Columbia Business School
AT THE VERY CENTER OF BUSINESS™

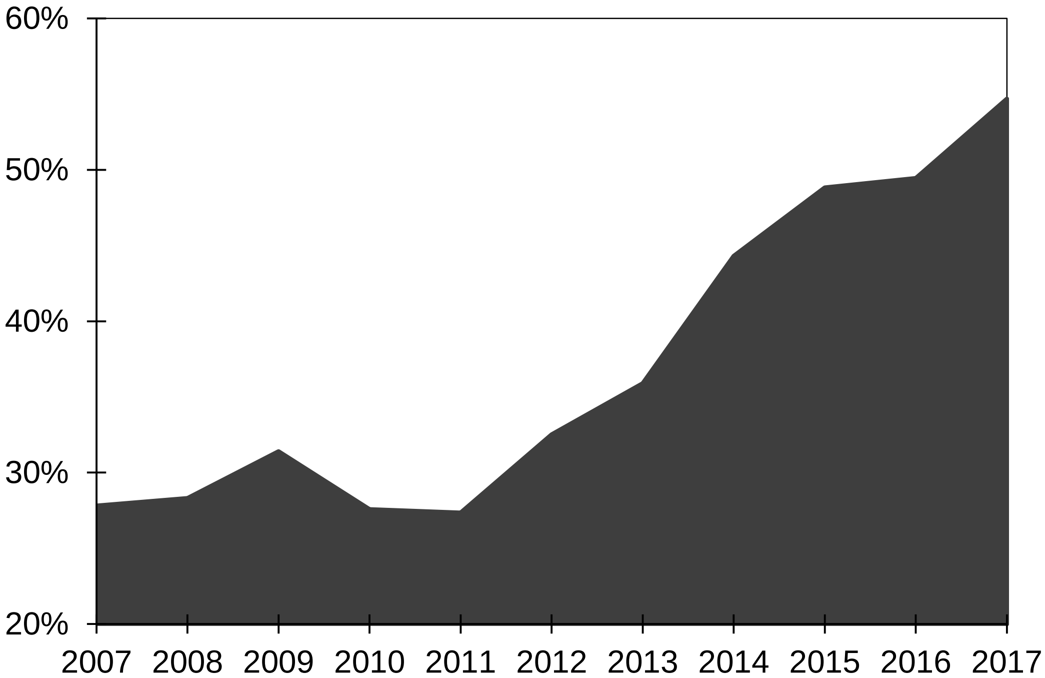
Fintech and Shadow Banking

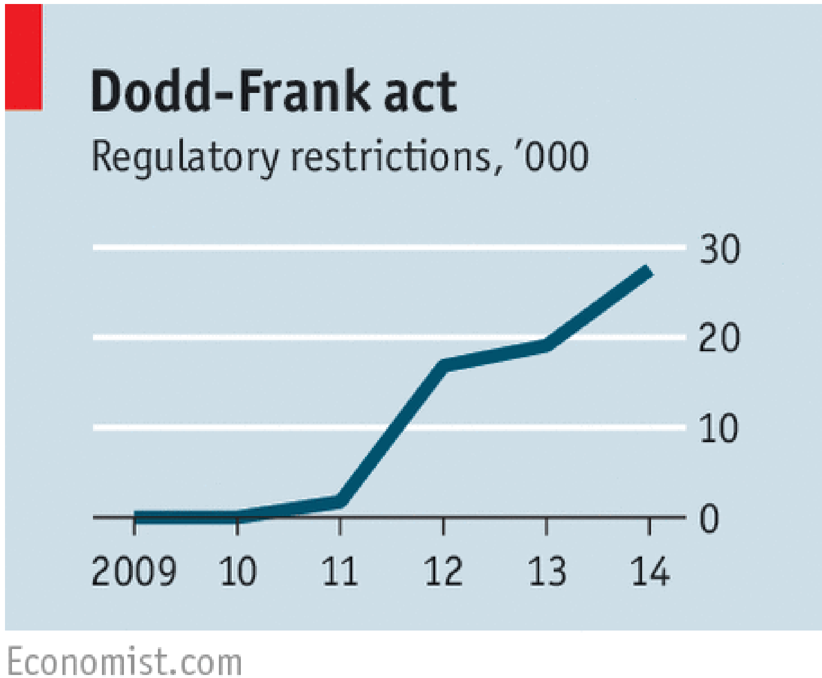
Tomasz Piskorski
Columbia GSB and NBER

Last Decade: Dramatic Change in Lending Landscape

- Rapid rise of shadow banks (SBs) in the lending market
- Occurred during the period of increasing bank regulatory burden

