The macroeconomic effects of bank regulation: New evidence from a high-frequency approach

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April 2025

Motivation

- Bank regulation
  - mitigates risk in the financial system
  - might constrain economic activity

  $\Rightarrow$ important to study this tradeoff

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- Difficult to estimate *macroeconomic* effects of bank regulation
  - changes in regulation not random
  - tighter regulation follows crises, e.g. Dodd-Frank Act in 2010

This paper: high-frequency identification strategy

1. Market surprises in narrow windows around Fed speeches
    - Existing literature: speeches about monetary policy $\rightarrow$ surprises in yields
    - This paper: speeches about bank regulation $\rightarrow$ surprises in bank stock price index

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    - Existing literature: speeches about monetary policy $\rightarrow$ surprises in yields
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2. Elicit variation in market surprises that reflects **bank regulation news shocks**
    - Sign restriction approach: distinguish "regulation news" from "health news"
    - Narrative approach: hand-pick speeches about key regulatory changes

Preview of results

- News about tighter bank regulation
  - Lowers bank stock prices
  - Lowers bank CDS premia
  - Increases banks' funding costs
  - Reduces bank loan supply
  - Increases credit spreads of nonfinancial firms
  - Increases unemployment
  - Reduces inflation
- Quantifying the tradeoff
  - 10 basis point (bp) decrease in CDS premium raises unemployment rate by 27.5 bp
  - 10 bp decrease corresponds to 18.75 bp lower annual probability of bank default

Contribution to the literature

- Macro impact of bank regulation widely studied with structural models
  - Eg Corbae and D'Erasmo (2021)
- Well-identified empirical estimates exist at the micro level
  - Eg Jiménez, Ongena, Peydró, and Saurina (2017)
- Empirical macro-level estimates typically based on cross-country analyses
  - Eg Jordà, Richter, Schularick, and Taylor (2021)
- We are the first to apply a high-frequency approach to the question
  - Contribution to the recent empirical macro literature: Nakamura and Steinsson (2018), Bauer and Swanson (2023), Känzig (2021), Hazell and Hobler (2024) Jayawickrema and Swanson (2023), ...
  - Ottonello and Song (2022) identify shocks to bank net worth using HF approach

Data and methodology

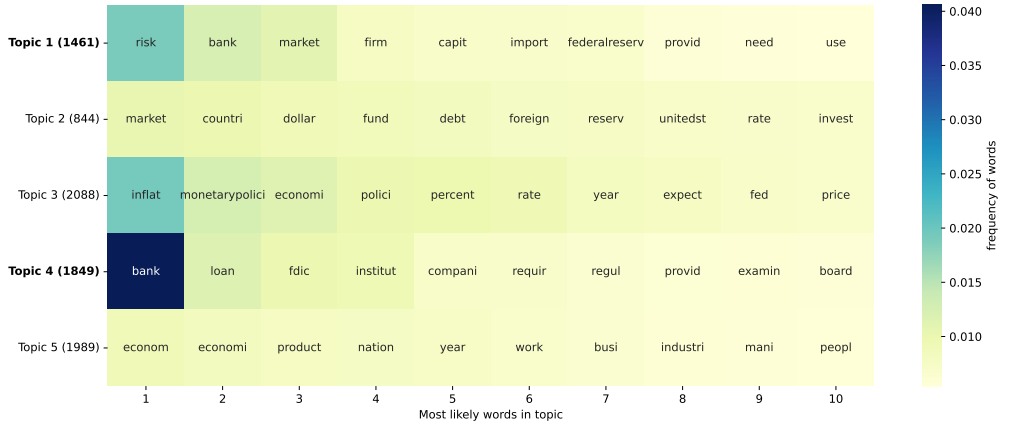
Institutional setup

- Laws underlying bank regulation are passed by Congress
- Fed implements details of **existing regulation** $\rightarrow$ provides information in speeches
- Fed guides **future regulation** $\rightarrow$ provides information in speeches
- Fed has been bank regulator for long period $\neq$ central banks in other countires

Construction of speech data base

- Download all speeches and testimony from St. Louis Fed's FRASER data base
- Begin in 1971, where bank stock price index becomes available
- Use algorithm of Hansen, McMahon, and Prat (2018) to find "topics"
- Select speeches in which main topic is bank related

