

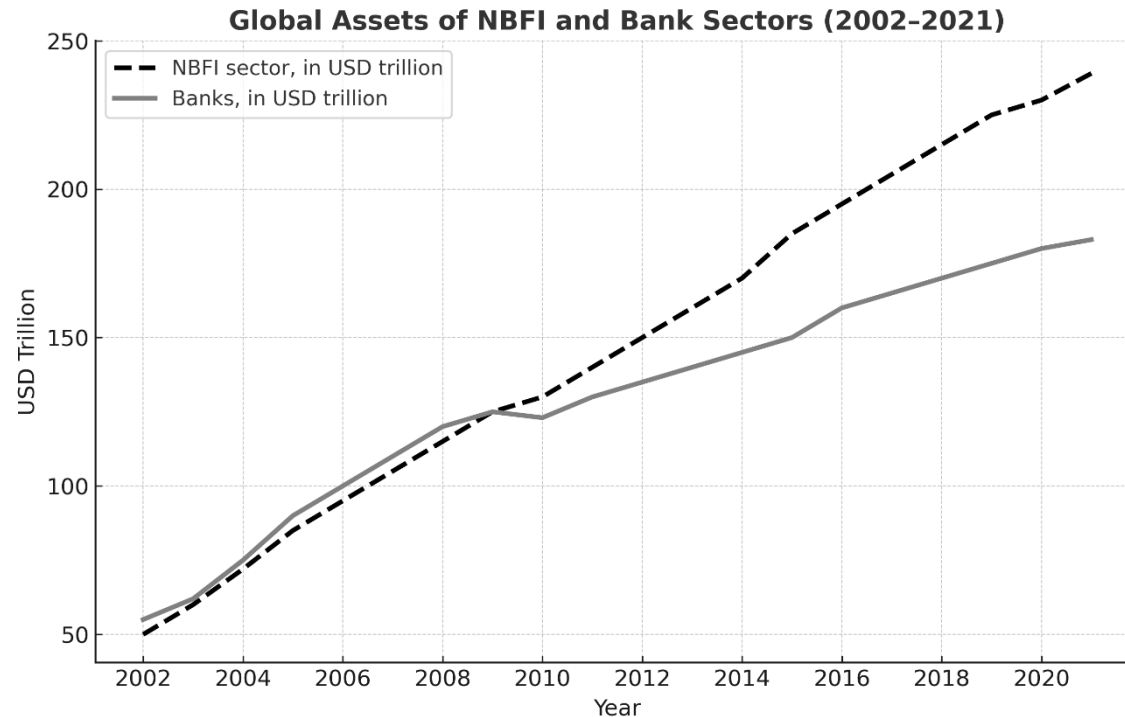
Where Do Banks End and NBFIs Begin??

by Viral Acharya, Nicola Cetorelli, Bruce Tuckman

Tomasz Piskorski
Columbia University & NBER

Motivation

- ❑ Significant growth of NBFIs over last few decades
- ❑ NBFIs (non-bank financial intermediaries) now surpass banks in global assets
- ❑ NBFIs lightly regulated vs. heavily regulated banks




Regulatory Focus

Car lender's failure hints at what's under the hood in private credit

FT FINANCIAL TIMES Published SEP 11 2025

Triclor isn't a bank. It borrowed from banks like JPMorgan, Fifth Third and Barclays, lent to car buyers, then bundled its auto loans as securitized bonds to sell to institutional investors.



Shadow Banking
(NBFI Sector)

Wall Street CEOs try to convince senators that new capital rules will hurt Americans as well as banks

PUBLISHED WED, DEC 6 2023



Hugh Son
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Traditional Banks

Conceptual Views of Bank-NBFI Relations

- ❑ Parallel View: Banks and NBFIs operate separately, with different roles.
 - ❑ Substitution View: Activities migrate to NBFIs, e.g., due to bank regulation.
 - ❑ Transformation View (Authors):
 - Risks and activities do not simply migrate from banks to NBFIs.
 - They “transform” and intertwine across both sectors.
 - Banks remain special due to deposit franchises and LOLR access
 - Banks provide credit to NBFIs (loans and credit lines)
- Consistent with “Distributive financial intermediation” Buchak et al. (2025)