Shadow bank share in the $10 trillion US mortgage market



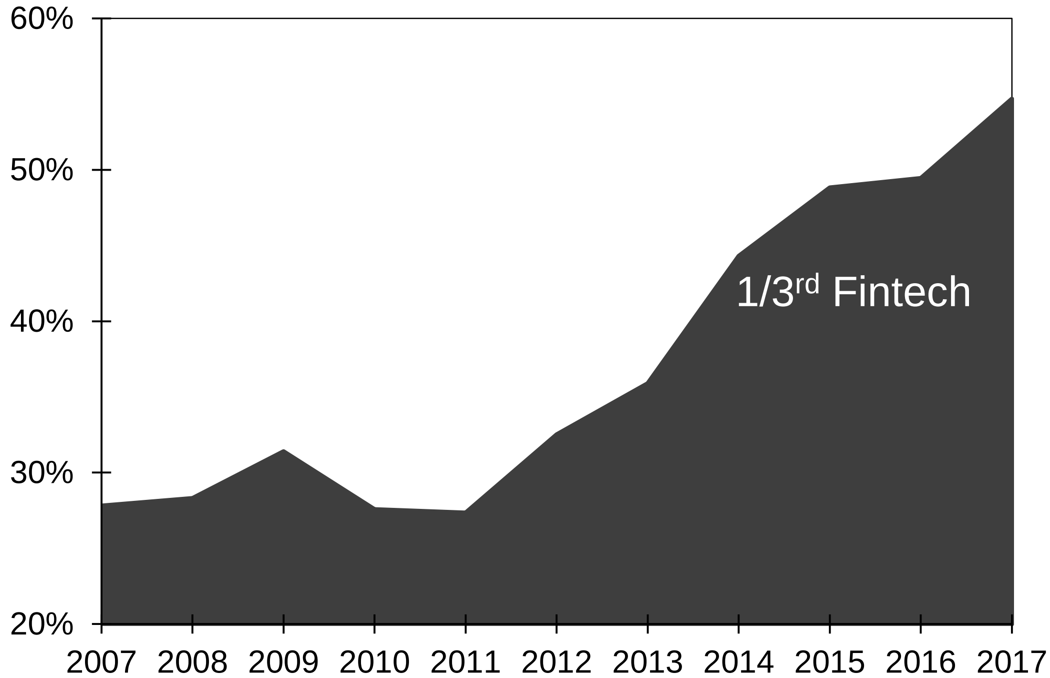


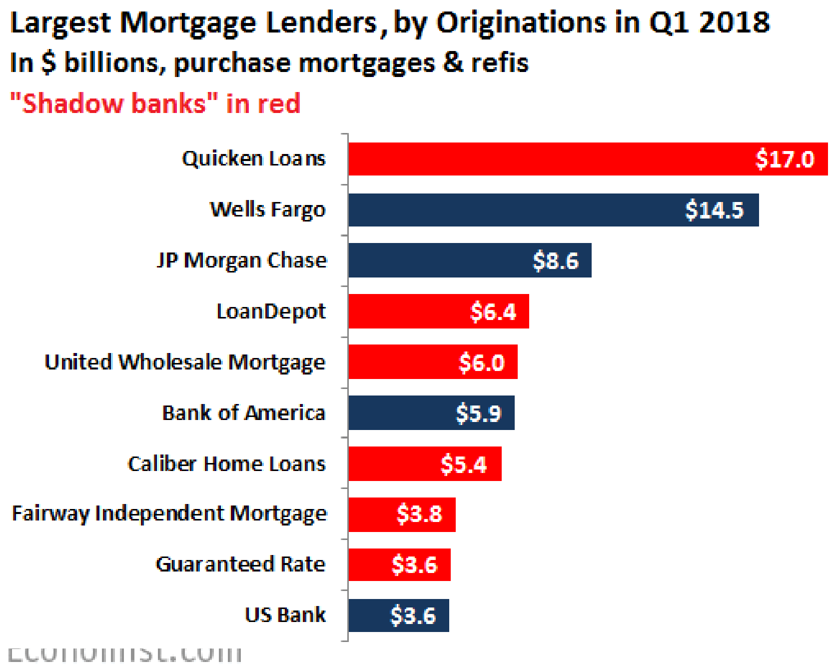
Source: Buchak, Matvos, Piskorski, and Seru (2018a)

Last Decade: Dramatic Change in Lending Landscape

- Rapid rise of shadow banks (SBs) in the lending market
- Occurred during the period of increasing bank regulatory burden
- Fintech lenders important part of this trend
  - Shadow banks early adopters of financial technology

Shadow bank share in the $10 trillion US mortgage market





Source: Buchak, Matvos, Piskorski, and Seru (2018a)

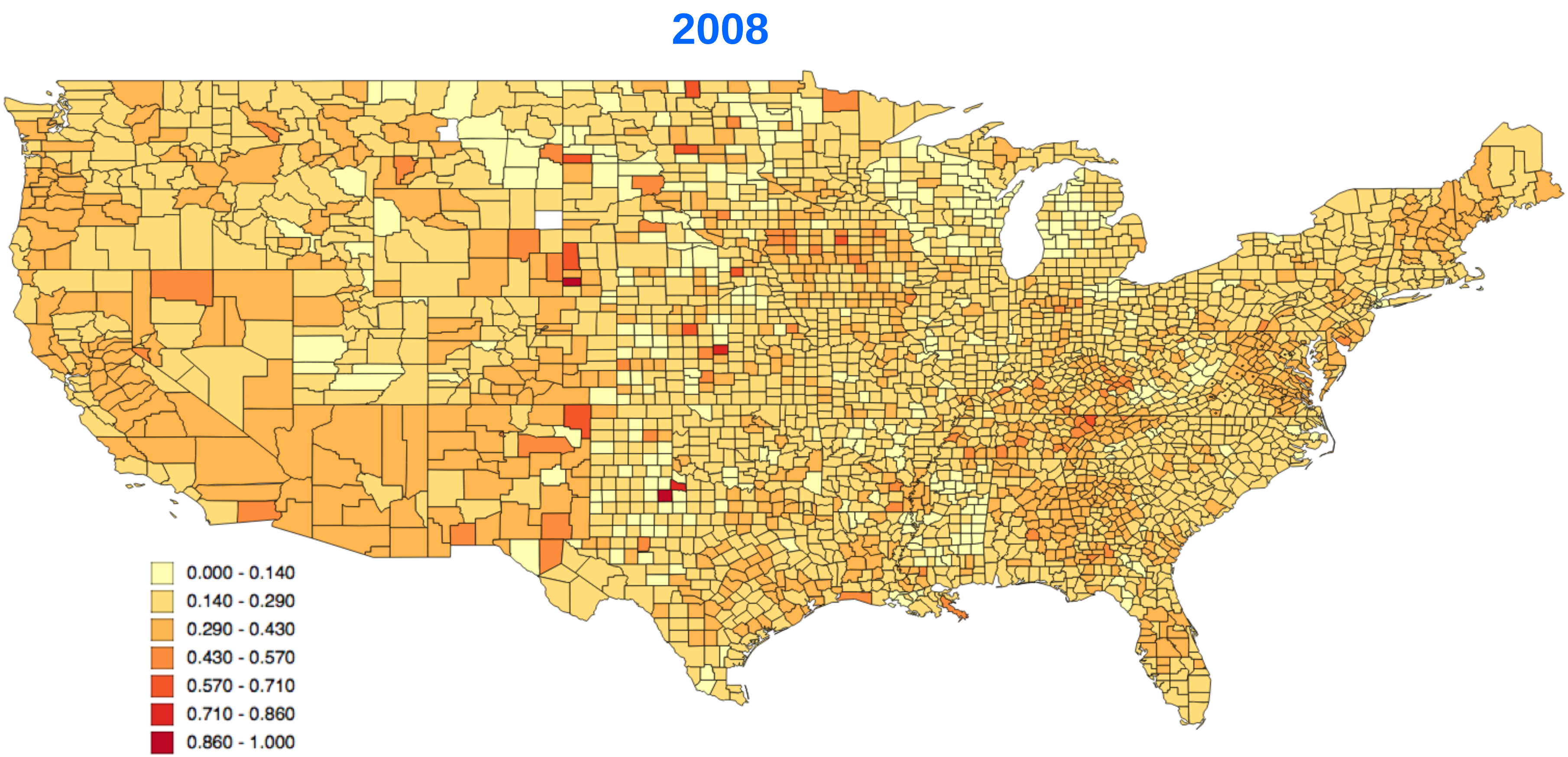
Rise of Shadow Banks: Key Questions

- How much of the growth driven by regulations vs technology
  - Regulation: capital costs, scrutiny/supervision burden, legal costs
  - Technology: lower costs, higher quality products, better models
- Impact on consumers
  - E.g., access/distribution/pricing of credit/financial services
- Implications for financial stability and regulation
  - Need to rethink current regulatory framework?

Rise of Shadow Banks: Regulatory Burden?

- Extensive regulation of banks after crisis
  - Dodd Frank
  - Basel III
  - Changes in regulators, enforcement..
- Regulation dampens bank lending
  - Traditional banks face rising capital costs
  - Traditional banks face greater capital constraints
  - Traditional banks face greater regulatory scrutiny
- Shadow banks fill regulatory gaps?