Results of NLP-based speech classification



- Our NLP based classification of monetary policy speeches turns out to be very similar to Jayawickrema and Swanson (2023)

Bank stock price indeces

- Nasdaq Bank Index: daily data available from 1971
- SPDR S&P Bank ETF: tick data available from 2005

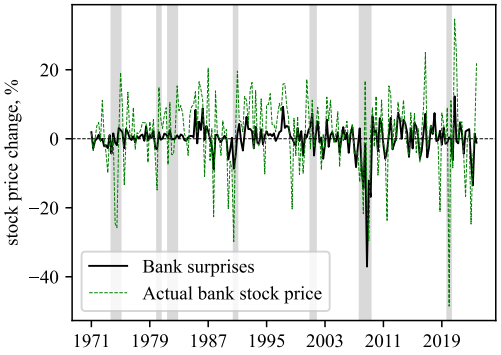
Construction of high-frequency surprises

$$s_i = \log p_{t_i, h_i + \Delta_i} - \log p_{t_i, h_i} \tag{1}$$

- p: bank stock price index
- t_i: date of a bank-related Fed speech
- h_i: time stamp of speech - 15 minutes
- Δ_i: 2h for speeches, 3h for testimony (Jayawickrema and Swanson, 2023)

“Raw” market surprises

Daily surprises



Intraday surprises

Identifying bank regulation news shocks

Identification challenge

- HF approach should exclude news other than those coming from the speech
- But Fed speech could reveal for example
  - News about bank regulation
  - News about health of banking system
  - ...

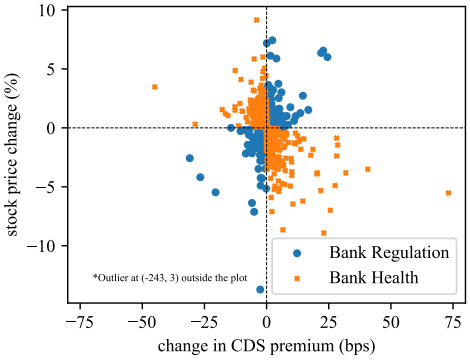
Solution 1 - sign restrictions

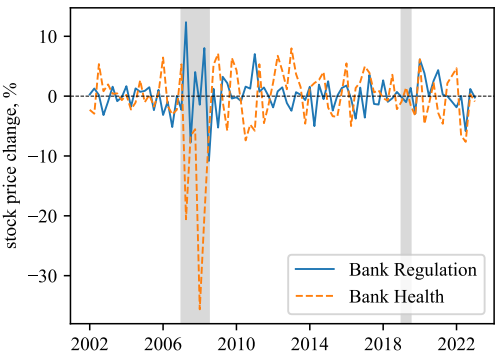
	Bank stock prices	Bank CDS premium
Bank regulation news shock	$-$	$-$
Bank health news shock	$-$	$+$

- Idea is similar to Jarocinski and Karadi (2020) in monetary literature

Sign restriction-based shocks

validation



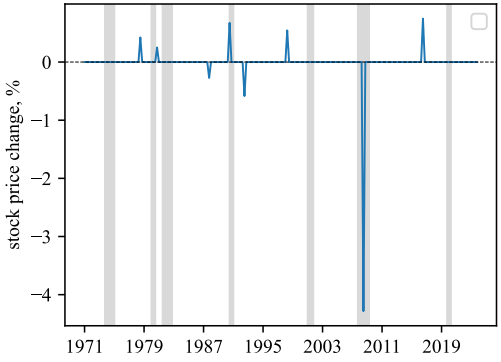


Solution 2 - narrative approach

Act	Date	Speech Date
The Depository Institutions Deregulation and Monetary Control Act of 1980 (DIDMCA)	3/31/1980	7/26/1978
The Garn–St Germain Depository Institutions Act of 1982	10/15/1982	11/14/1980
The Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA)	8/9/1989	11/19/1987
The Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA)	12/19/1991	7/12/1990
The Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994	9/13/1994	9/15/1992
The Gramm-Leach-Bliley Act of 1999	11/12/1999	4/19/1998
The Dodd-Frank Wall Street Reform and Consumer Protection Act in 2010	7/21/2010	7/24/2008
The Economic Growth, Regulatory Relief, and Consumer Protection Act (EGRRCPA)	5/24/2018	9/28/2016