This Paper: Evidence for “Transformation”

- ❑ FWTW (From Whom to Whom) data patterns:
 - Banks and NBFIs finance each other, but NBFIs especially depend on banks.
 - Bank loans to NBFIs: ~\$125B → \$300B (2013–2023); Credit lines: ~\$500B → \$1.5T
- ❑ Case studies: Private credit funds (e.g., Blackstone); Mortgage non-banks, Bank liquidity for derivative clearing.
- ❑ Systemic Risk Interlinkages
 - SRISK correlations between banks & NBFIs rose from ~64% (pre-GFC) to >80%
 - Granger causality analysis suggests shocks transmit both ways
 - (esp. GFC, Pandemic, SVB stress).

This Paper: Implications

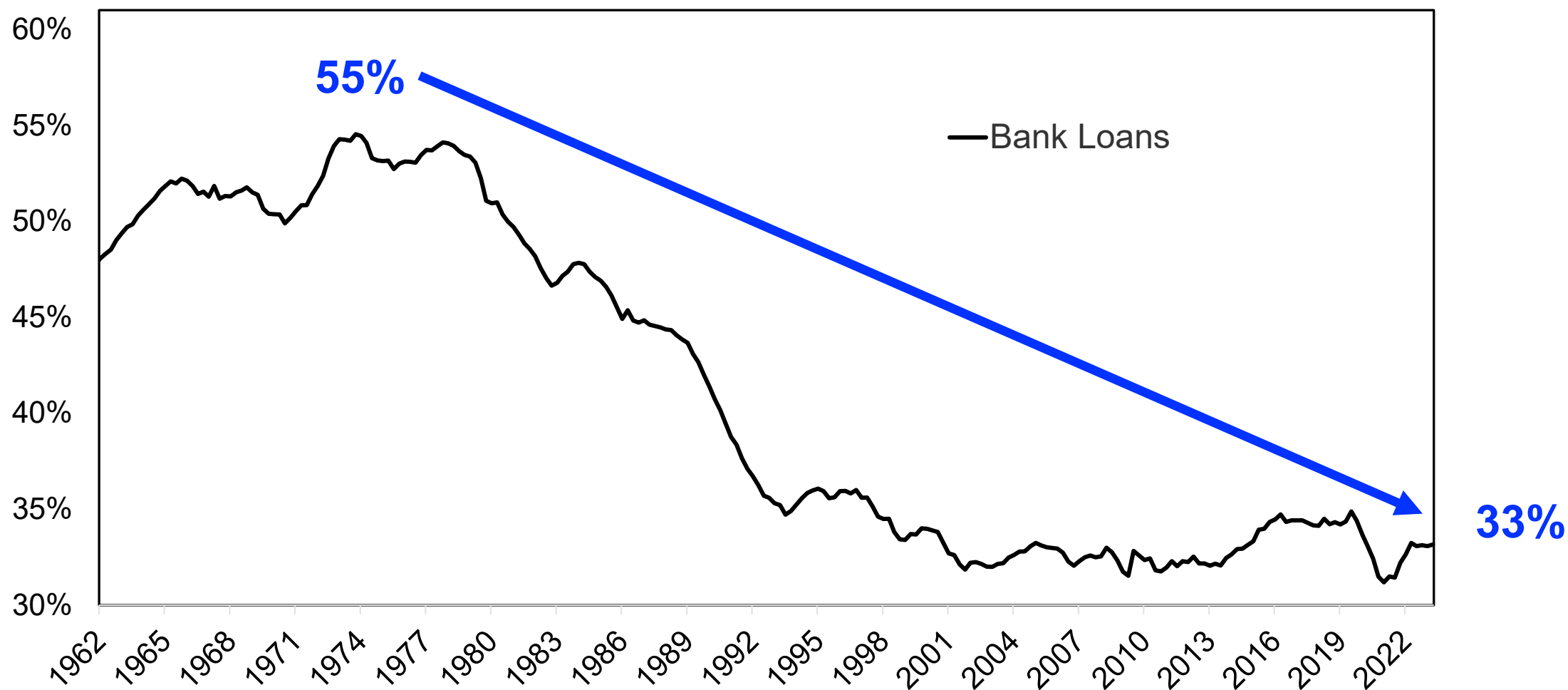
- ❑ Systemic risk is now a bank–NBFI nexus.
- ❑ Regulatory tightening on banks may overstate reductions in systemic risk.
- ❑ Policy suggestions:
 - Holistic regulation covering bank–NBFI linkages.
 - Pre-committed liquidity frameworks
 - Oversight of NBFIs that benefit from official support.