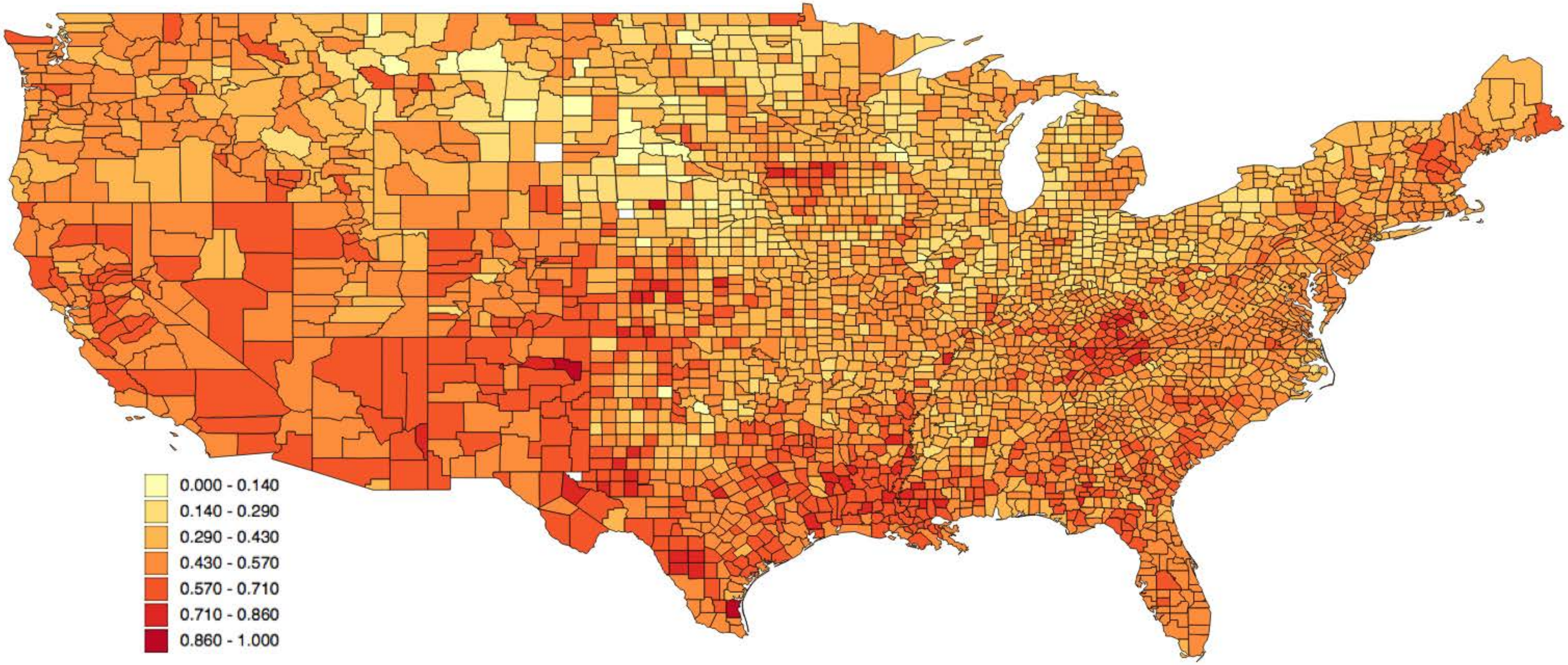
Shadow Bank Expansion in the Residential Mortgage Market



Source: Buchak, Matvos, Piskorski, and Seru (2018a)

Shadow Bank Expansion in the Residential Mortgage Market

2015



Source: Buchak, Matvos, Piskorski, and Seru (2018a)

Rise of Shadow Banks: Regulatory Burden?

- Source of Variation (BMPS, 2018a)
  - Banks are exposed to national-level regulatory shocks
  - Counties exposed through 2008 bank lending market share
  - County-level variation in exposure to differentially shocked banks

- Regulatory Changes
  1. Higher Capital Requirements

     Bank Capitalization: Banks rebuilding capital → Lend less
  2. Enforcement / Legal Risk

     Lawsuits: Banks exposed to more mortgage-related lawsuits → Lend less
  3. Tighter regulatory supervision:

     OTS Closure: Banks supervised by OTS → Lend Less

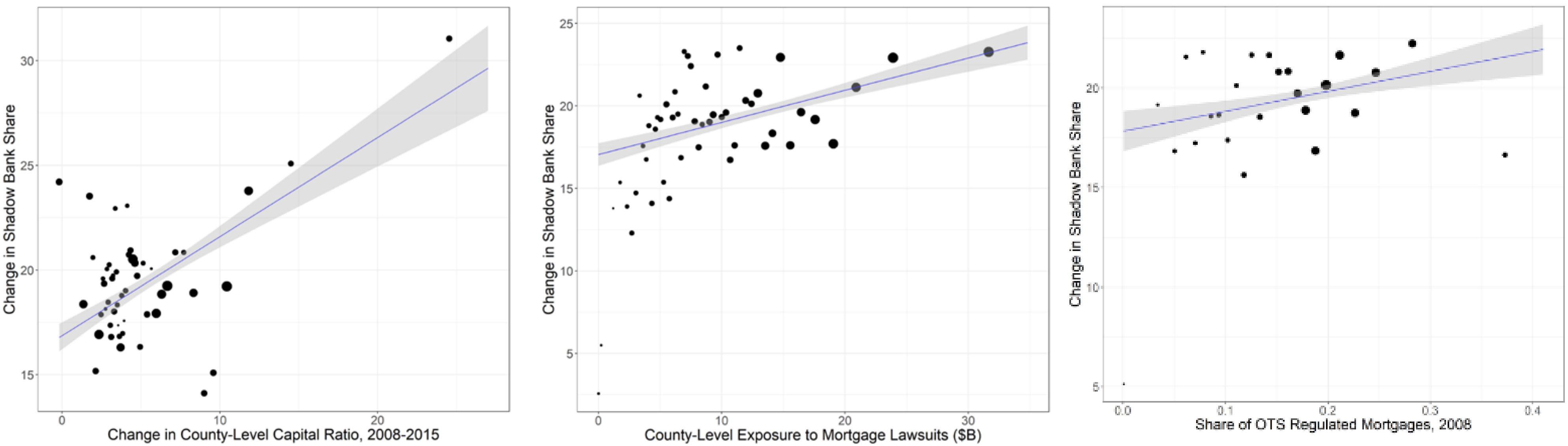
- Outcome
  - Changes in shadow bank market share from 2008

Source: Buchak, Matvos, Piskorski, and Seru (2018a)

Shadow Bank Expansion and Bank Regulatory Burdn

- Assess shadow expansion in response to bank regulatory burden
  - Shocks to Regulatory Burden (BMPS 2017)
  - Banks retreated and shadow banks expanded where regulatory burden ↑

ROLE OF REGULATION IN SHADOW BANK EXPANSION



$$\boldsymbol{\Delta Shadow\ Bank\ Lending\ Share_c} = \beta_0 + \beta_1 \boldsymbol{\Delta Regulatory\ Burden_c} + X_c'\Gamma + \epsilon_c$$

