

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

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 - mitigates risk in the financial system
 - might constrain economic activity
- ⇒ important to study this tradeoff

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⇒ important to study this tradeoff
- Difficult to estimate the *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 → surprises in yields
- This paper: speeches about bank regulation → surprises in bank stock price index

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1. Market surprises in narrow windows around Fed speeches
 - Existing literature: speeches about monetary policy → 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 “bank health news”
 - Intuition: tighter regulation lowers bank profitability AND bank risk

Preview of results

- News about tighter bank regulation
 - Lowers bank stock prices
 - Increases banks' distance to default (lowers bank risk premia)
 - Reduces bank loan supply
 - Increases unemployment
 - Mildly increases inflation
- Quantifying the tradeoff
 - 10 basis point (bp) decrease in CDS premium raises unemployment rate by 15 bp
 - 10 bp decrease corresponds to 16.67 bp lower annual probability of bank default

Contribution to the literature

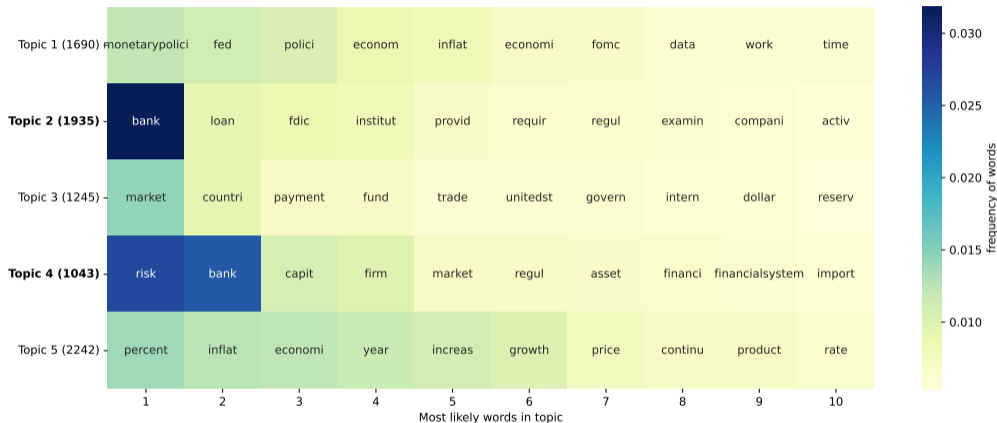
- Macro impact of bank regulation widely studied with structural models
 - E.g. [Corbae and D'Erasmus \(2021\)](#)
- Well-identified empirical estimates exist at the micro level
 - E.g. [Jiménez, Ongena, Peydró, and Saurina \(2017\)](#)
- Empirical macro-level estimates typically based on cross-country analyses
 - E.g. [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 \(2025\)](#) identify shocks to bank net worth using HF approach

Data and methodology

Construction of speech data base

- Download all speeches and testimony from St. Louis Fed's FRASER data base
- Includes speeches by FOMC members, other senior Fed staff & FDIC leadership
- 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 index

- Tick prices for 18 large US banks from Trade and Quote (TAQ) data base
 - Same data source as [Ottonello and Song \(2025\)](#)
- Largest: JP Morgan, Citi, Bank of America
- Smallest: Northern Trust, Bankboston, First Chicago, Ameriprise Financial
- Sample: 1998–2023
- Aggregate using market cap weights

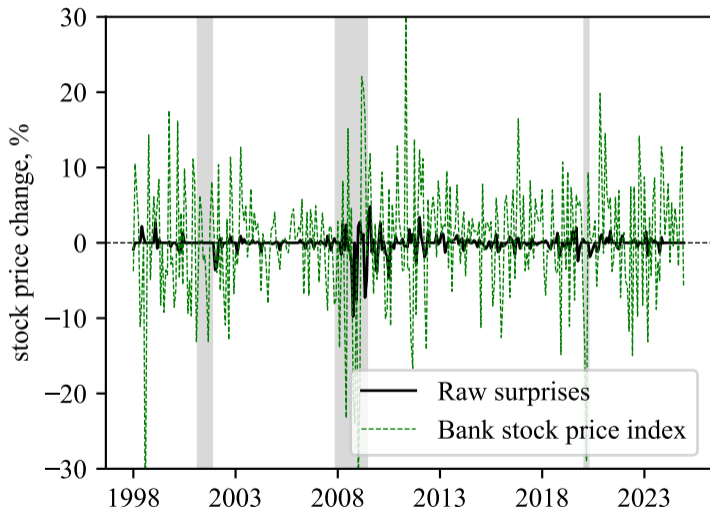
- For same 18 banks, construct *distance to default* following Merton's methodology
- Idea: interpret bank equity as contingent claim on underlying assets; measure the buffer against insolvency implied by market prices
- Widely used, e.g. in [Ottonello and Winberry \(2020\)](#) for firms
- Alternative measure: bank CDS premia