Comments

- ❑ This paper: Valuable additional evidence on the growth of NBFIs
- ❑ Broadly agree with the authors' assessments
- ❑ Main comments
 - Causes of the NBFIs growth over last few decades
 - Banks & NBFIs financial stability considerations (solvency & liquidity)
 - Consequences of the NBFIs growth
 - It fundamentally alters pass-through of monetary policy and financial regulation
 - Need for the new financial intermediation framework for policy analysis

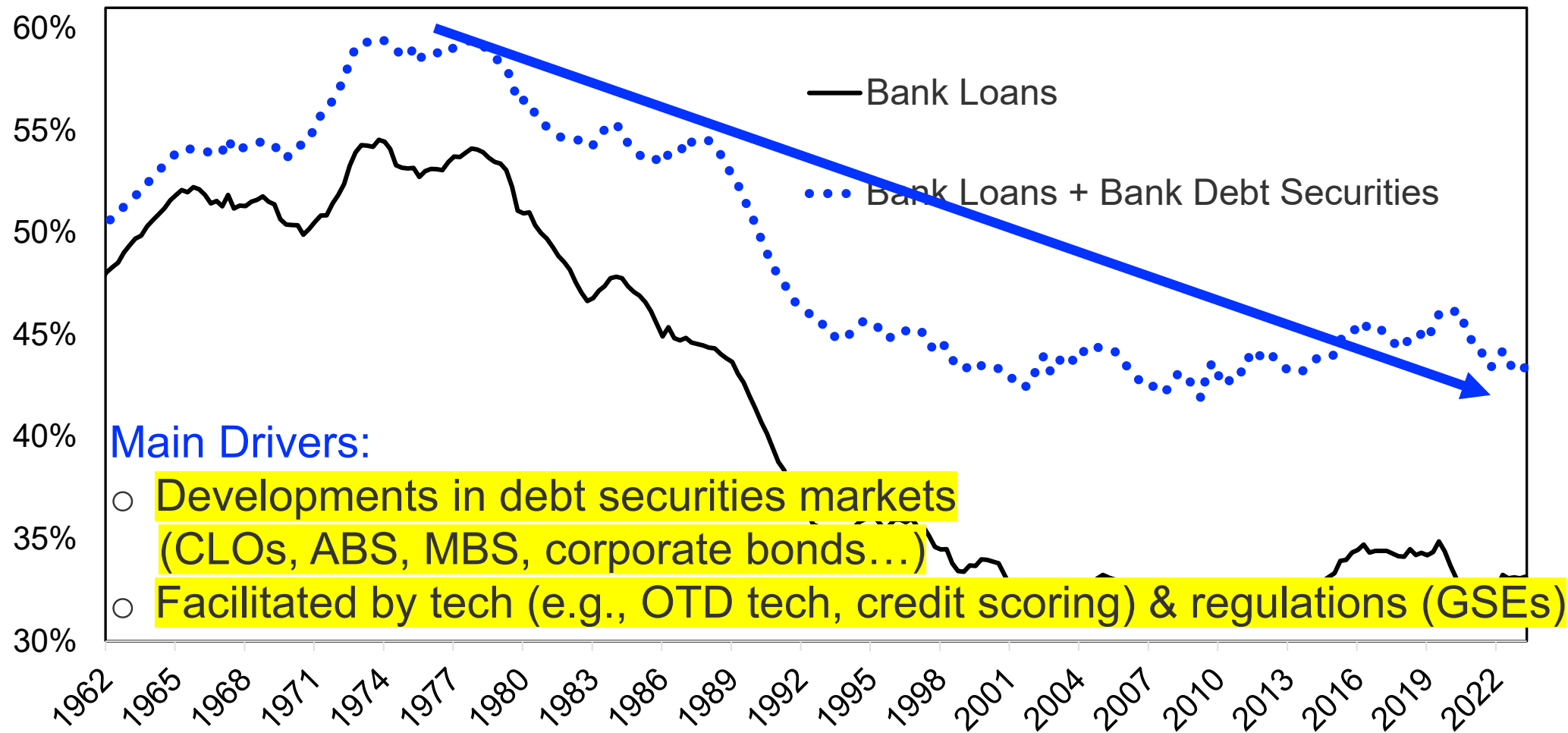
US Credit Market:
Secular Decline of Traditional Banking and Its Causes