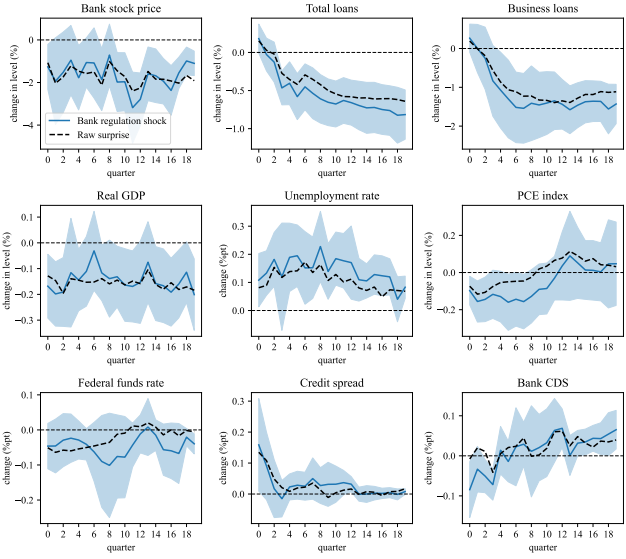
- Hand-select speeches with the *first mention* of key legislative changes

Narrative-based shocks

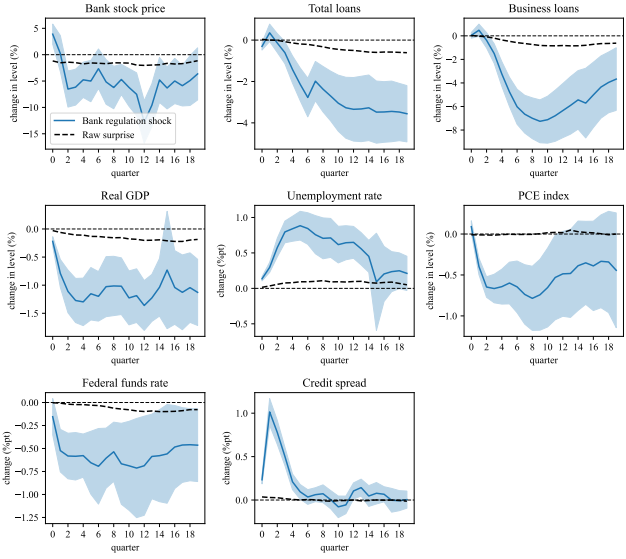


Main results

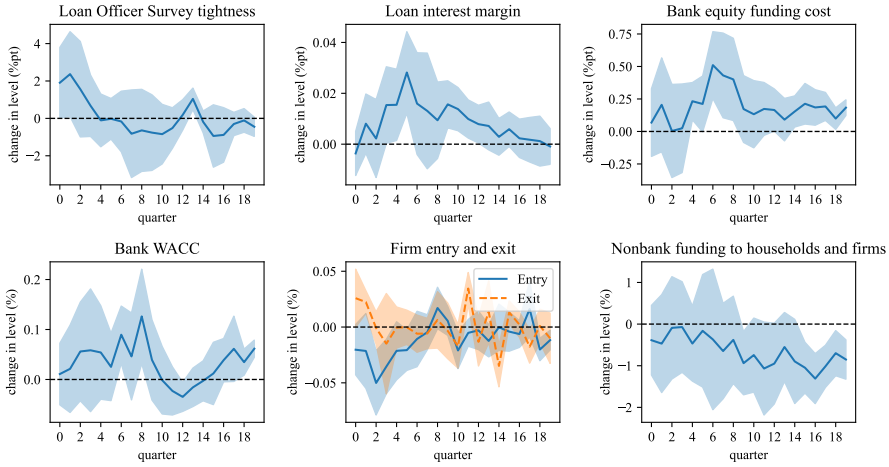
Sign restriction-based IRFs



Narrative-based IRFs



More results on the mechanism

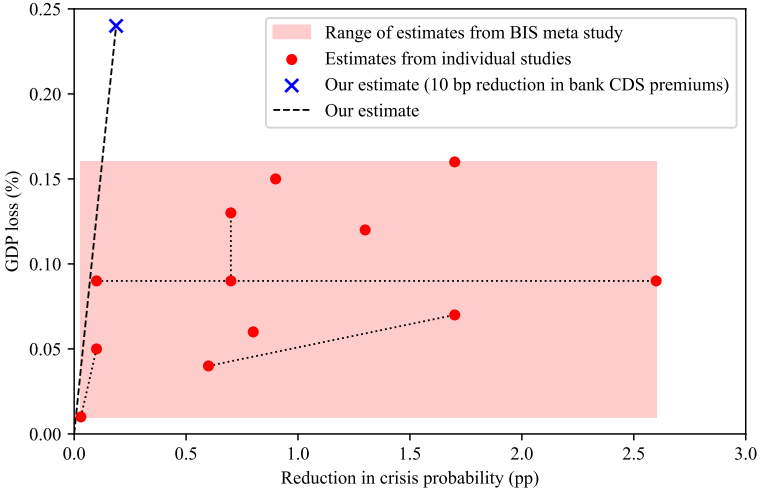


Quantifying the tradeoff

- 10 bp decrease in CDS premium raises unemployment rate by 27.5 bp
- 10 bp decrease corresponds to 18.75 bp lower annual probability of default