Construction of high-frequency surprises

$$s_i = \log p_{t_i, h_i + \Delta_i} - \log p_{t_i, h_i} \quad (1)$$

- 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, 3.5h for testimony (Jayawickrema and Swanson, 2023)

“Raw” market surprises



Identifying bank regulation news shocks

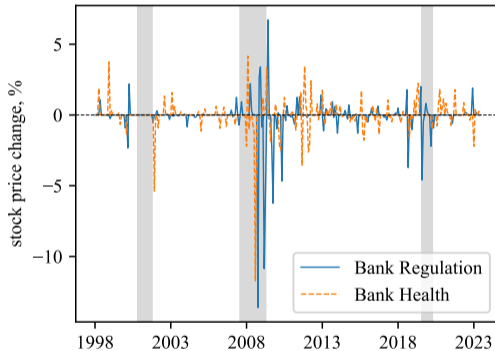
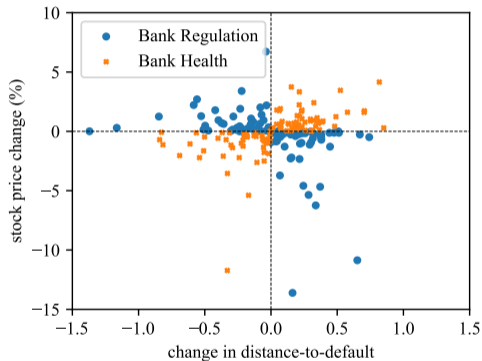
Identification challenge

- HF approach should exclude news other than those coming from a speech
- But Fed speeches probably reveal multiple types of information
 - News about bank regulation
 - News about health of banking system
 - ...
- Analogy in monetary policy literature: “Fed information effect”
(Nakamura and Steinsson, 2018; Bauer and Swanson, 2023)

Refinement - sign restrictions

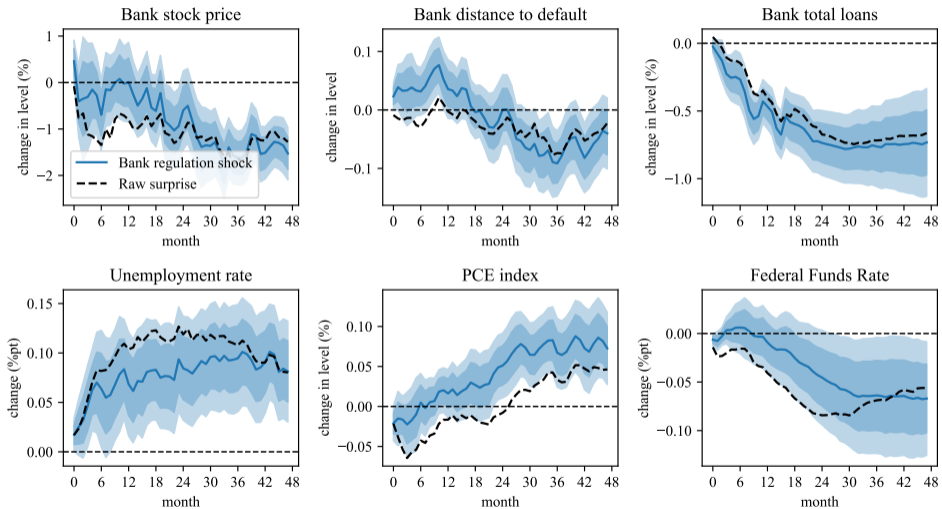
	Bank stock prices	Bank distance to default
Bank regulation news shock	–	+
Bank health news shock	–	–