Bank Balance Sheet Share in Total Lending to Firms & HHs

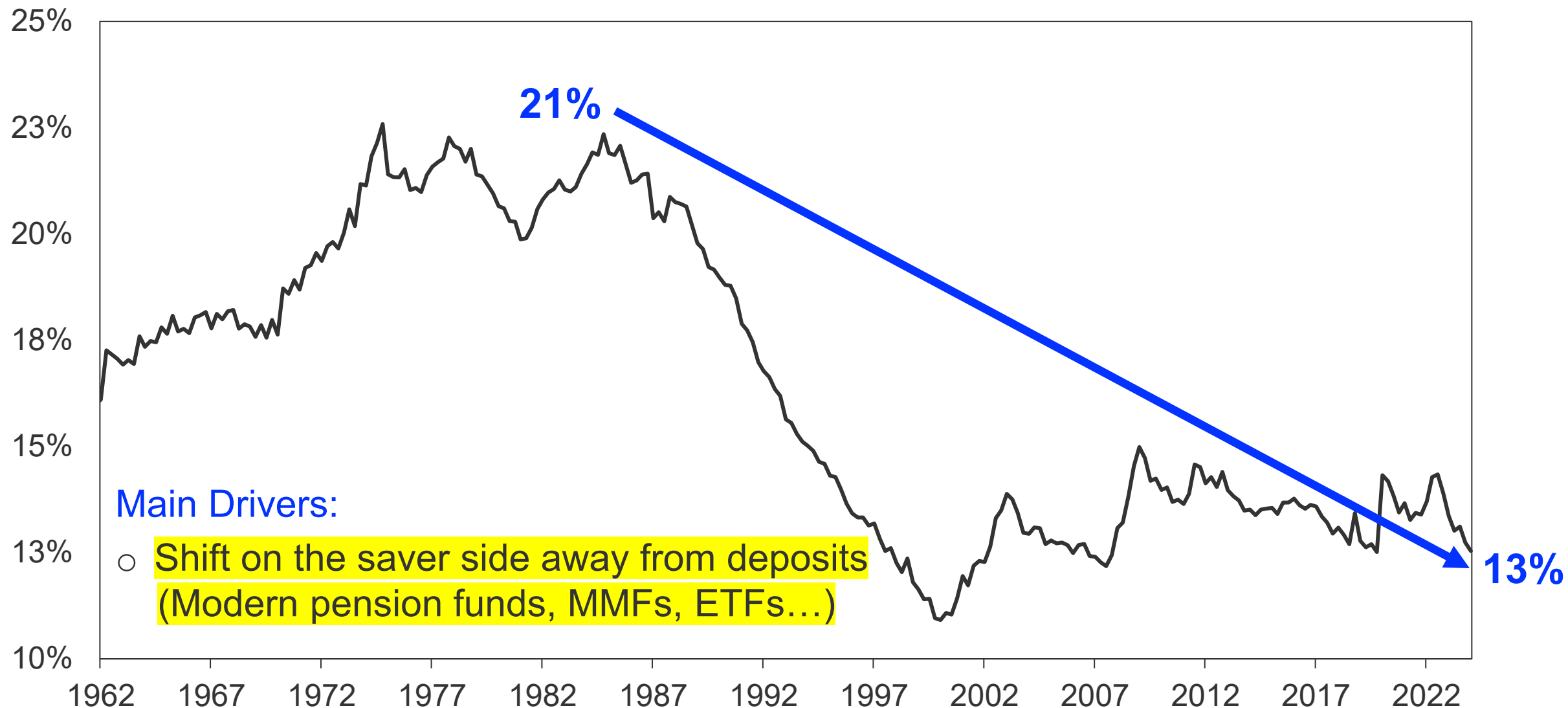


Source: Buchak, Matvos, Piskorski, Seru, 2024, "Secular Decline in Bank Balance Sheet Lending"

