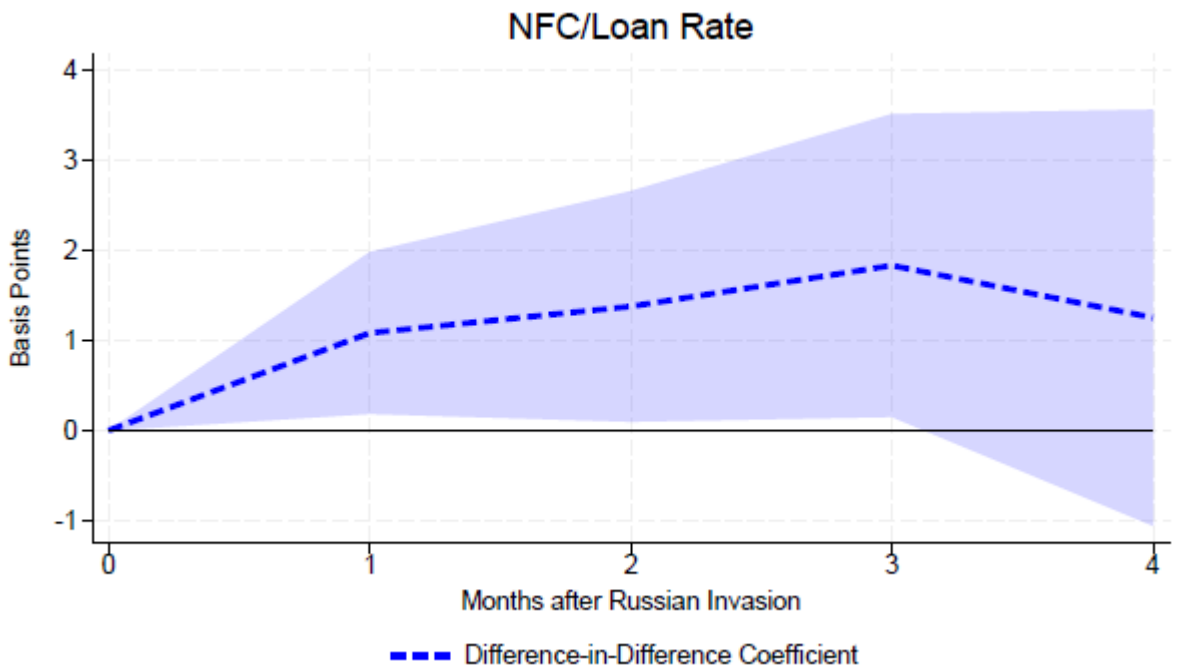
- bank deposit volume rather decreases
- We also observe that the probability of a bank receiving an additional deposit from a given firm rather decreases.
- We find the results on interest rate and volume also confirmed at the aggregate bank-month level (iMIR data).