- The average annual probability of default is around 1.5% (std. dev. is 1.2 pp)
  - Excluding the GFC, average is 1.2% (std. dev. is 0.36 pp)

Magnitudes relative to the literature

long run



Conclusion

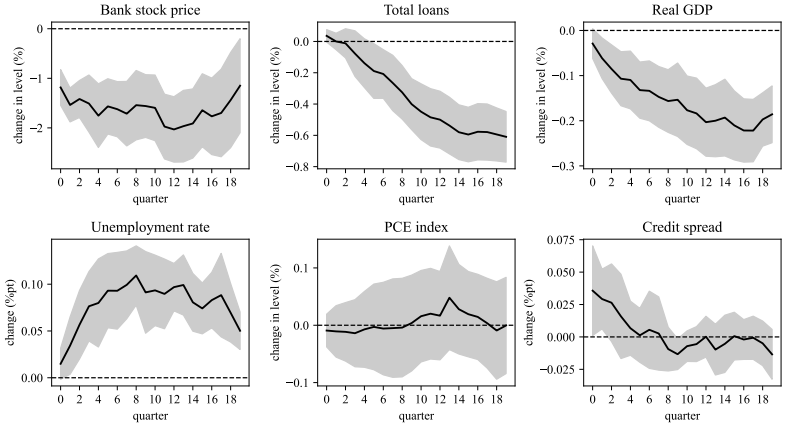
Conclusion

- Important to understand costs and benefits of bank regulation
- We use a high-frequency identification approach
- We study news about bank regulation revealed by Fed speeches
- While mitigating risk, news about bank regulation slow activity quite markedly