Source: Buchak, Matvos, Piskorski, and Seru (2018a)

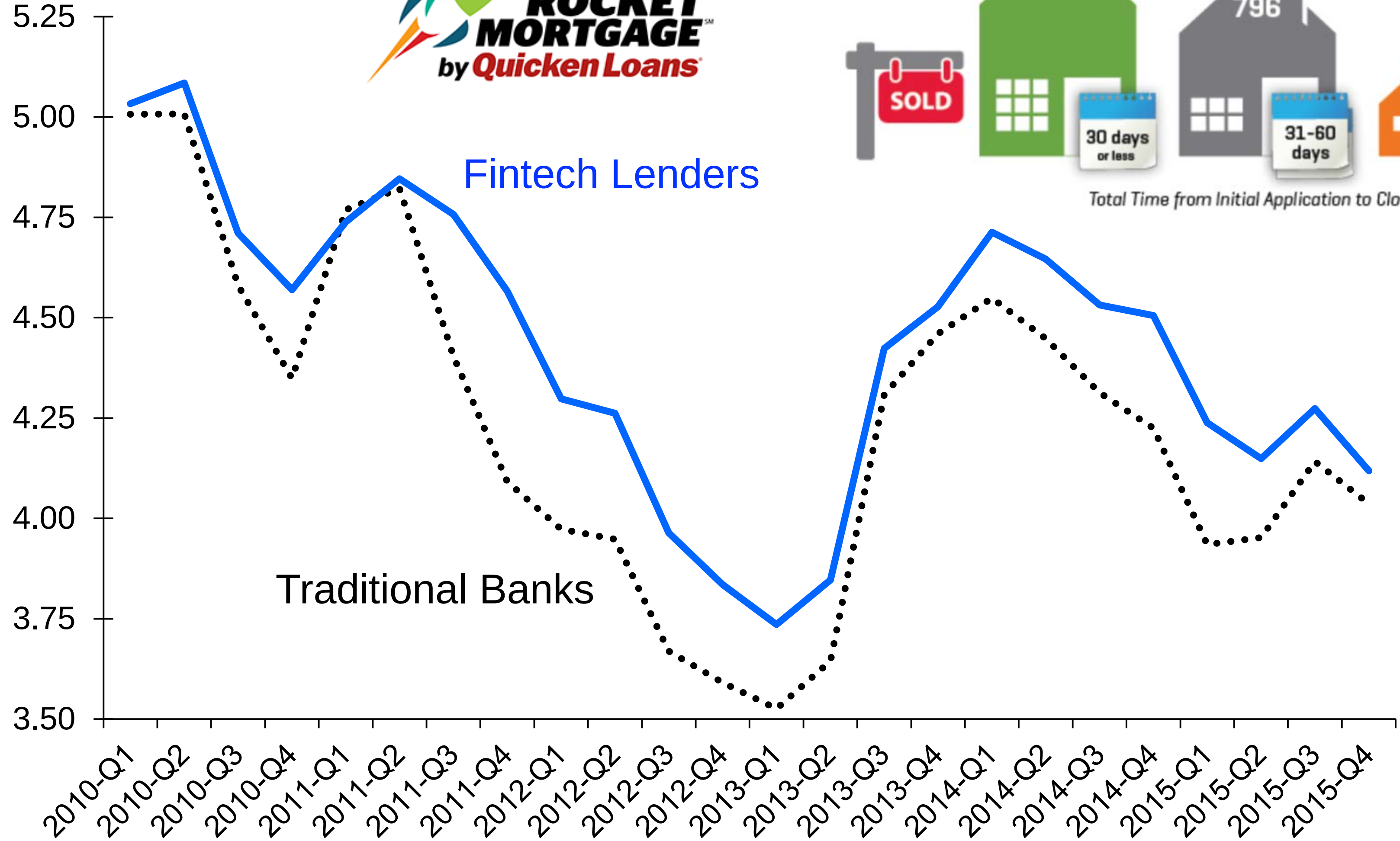
Rise of Shadow Banks: Technology?

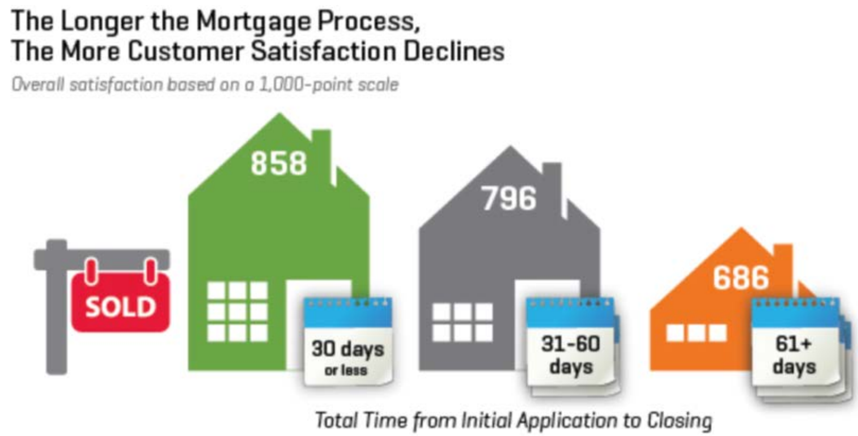
- Fintech lenders account for significant part of SB expansion
  - 1/3rd in the mortgage market

- Fintech lenders (BMPS, 2018a)
  - Serve more creditworthy borrowers than shadow banks
  - Focus on refinancing
  - Originate and sell loan faster than traditional banks
  - Seem to use different models/data in loan origination process
  - Provide convenience rather than direct cost savings

Source: Buchak, Matvos, Piskorski, and Seru (2018a)