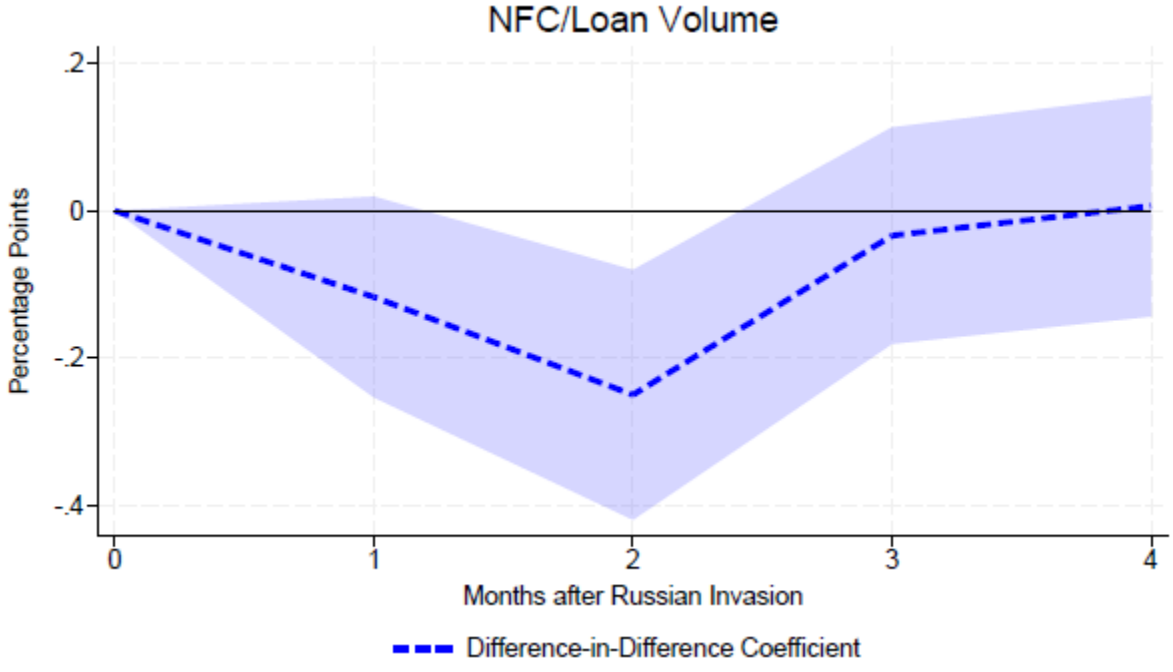
Loans

Loans

What is the impact of the asset shock on loan rates and volumes?

- Higher exposure = less risk bearing capacity → tighter lending standards
- Do we observe higher **loan rates** and/or lower **loan volumes**?





- Banks issue less loans; if anything, charge more.
- We find this confirmed at the aggregate bank-month level (iMIR data).

Loans

What is the impact of the asset shock on loan rates and volumes?

- Higher exposure = less risk bearing capacity → tighter lending standards
- Do we observe higher **loan rates** and/or lower **loan volumes**?

	(1) Loan Volume	(2) Loan Volume	(3) Loan Volume	(4) Loan Rate	(5) Loan Rate	(6) Loan Rate
$Post \times Exp_b^{Russia}$	-0.0017	-0.0035**	-0.0041**	1.0397	0.8659	1.0434
	(-0.50)	(-2.14)	(-2.36)	(1.23)	(1.41)	(1.20)
Adj. R2	98.46	98.49	98.46	97.28	97.38	98.61
Obs	1840198	1840198	1840198	1840198	1840198	1840198
Banks	28	28	28	28	28	28
Bank Controls	Yes	Yes	Yes	Yes	Yes	Yes
Bank x Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	–	–	Yes	–	–
Industry x Country x Time FE	–	Yes	–	–	Yes	–
Firm x Time FE	–	–	Yes	–	–	Yes

- Banks issue less loans (on avrg. -2.9%), no sign of systematic repricing

Deposits → Loans
Firms

Loans & Deposits

Is the restriction in loan supply directly driven by a bank's change in funding?

- Do the deteriorating refinancing conditions of affected banks in the wholesale deposit market induce them to cut back their lending?
  - We link both and estimate the change in a bank's funding rate over a short (5-day window) pre- and post invasion
  - inspired by literature on isolating exogenous monetary policy surprises using high-frequency movements in financial markets around monetary policy announcements (Kuttner, 2001; Gürkaynak et al., 2005; Altavilla et al., 2019)
    - observed movements in deposit rates should predominantly capture the direct impact of the geopolitical shock rather than other dynamics
  - on the bank's loan volume.

Post x $\Delta r_b^{invasion}$	-0.0040**
	(-2.49)
Adj. R2	98.46
Obs	1839076
Banks	25
Bank Controls	Yes
Bank x Firm FE	Yes
Firm x Time FE	Yes

→ **Banks with a stronger increase in deposit interest rates in the immediate period around the invasion issue less loans in the post period.**

→ Confirmed for deposit rate changes in a window of [-5; 5] as well as [-20; 20] days.

→ Consistent with the classic bank lending channel, where liability-side constraints impact asset-side behavior.

Loans & Deposits

Does the restriction in loan supply restrain nonfinancial firms?

- Does the geopolitical shock have negative demand-side effects through financial intermediaries?
  - We calculate the weighted exposure of the lending relationship banks of a firm in the pre period
  - and investigate economic variables at the individual firm level.

	total credit	# employees	total assets	turnover
	(1)	(2)	(3)	(4)
Weighted firm exposure	-0.0048***	-0.0000	-0.0021***	-0.0050**
	(-4.19)	(-0.03)	(-2.73)	(-2.28)
Adjusted R-squared	18.89	2.75	2.89	2.21
Obs.	786,274	174,394	174,394	174,394

→Restricted loan supply of more exposed banks cannot easily be substituted.