- Idea is similar to [Jarocinski and Karadi \(2020\)](#) in monetary literature

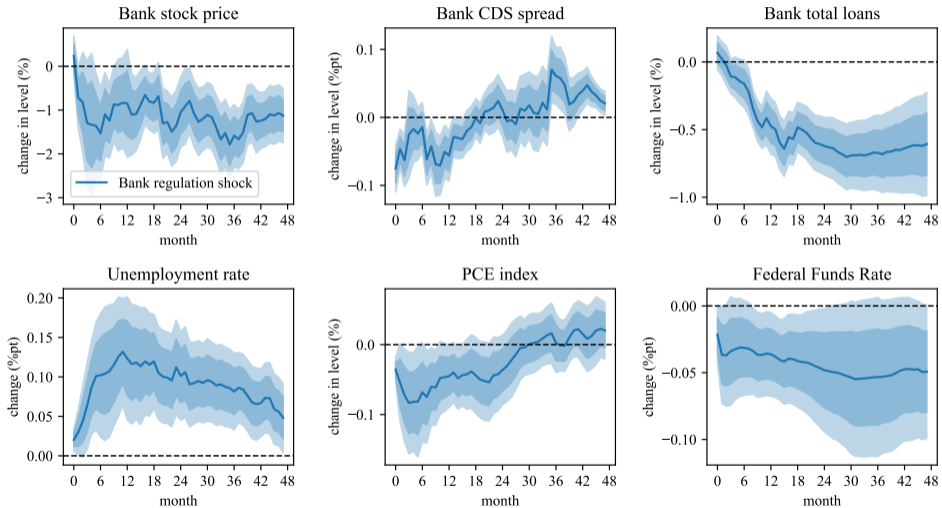


Main results

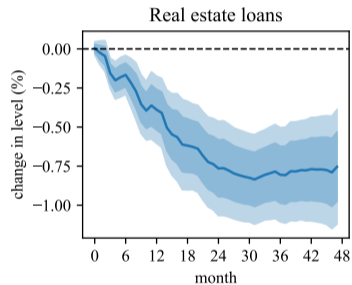
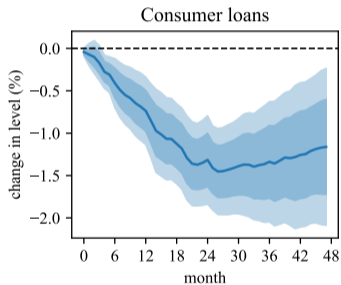
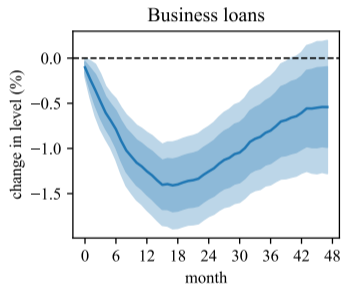
IRFs to tighter than expected bank regulation news



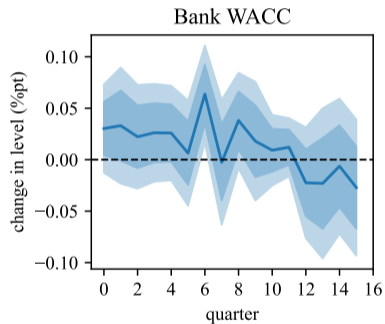
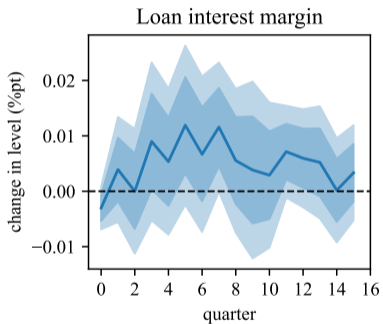
CDS premia instead of D2D



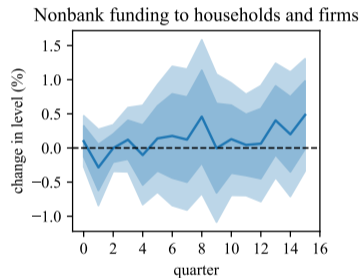
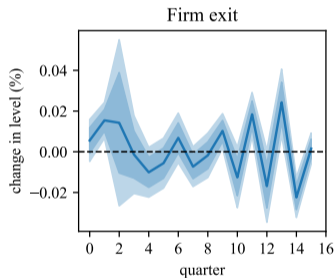
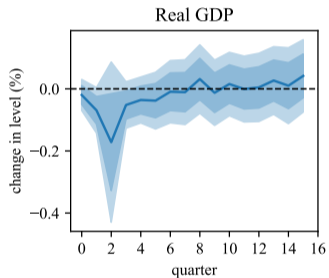
Results on the mechanism: loan types