Fintech Premium: Fintech vs Bank Mortgage Rates

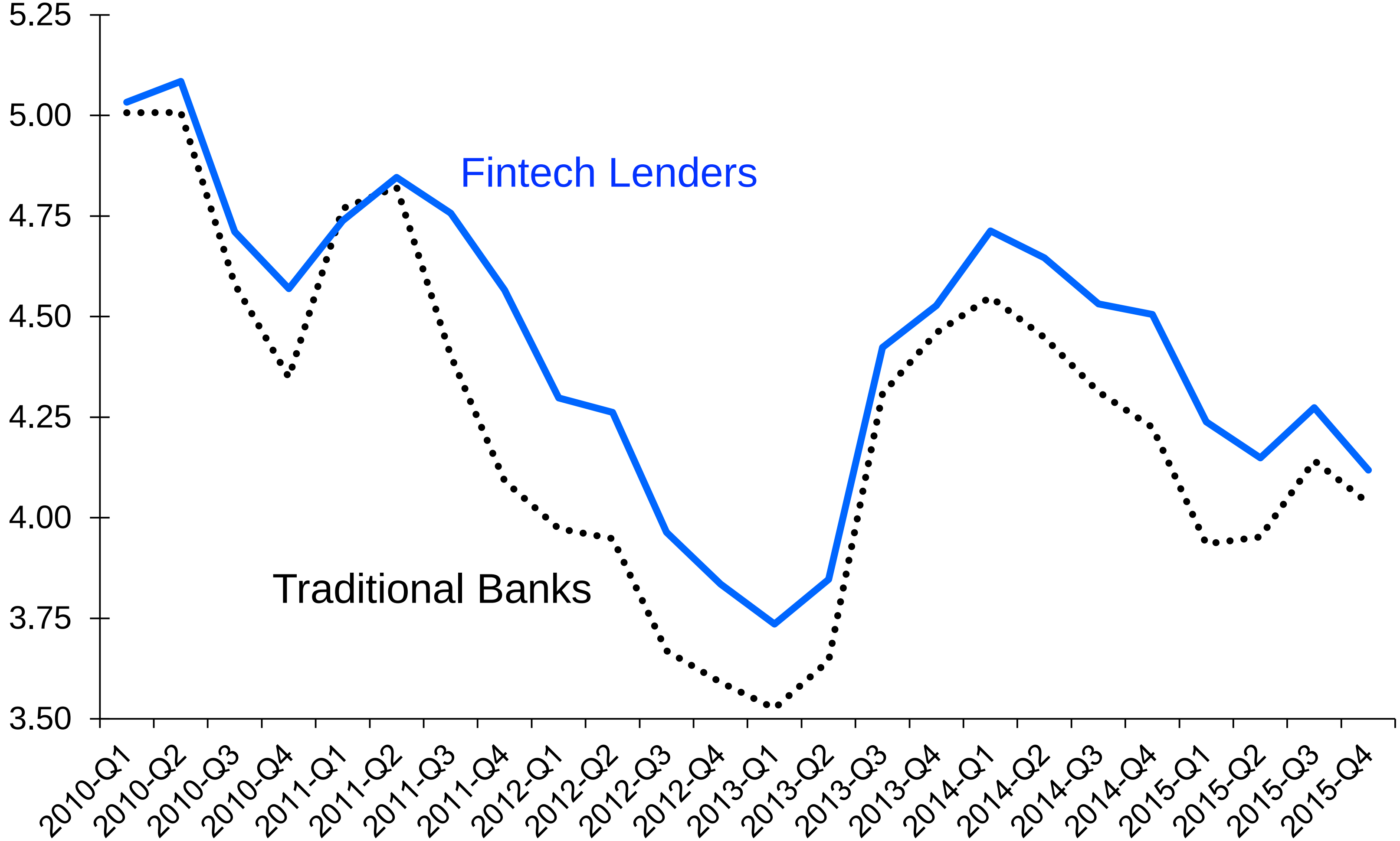




Source: Buchak, Matvos, Piskorski, and Seru (2018a)

Fintech Premium: Fintech vs Bank Mortgage Rates

- Fintech can offer borrowers convenience rather than costs savings



Source: Buchak, Matvos, Piskorski, and Seru (2018a)

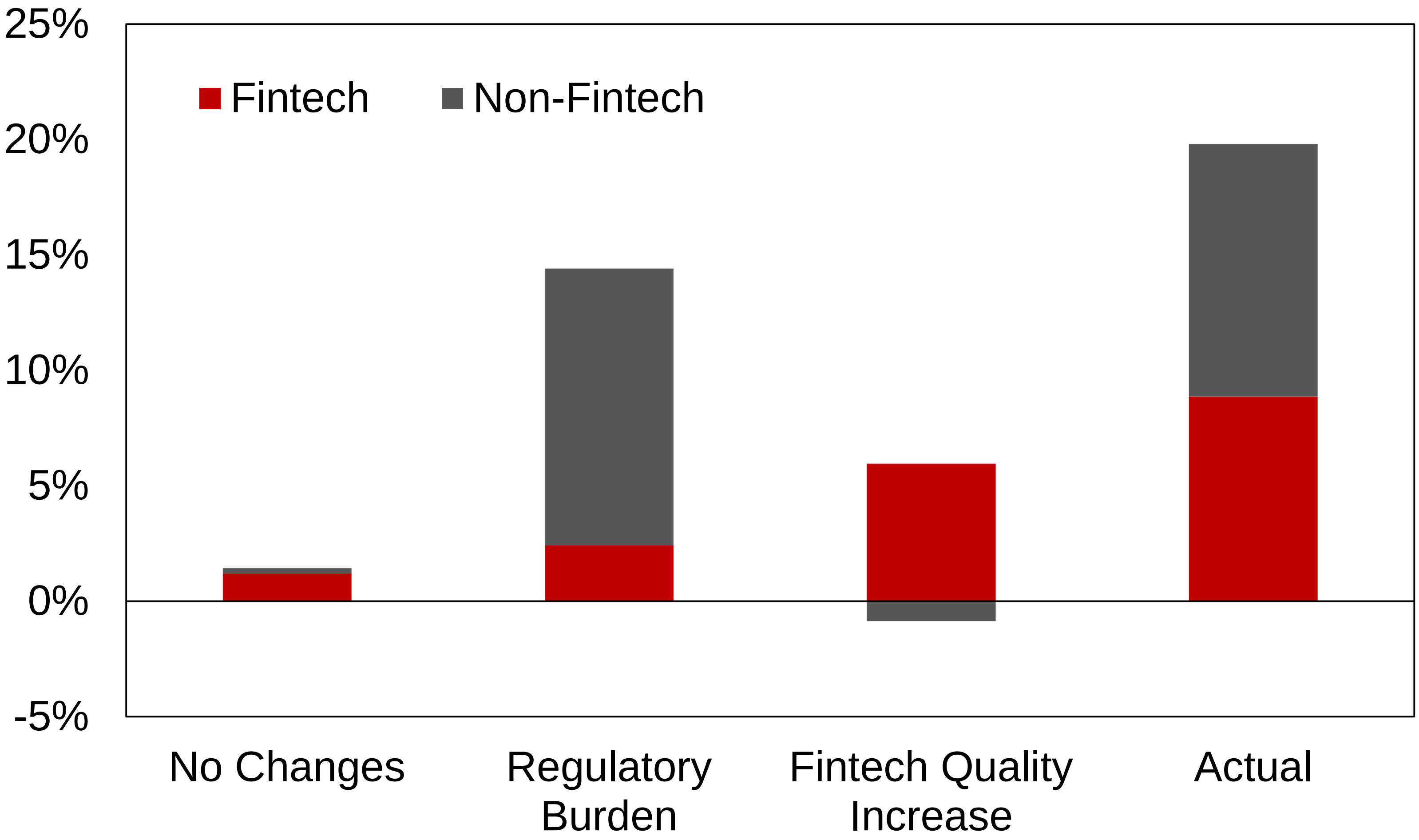
Rise of Shadow Banks: Regulation vs Technology

- What we know so far:
  - Shadow banks expand in areas with banks subject to more regulatory oversight
  - Fintech lenders command rate premium and appear to process/sell loans faster