→Restricted loan supply of more exposed banks implies negative real effects for their borrowers.

→Consistent with diminished aggregate demand.

Loans & Deposits – Results Summary

Results Summary

- More exposed banks did not (or could not) compensate for the negative effects on their funding by charging (sufficiently) more but rather decreased their lending.

- Geopolitical risk relates to the bank lending channel via deposit market disruptions.
  - The Russian invasion caused stress for banks' balance sheets.
  - Banks with greater exposure to the shock have to pay higher deposit interest rates.
  - Rather than rolling over these elevated refinancing costs to their borrowers, these banks curtail lending to firms.
  - As firms cannot easily substitute these loan supply restrictions, their overall borrowing declines.
  - This leads to reduced real activity consistent with diminished aggregate demand.

➔**A geopolitical shock has effects on aggregate demand through financial intermediaries and constitutes a "silent tightening" through exposed banks.**

Monetary policy transmission

Monetary Policy Transmission

Does the geopolitical shock affect the sensitivity of banks' refinancing and lending conditions to monetary policy shocks?

- Higher exposure = lower net asset value → higher sensitivity of the external finance premium to the monetary policy rate (see, e.g., Altavilla, Gürkaynak, Quaedvlieg, 2024)
- Do we observe a stronger reaction of more exposed banks to monetary policy rate surprises?
- We estimate local projections of deposit and loan rates over March 2021 to February 2023, encompassing five ECB policy rate hikes, controlling for the (general exposure) effects we observed earlier (in the period prior to any policy rate changes).
- The data derive from the MMSR and Anacredit, aggregated to the bank-firm-month level.
- For the change in monetary policy rate, we use the change in DFR as well as monetary policy surprises provided by Jarociński and Karadi.

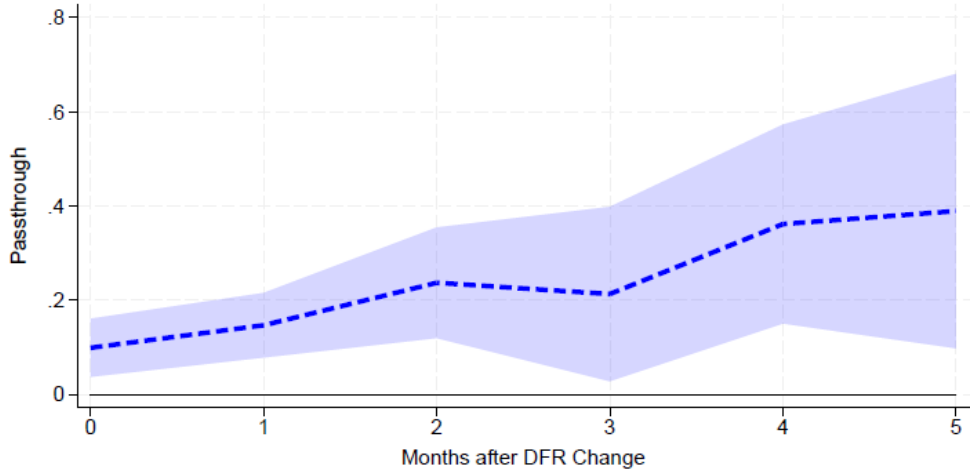
Monetary Policy Transmission

Does the geopolitical shock affect the sensitivity of banks' refinancing and lending conditions to monetary policy shocks?

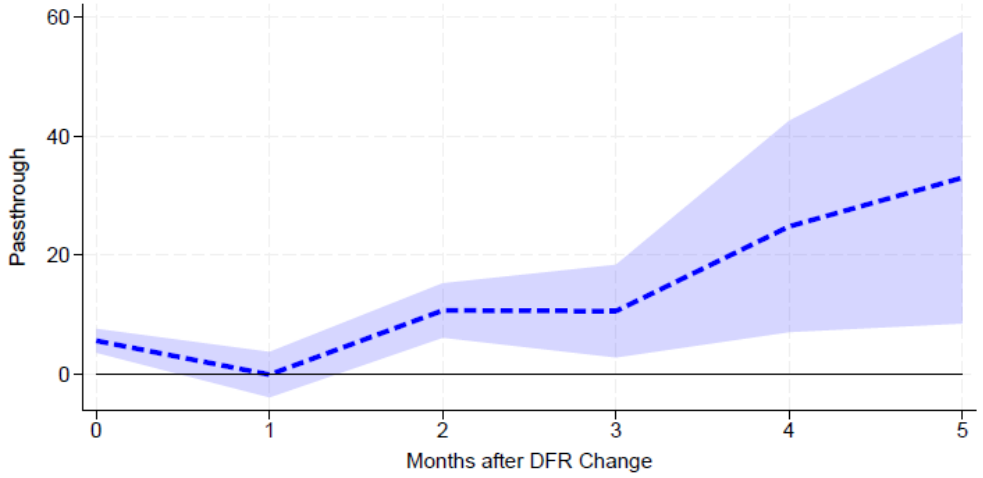
- Higher exposure = lower net asset value → higher sensitivity of the external finance premium to the monetary policy rate (see, e.g., Altavilla, Gürkaynak, Quaedvlieg, 2024)