Results on the mechanism: loan pricing and bank funding costs

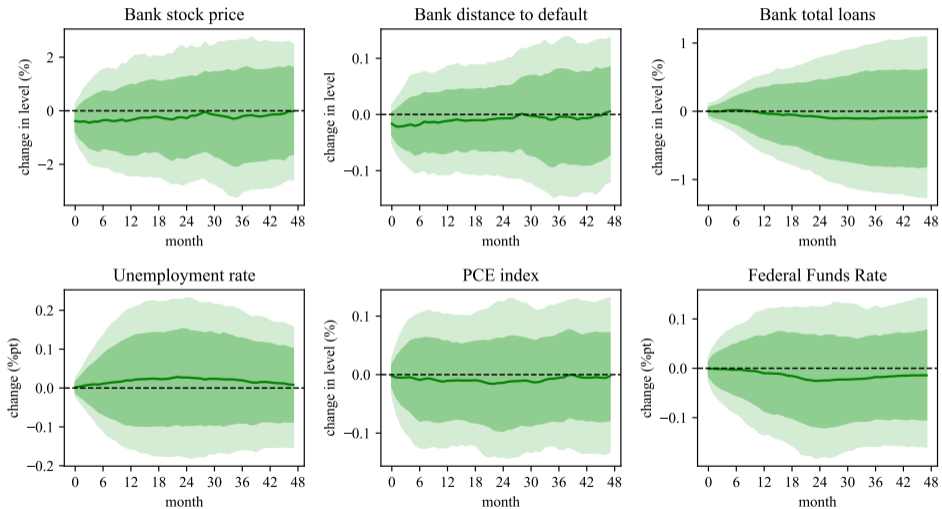


Results on the mechanism: GDP, firm exit, nonbank funding

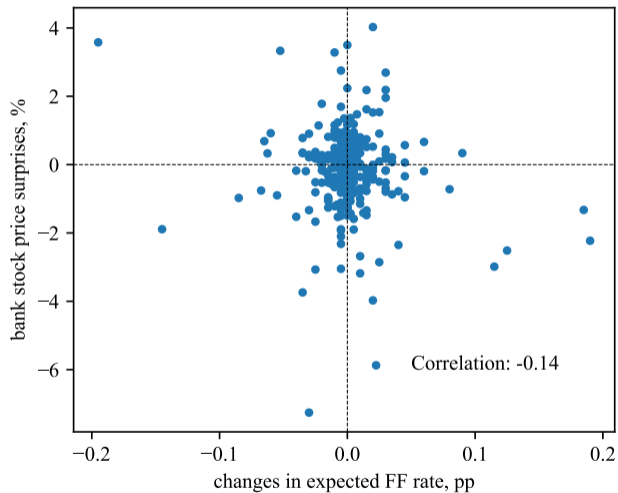


Validation results

Placebo test



Bank surprises vs. monetary policy surprises



Relation with macro shocks from the literature

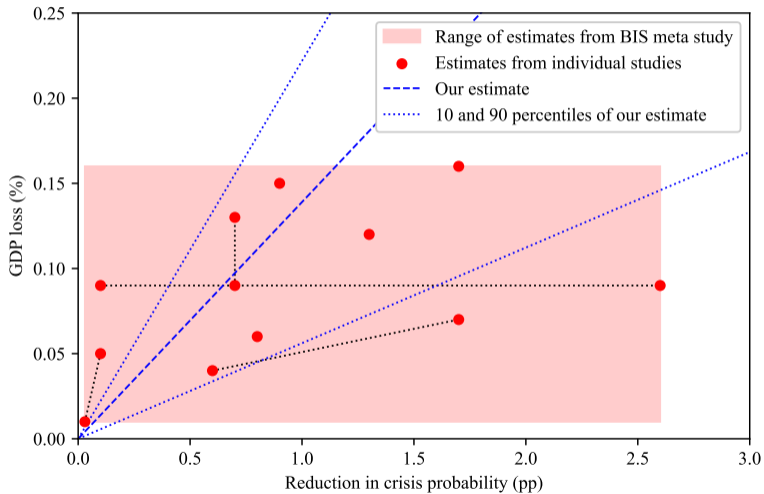
Shock type	Correlation	p-value	Sample
Monetary (Bauer and Swanson, 2023)	0.095	0.218	1998M1-2023M8
Uncertainty (Bloom, 2009)	-0.001	0.987	1998M1-2023M8
Oil supply news (Känzig, 2021)	0.080	0.301	1998M1-2023M8
Fiscal (Ramey and Zubairy, 2018)	0.086	0.580	1998Q1-2015Q4