Appendix

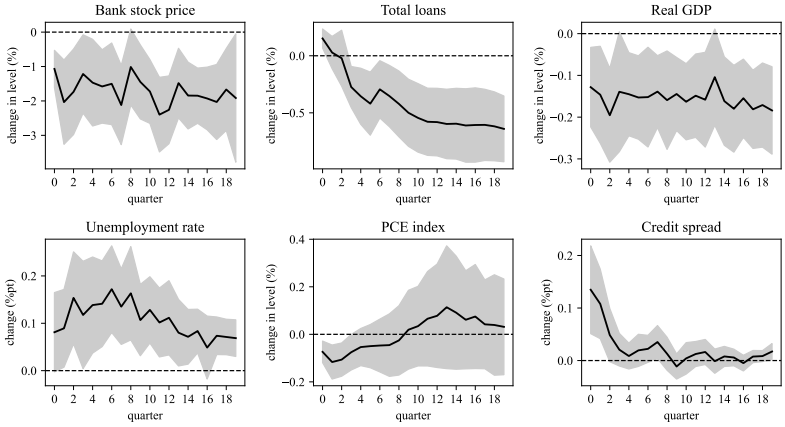
IRFs to “raw” surprises - daily version

back



IRFs to “raw” surprises - high-frequency version

back



IRFs to “raw” surprises - placebo test

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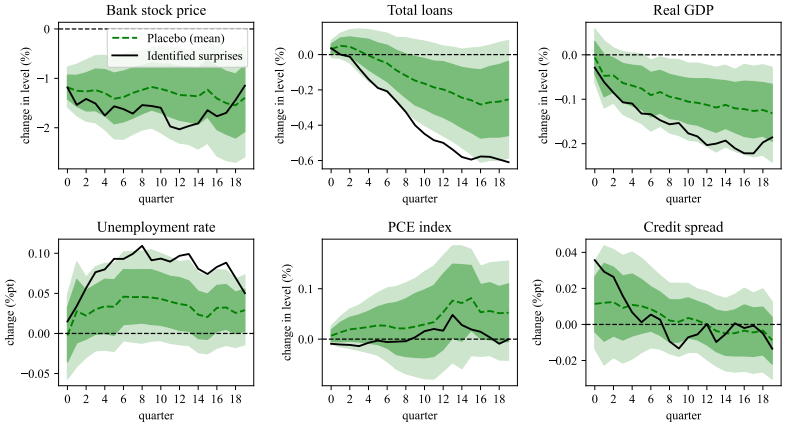
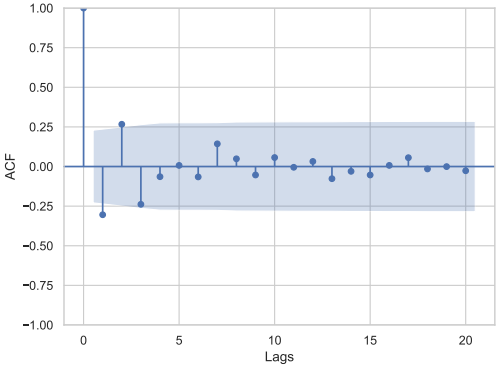


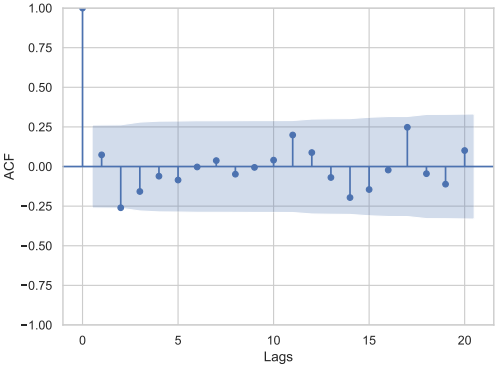
Validation - autocorrelation function

back

Full sample



Excluding the GFC



Validation - predictability

back

Variable	Full sample	After GFC
Auto lag	0.971	0.882
Bank stock price	0.354	0.610
Stock price	0.131	0.137
Total loans	0.257	0.994
Business loans	0.735	0.990
Real GDP	0.840	0.438
Unemployment rate	0.932	0.730
PCE index	0.035	0.496
Federal funds rate	0.300	0.337
Credit spread	0.105	0.508
Bank CDS	0.045	0.788
Joint	0.000	0.386

Validation - correlation with other shocks

back

Shock type	Correlation	p-value	Sample
Monetary (Bauer and Swanson, 2023)	0.037	0.582	2005M11-2023M12
Uncertainty (Bloom, 2009)	-0.055	0.420	2005M11-2023M12
Oil supply (Känzig, 2021)	0.109	0.108	2005M11-2023M12
Fiscal (Ramey and Zubairy, 2014)	0.126	0.434	2005Q4-2015Q4