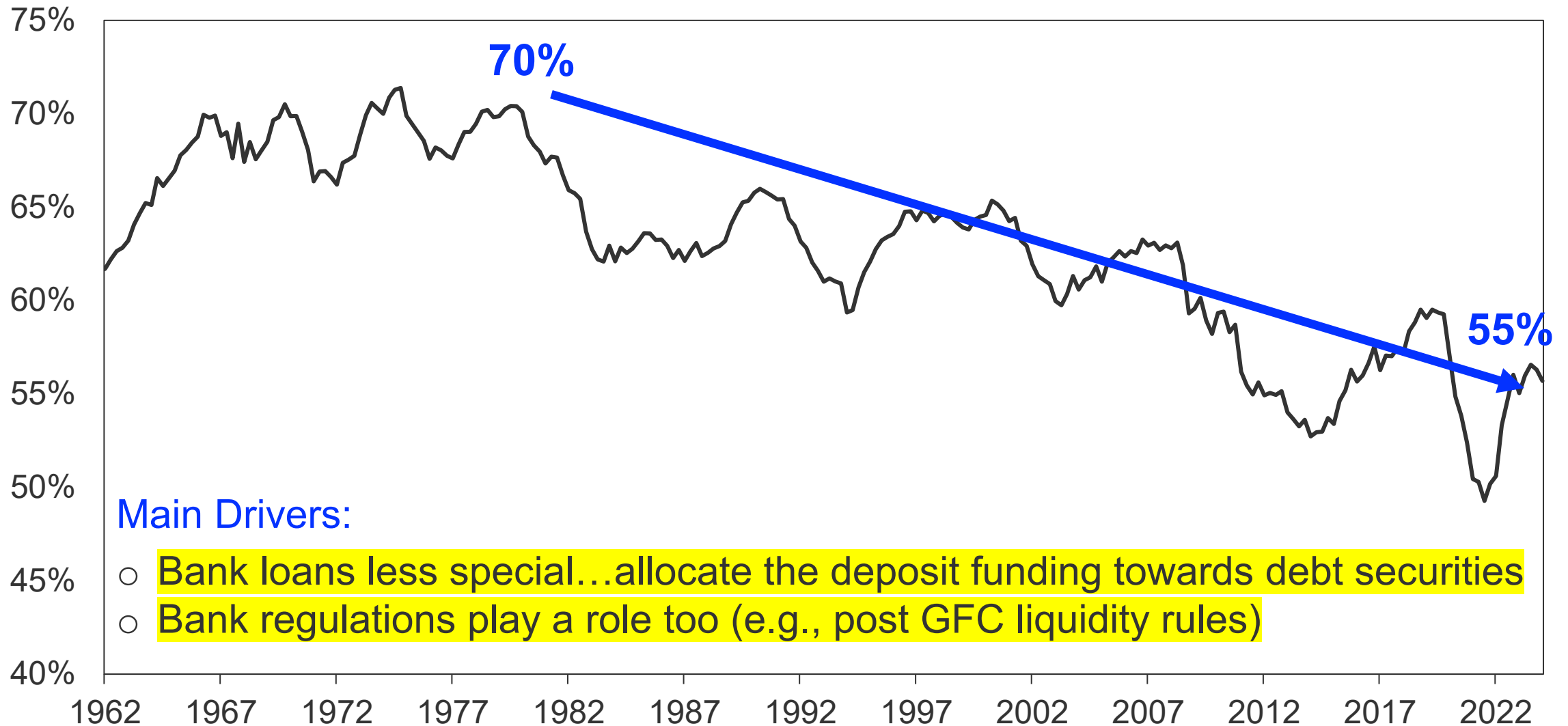
Bank Balance Sheet Share in Total Lending to Firms & HHs