- Speeches corresponding to large shocks ●
- Excluding the GFC ●
- Daily version from 1971 ●
- IRFs for bank health news ●
- IRFs for individual banks ●

Quantifying the tradeoff

- 10 bp decrease in CDS premium raises unemployment rate by 15 bp
- 10 bp decrease corresponds to 16.67 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



Magnitudes relative to the literature - discussion

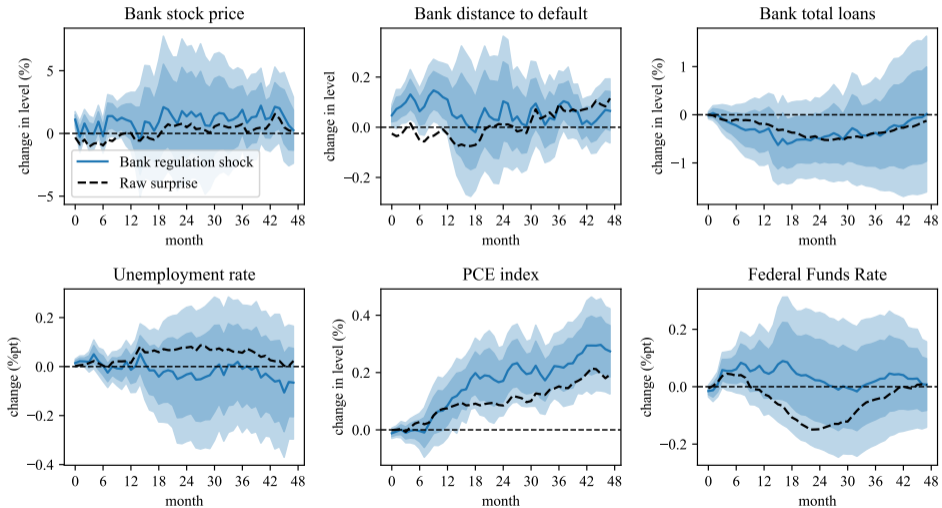
- Comparisons are very tricky
- Comparisons suggest we estimate sizable costs of regulation
- Our estimates capture short-run effects
- Stable financial sector supports growth in the long run, despite short-run costs
(Mendicino, Nikolov, Suarez, and Supera, 2020)
- Our estimates can be useful to discipline short-run dynamics of structural models that can speak to longer-term economic effects

Conclusion

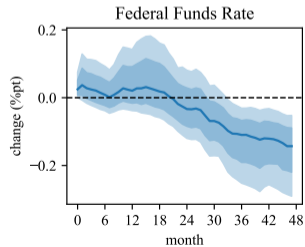
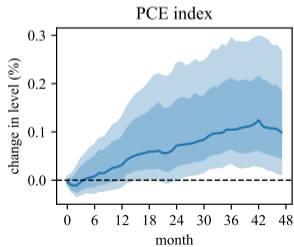
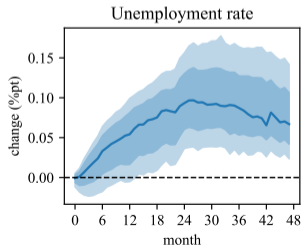
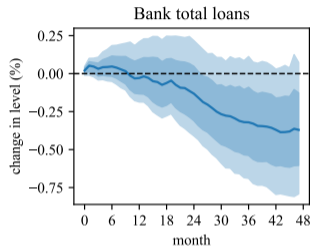
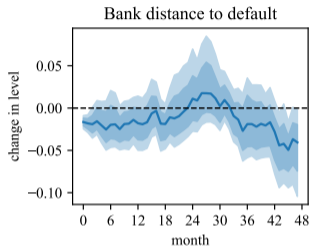
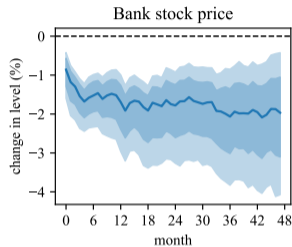
- Important to understand costs and benefits of bank regulation
- We use a high-frequency identification approach
- We study news about bank regulation revealed by Fed speeches
- While mitigating risk, news about bank regulation slows activity quite markedly