- Do we observe a stronger reaction of more exposed banks to monetary policy rate surprises?

ΔDFR



Mon. Pol. Surprises



→larger refinancing costs for more exposed banks in the post-invasion period

→ 100 bps. rise in DFR leads to roughly a 40 basis points larger increase in deposit interest rates of high-exposure banks within about five months

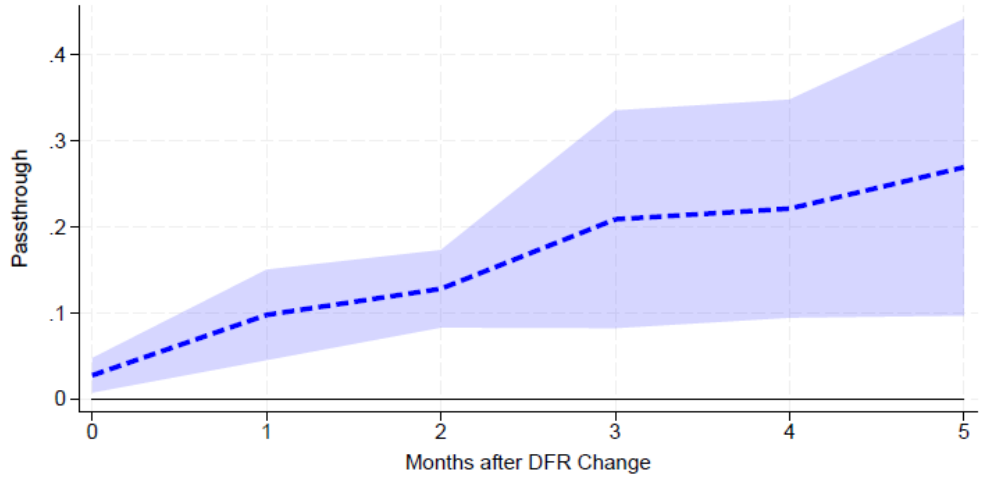
Monetary Policy Transmission

Does the geopolitical shock affect the sensitivity of banks' refinancing and lending conditions to monetary policy shocks?

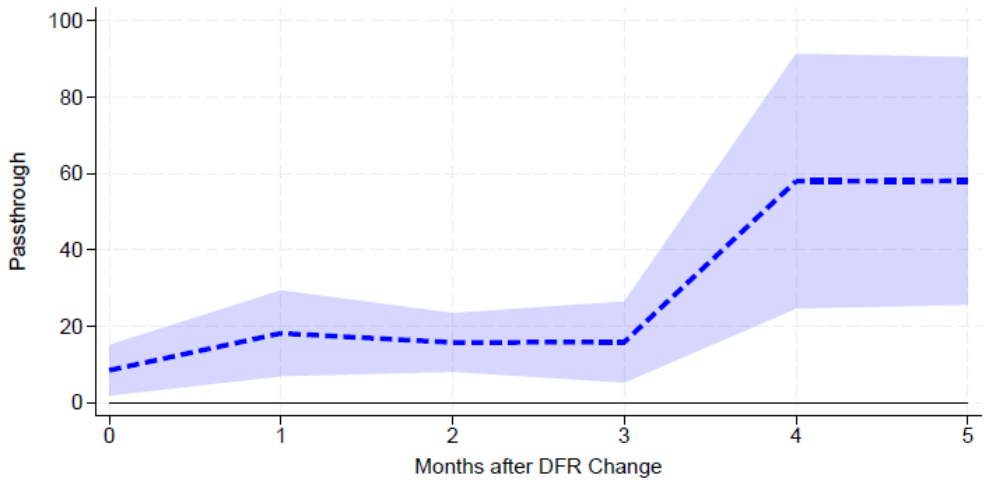
- Higher exposure = lower net asset value → higher sensitivity of the external finance premium to the monetary policy rate (see, e.g., Altavilla, Gürkaynak, Quaedvlieg, 2024)

- Do we observe a stronger reaction of more exposed banks to monetary policy rate surprises?