- Quantitative model to assess role of technology and regulation
  - Combine regulatory and technology effects
  - Decomposition: how much in technology and how much is regulation
  - Informed by the data (market shares, prices)

- Key Findings
  - Estimate that 60-70% of shadow bank growth due to regulation
  - Rest due to financial technology (about 30%)

Rise of Shadow Banks: Regulation vs Technology

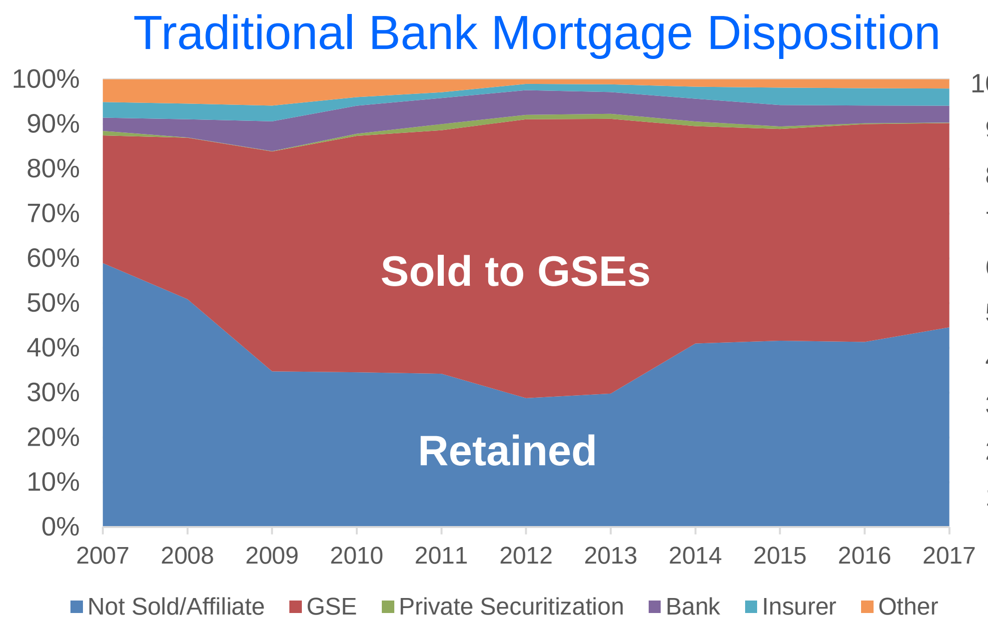


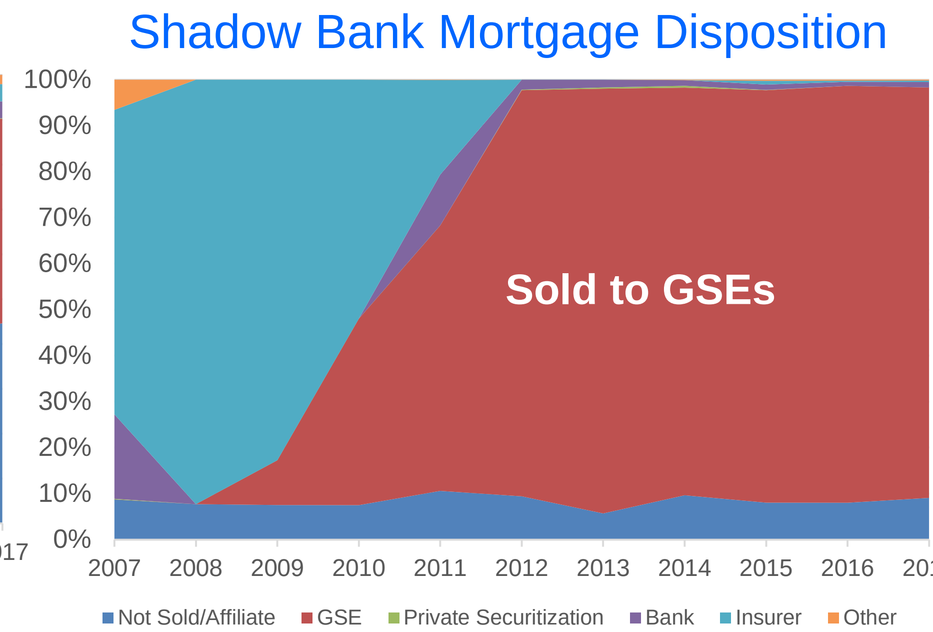
- 60-70% of shadow bank growth due to increase in bank regulatory burden
- Rest due to financial technology (about 30%)

Source: Buchak, Matvos, Piskorski, and Seru (2018a)

Rise of Shadow Banks: Implications

- Implications for Financial Stability
  - Fintech/SBs have no deposit funding base, limited balance sheet capacity
  - Dependent on ability to sell loans/warehouse lines/GSEs/crowdfunding





Source: Buchak, Matvos, Piskorski, and Seru (2018a)

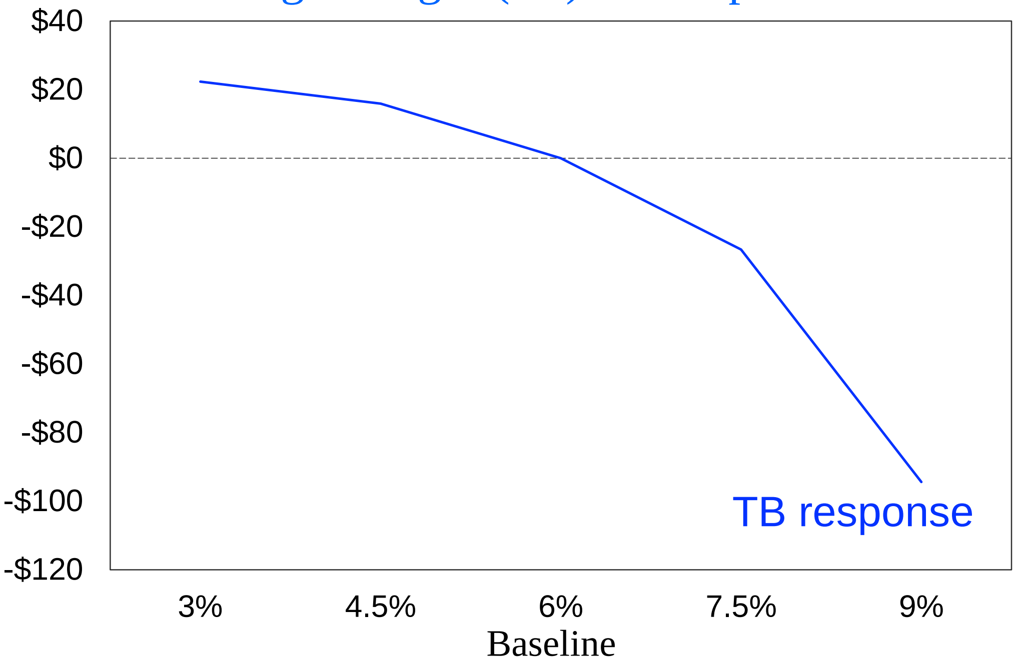
Rise of Shadow Banks: Implications

- Implications for Financial Stability
  - Fintech/SBs have no deposit funding base, limited balance sheet capacity
  - Dependent on ability to sell loans/warehouse lines/GSEs/crowdfunding
  - SBs can quickly shutdown in the face of funding problems like in 2007
    - Mortgage market shadow bank share: 2007 ≈ 25% vs Now > 50%
  - New lending models have not been tested during downturn
  - In case of the shutdown of fintech/SB lenders who will pick up the slack?
    - Traditional banks (TB) may be unable due to limited experience/market presence