Deposits Share of Financial Wealth

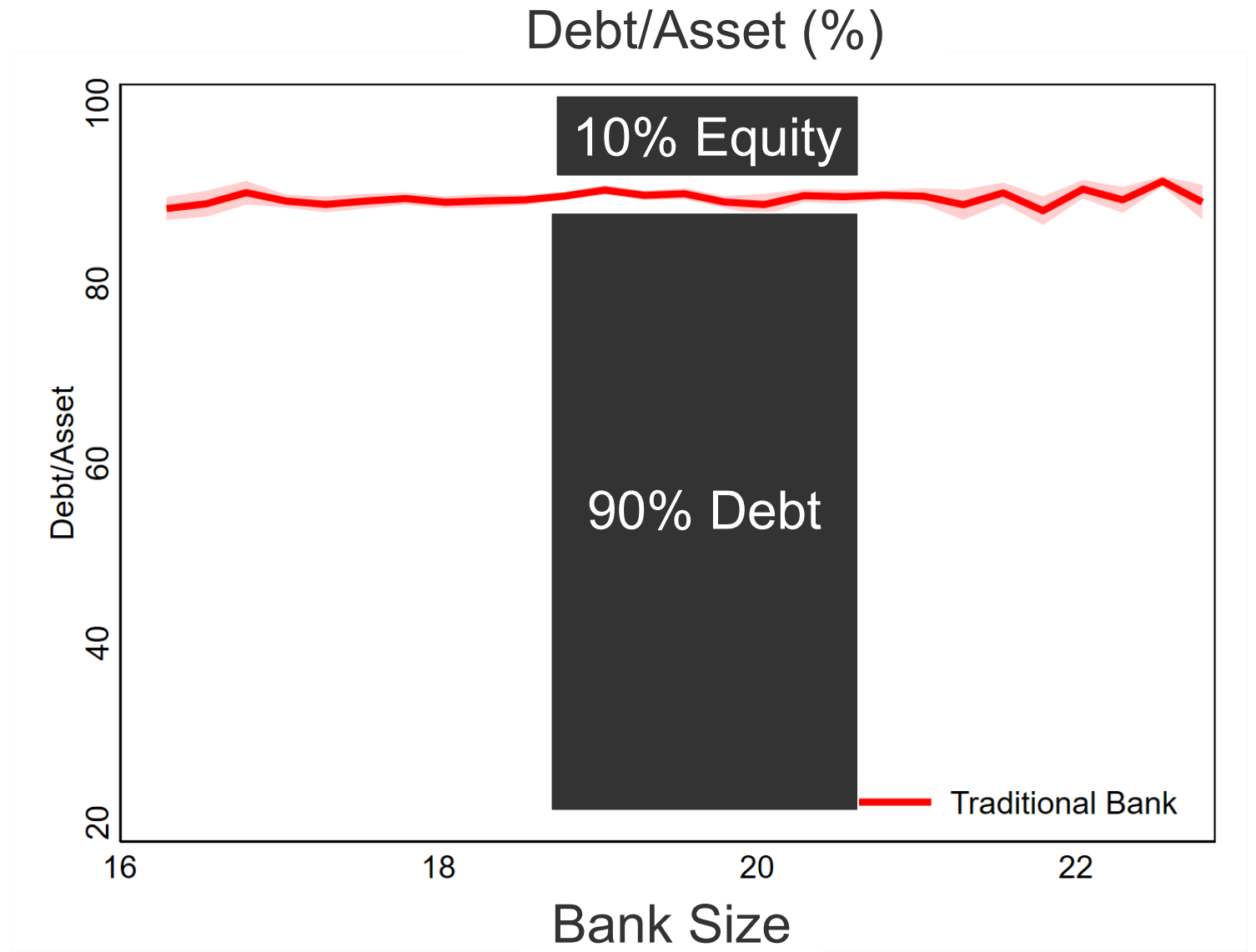


Loan Share of Bank Assets



Bank and NBFIs Leverage