Sign restriction-based IRFs - excluding GFC

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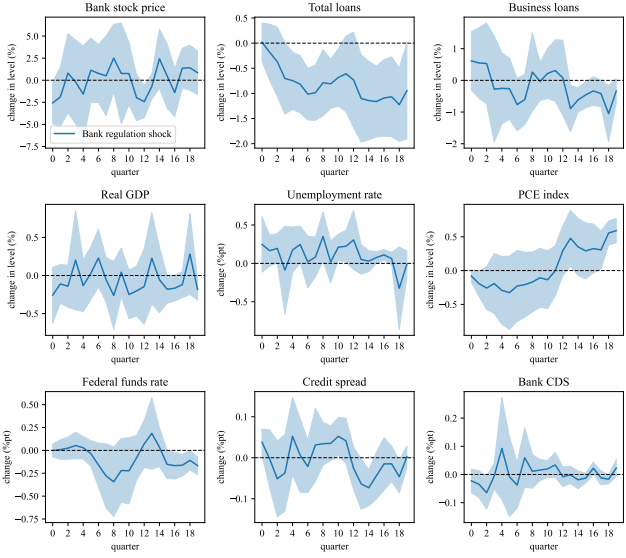

Sign restriction-based IRFs - outcomes at higher frequency

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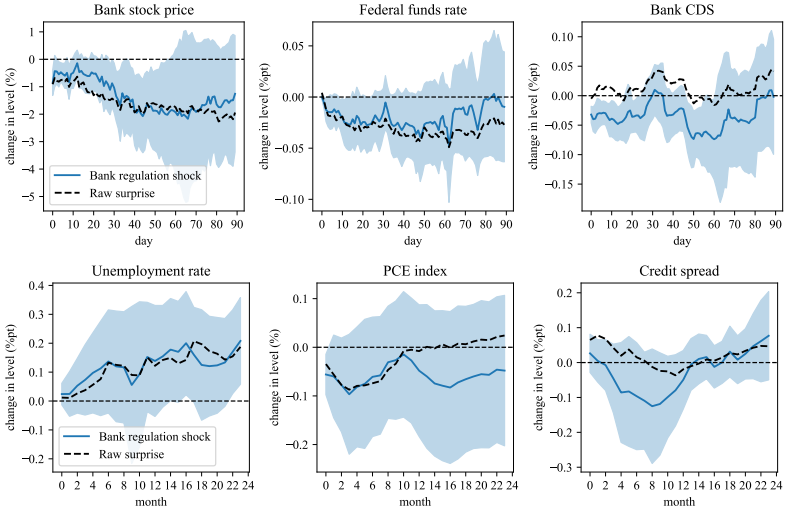

Sign restriction-based IRFs - bank health shocks

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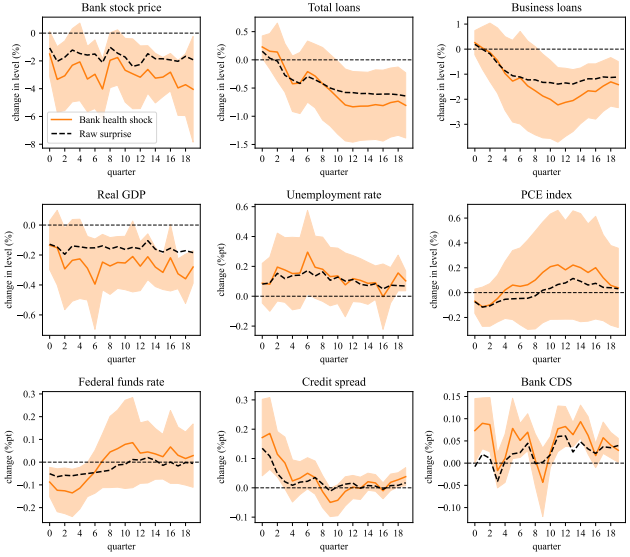

Bank regulation vs. monetary policy surprises

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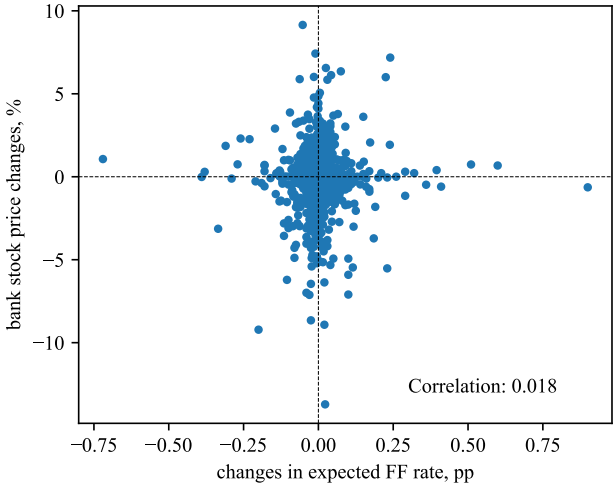