Rise of Shadow Banks: Implications

- Implications for Regulatory Framework (BMPS, 2018b)
  - Need to recognize the role of shadow banks and IO of the market
  - SBs response can significantly affect transmission of various polices
    - Quantity, pricing, distribution of credit, bank stability

Lending Changes ($B) and Capital Ratios

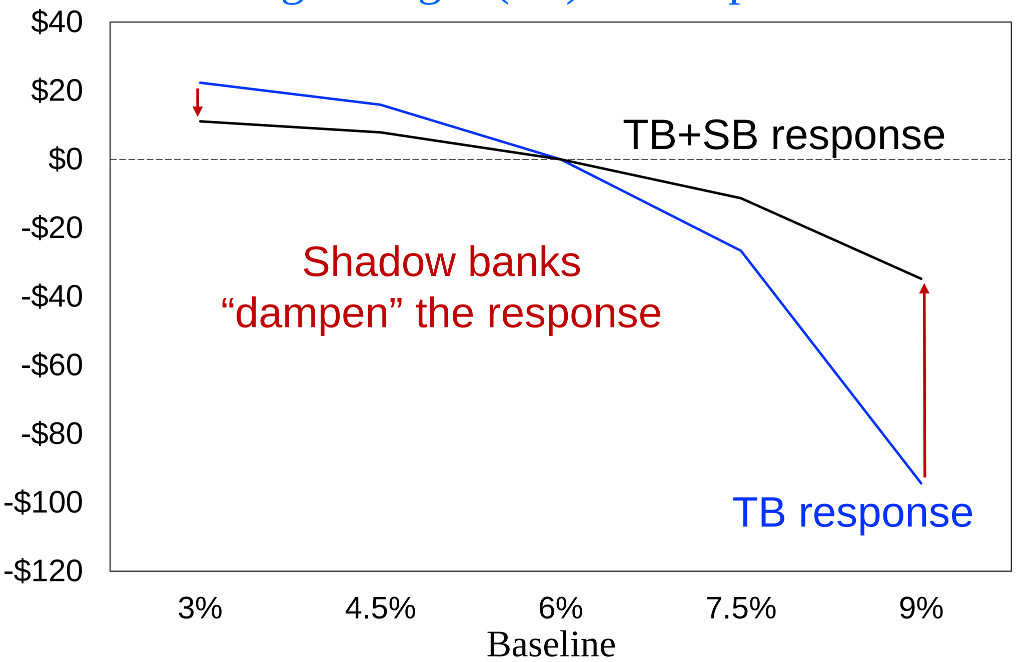


Source: Buchak, Matvos, Piskorski, and Seru 2018b

Rise of Shadow Banks: Implications

- Implications for Regulatory Framework (BMPS, 2018b)
  - Need to recognize the role of shadow banks and IO of the market
  - SBs response can significantly affect transmission of various polices
    - Quantity, pricing, distribution of credit, bank stability