Banks Have High Leverage

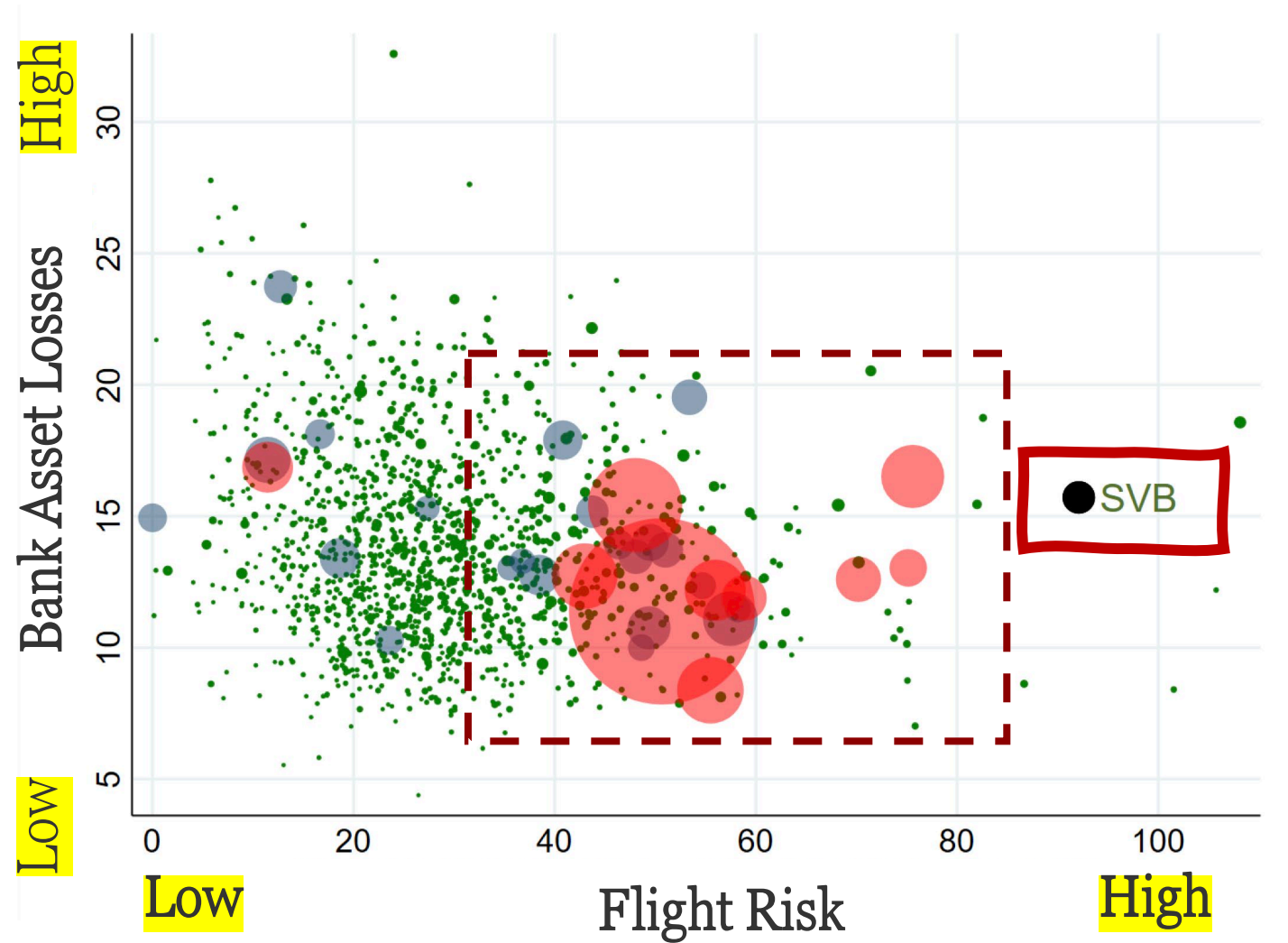


Source: Jiang, Matvos, Piskorski, Seru (2020): "Which Banks are (Over) Levered"