ΔDFR



Mon. Pol. Surprises



→larger increase in loan rates for more exposed banks in the post-invasion period

→ 100 bps. rise in DFR leads to roughly a 30 basis points larger increase in deposit interest rates of high-exposure banks within about five months

Monetary Policy Transmission – Results Summary

Results Summary

- A geopolitical shock amplifies the aggregate effects of monetary tightening through the banking system.

- More exposed banks amplify the pass-through of the subsequent monetary tightening relative to less-exposed banks by increasing their deposit and loan rates more.

→higher borrowing costs and possibly reduced credit availability during monetary tightening cycles

→the geopolitical shock did not only impact banks' funding what negatively affected bank lending, but also magnified the contractionary impact of subsequent rate hikes on the real economy

→A geopolitical shock accelerates the pass-through of policy actions and thereby further restrains aggregate demand.

Contribution

- Our study highlights the effect of a geopolitical shock both on liabilities (deposits) and assets (loans) of financial intermediaries, as well as the impact on monetary policy transmission through banks.

➔**Geopolitical shocks** do not only impact aggregate supply but **also lower inflationary pressure on the demand-side**, with negative real effects for firms, **as well as increase the transmission of monetary policy**.

- The effects we uncover suggest that the direct impact of the geopolitical shock is equivalent to an increase in the policy rate of 48 basis points!

Robustness

show

The results are robust to

- deposit size
- deposit type
- different calculations of our exposure measure
- placebo test, using the pandemic

Robustness

Exposure Measure – Alternative Risk Measures

- We measure exposure by the ratio of credit (loans and bonds) exposure to Russian + Belarusian borrowers over bank equity in 2021 = equity at risk due to shock

	(1) Baseline	(2) GPR	(3) CDS (Orth)	(4) CDS Beta	(5) Combined
$Post \times Exp_b^{Russia}$	0.7434***	0.5960***	0.6793***	0.6010***	0.3546**
	(3.92)	(3.22)	(3.72)	(4.50)	(2.51)
$Post \times$GPR		0.3745**			0.2586*
		(2.58)			(1.77)
$Post \times$CDS$\perp$			0.2561		0.5076*
			(0.85)		(1.74)
$Post \times \beta_{CDS}$				0.6899**	0.7750***
				(2.87)	(4.18)
Adj. R2	.5943	.5958	.5949	.5993	.6023
Obs	5583	5583	5583	5583	5583
Banks	18	18	18	18	18
Bank Controls	Yes	Yes	Yes	Yes	Yes
Bank x Firm FE	Yes	Yes	Yes	Yes	Yes
Firm x Time FE	Yes	Yes	Yes	Yes	Yes

→robust to including

- → bank-specific geopolitical risk (GPR) index (weighting country-level GPR indices from Caldara and Iacoviello (2022)) = idiosyncratic and systematic risk
- → orthogonalized bank CDS spread (to bank characteristics) = idiosyncratic risk
- → CDS beta (to iTraxx Bank CDS index) = systematic risk

→our exposure measure contains additional information (comparable to model in Liu, 2023; within bank coordination together with cross bank price externality)

Conclusion

Conclusion

- Banks with a higher exposure to the geopolitical shock of Russia invading the Ukraine have relatively higher refinancing costs, and cut their lending to firms.
- Borrowers of more exposed banks relatively experience negative real effects.
- More strongly affected banks allow for a stronger transmission of monetary policy.
- **After a geopolitical shock, central banks should tighten monetary policy cautiously to avoid overshooting and unnecessarily suppressing already weakened private demand.**

  = data-driven approach with incremental policy rate changes

- **Supervisors should require granular disclosure of country-counterparty concentrations, embed geopolitical-stress scenarios in Pillar 2 reviews, and oblige banks to price these risks internally.**

  = transparent, forward-looking capitalization of geopolitical concentration risk of banks