Lending Changes ($B) and Capital Ratios

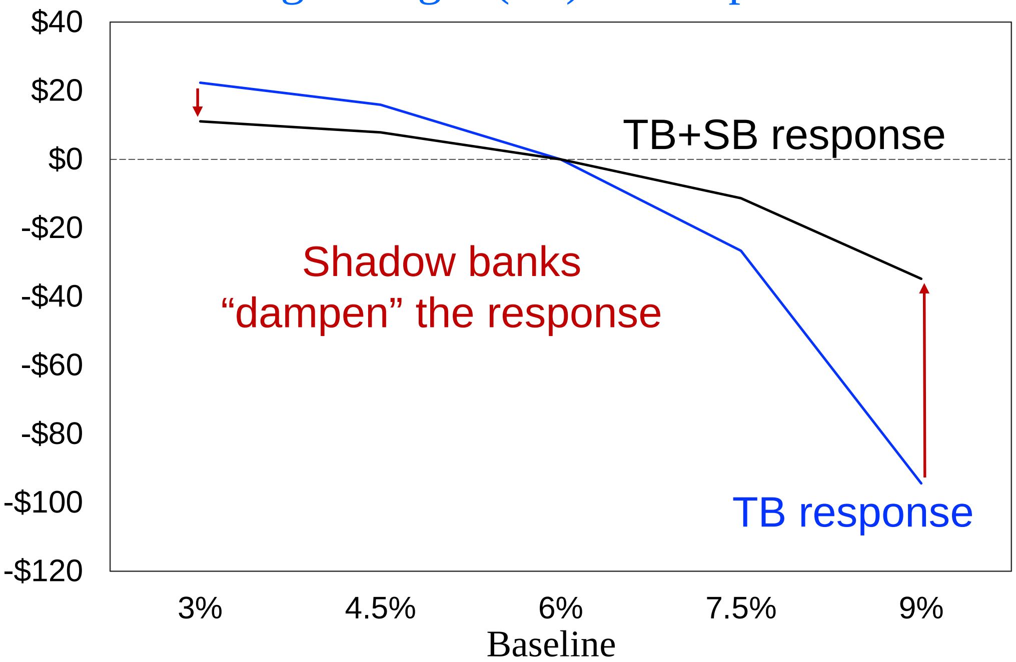


Source: Buchak, Matvos, Piskorski, and Seru 2018b

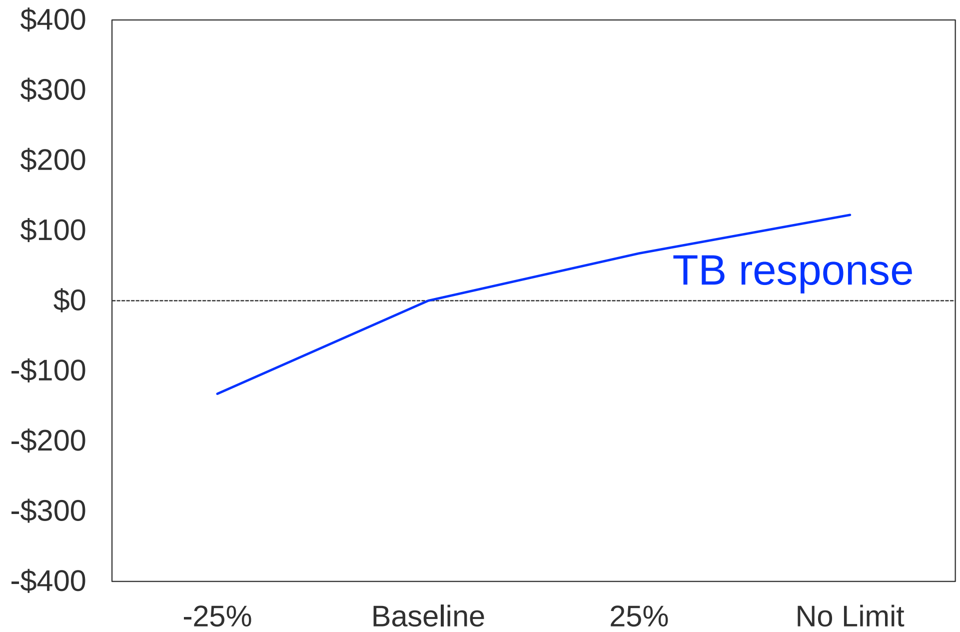
Rise of Shadow Banks: Implications

- Implications for Regulatory Framework (BMPS, 2018b)
  - Need to recognize the role of shadow banks and IO of the market
  - SBs response can significantly affect transmission of various polices
    - Quantity, pricing, distribution of credit, bank stability

Lending Changes ($B) and Capital Ratios



Lending Changes ($B) and Conforming Limit

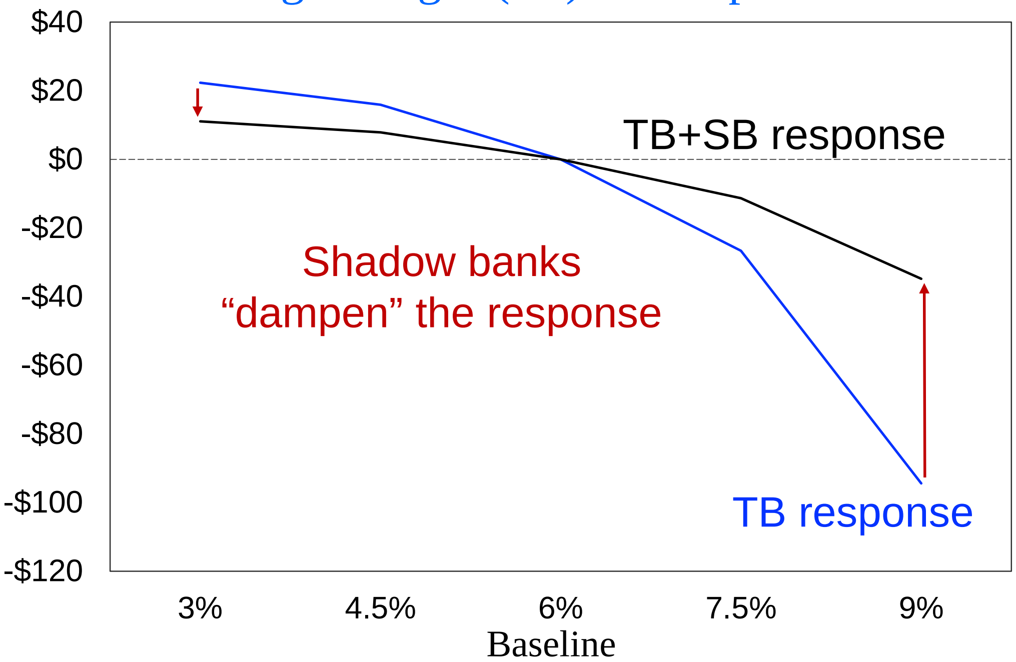


Source: Buchak, Matvos, Piskorski, and Seru 2018b

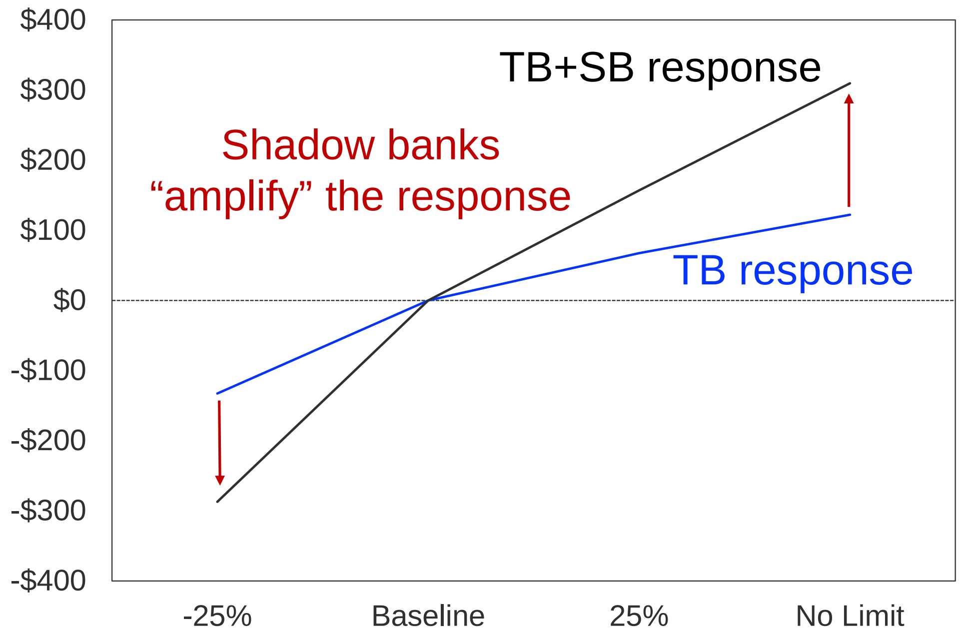
Rise of Shadow Banks: Implications

- Implications for Regulatory Framework (BMPS, 2018b)
  - Need to recognize the role of shadow banks and IO of the market
  - SBs response can significantly affect transmission of various polices
    - Quantity, pricing, distribution of credit, bank stability

Lending Changes ($B) and Capital Ratios



Lending Changes ($B) and Conforming Limit



Source: Buchak, Matvos, Piskorski, and Seru 2018b

Rise of Shadow Banks: Implications

- Taxpayer Exposure
  - No direct FDIC exposure…but GSE exposure in the mortgage market
    - Increased taxpayer risk due to limited regulation and GSE guarantees?
    - Can make scaling down the role of GSEs even harder
- Consumer Welfare
  - SBs dominate market for the least creditworthy (+80% FHA market share)
    - Much less regulatory oversight than traditional banks
  - Use of big data/credit scoring algorithms create regulatory challenges
- Traditional Bank Response
  - Shadow banks were early adopters of new technologies
    - Less concern about regulatory implications, no legacy investments/systems
  - Traditional banks are catching up
    - Evolving market structure can create further regulatory challenges

References

- Buchak, G., G. Matvos, T. Piskorski, A, Seru, 2018a, “Fintech, Regulatory Arbitrage, and the Rise of Shadow Banks”, *Journal of Financial Economics* 130, 453-483.

  Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2941561

- Buchak, G., G. Matvos, T. Piskorski, A, Seru, 2018b, “The Limits of Shadow Banks”, *National Bureau of Economic Research Working Paper* 25149.

  Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3260434