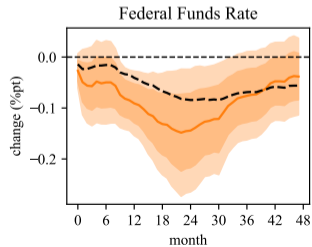
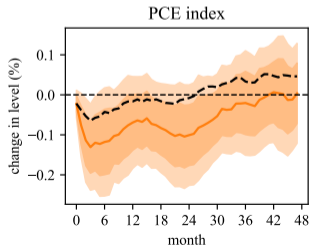
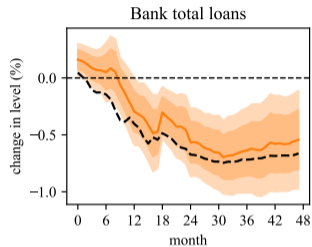
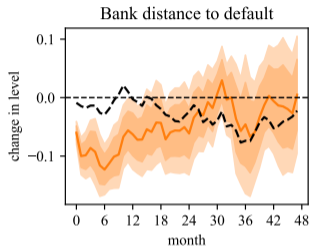
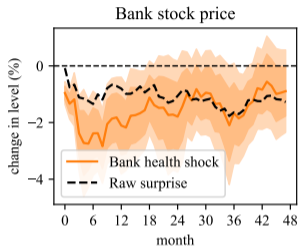
Appendix

Rank	Date	Shock (%)	Speaker name	Speaker title (at time of speech)
1	3/24/2009	4.03	Ben Bernanke	Chairman of the Federal Reserve
2	3/18/2009	3.58	Roger T. Cole	Director, Banking Supervision and Regulation
3	6/19/2008	1.96	Donald L. Kohn	Vice Chair of the Federal Reserve
4	12/3/2009	-1.89	Ben Bernanke	Chairman of the Federal Reserve
5	10/14/2008	-1.89	Ben Bernanke	Chairman of the Federal Reserve
6	7/9/2019	1.54	Randal Quarles	Vice Chair for Supervision
7	7/10/2008	1.53	Ben Bernanke	Chairman of the Federal Reserve
8	3/23/2021	-1.26	Lael Brainard	Member of the Board of Governors
9	4/8/2010	1.24	Ben Bernanke	Chairman of the Federal Reserve
10	6/3/2010	-1.22	Ben Bernanke	Chairman of the Federal Reserve



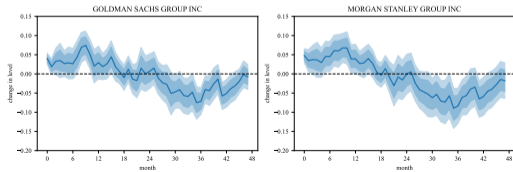
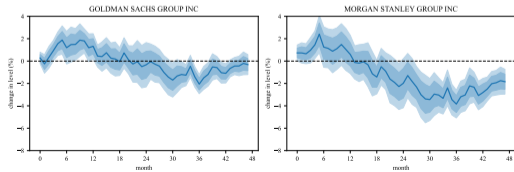
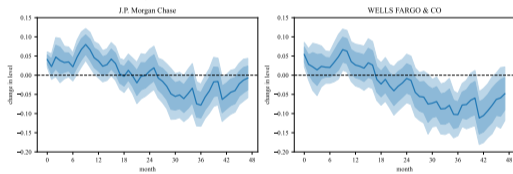
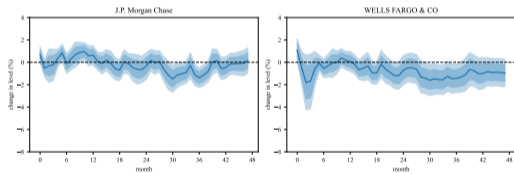
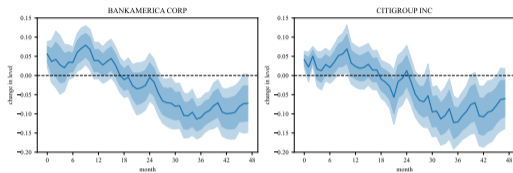
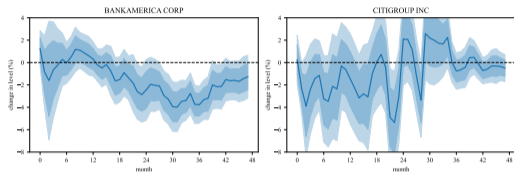
- Tick data start in 1998, so sample for high-frequency analysis relatively short
 - Typical problem in the monetary policy literature
- Can use daily data (NASDAQ Bank Index) from 1971
- AT daily frequency, high-frequency identification less credible
- We instead employ identification via heteroskedasticity (Rigobon and Sack, 2004)





Responses of individual banks - stock prices (left) and D2D (right)

back



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