Responses of individual banks - stock prices

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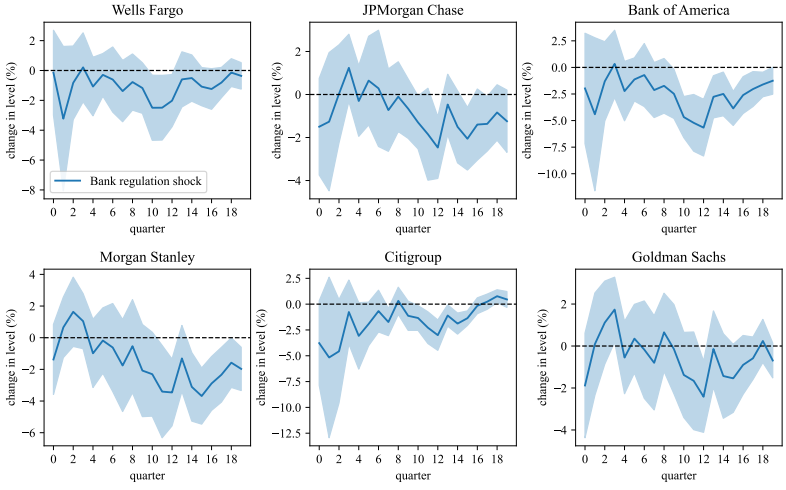

Responses of individual banks - CDS premiums

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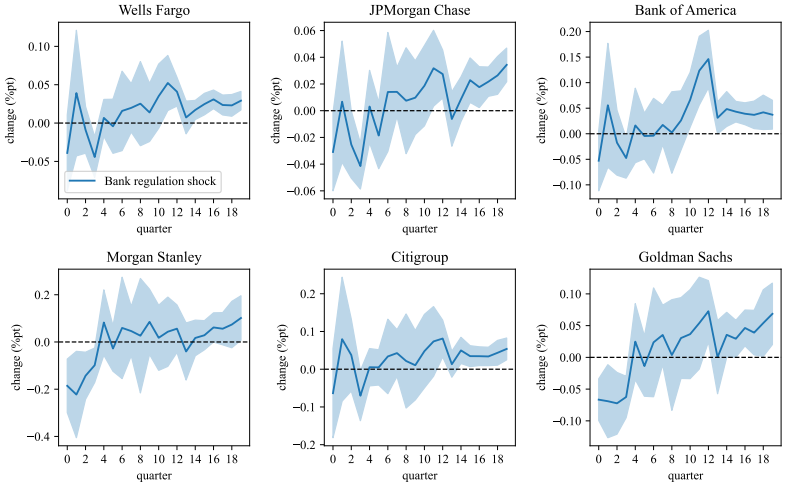

Long-run effects?

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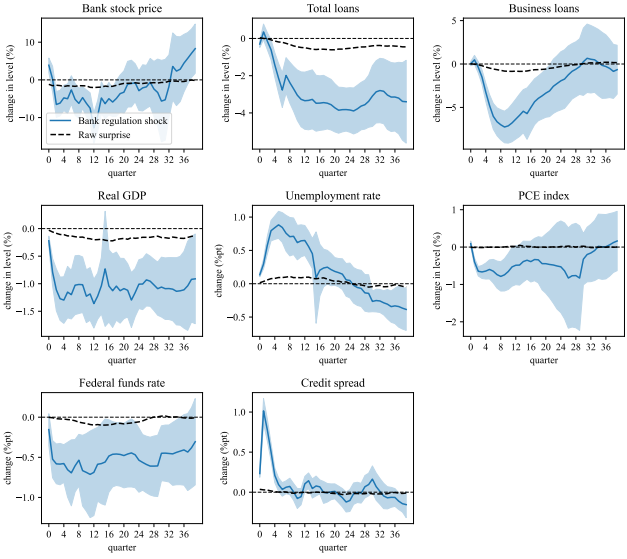

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