Recent Monetary Tightening

Solvency Run Risk
Present at Significant
Number of Banks

Banks at Risk of Solvency Runs in 2023



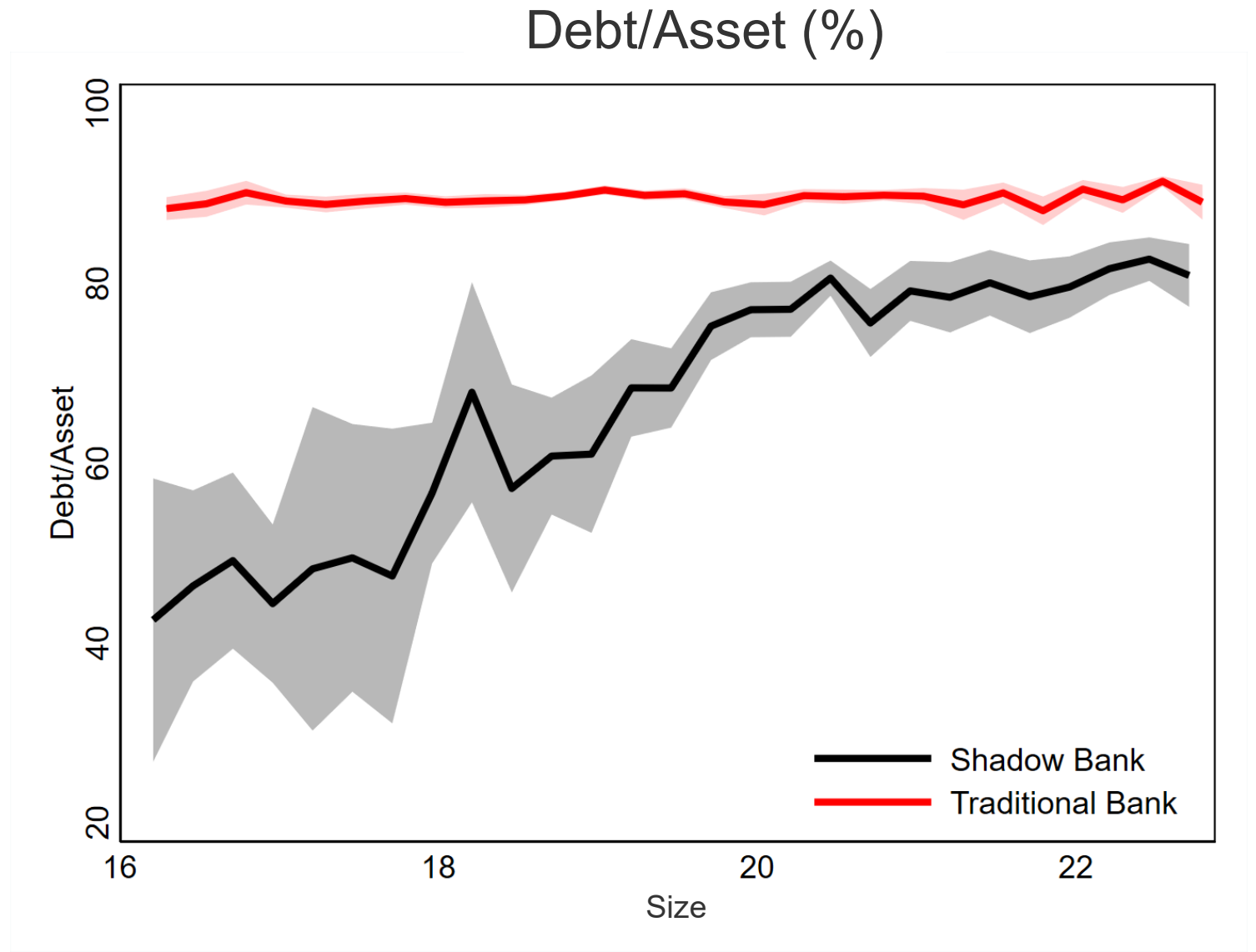
Source: Jiang, Matvos, Piskorski, Seru (2024): "Monetary Tightening and US Bank Fragility" JFE

Bank Leverage

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Non-Bank Lenders Leverage

Non-bank mortgage
lenders are more than
twice as capitalized as
similar banks
(Average $E/A=25\%$)



Source: Jiang, Matvos, Piskorski, Seru (2020): "Which Banks are (Over) Levered"...

Bank Lending to Non-Banks

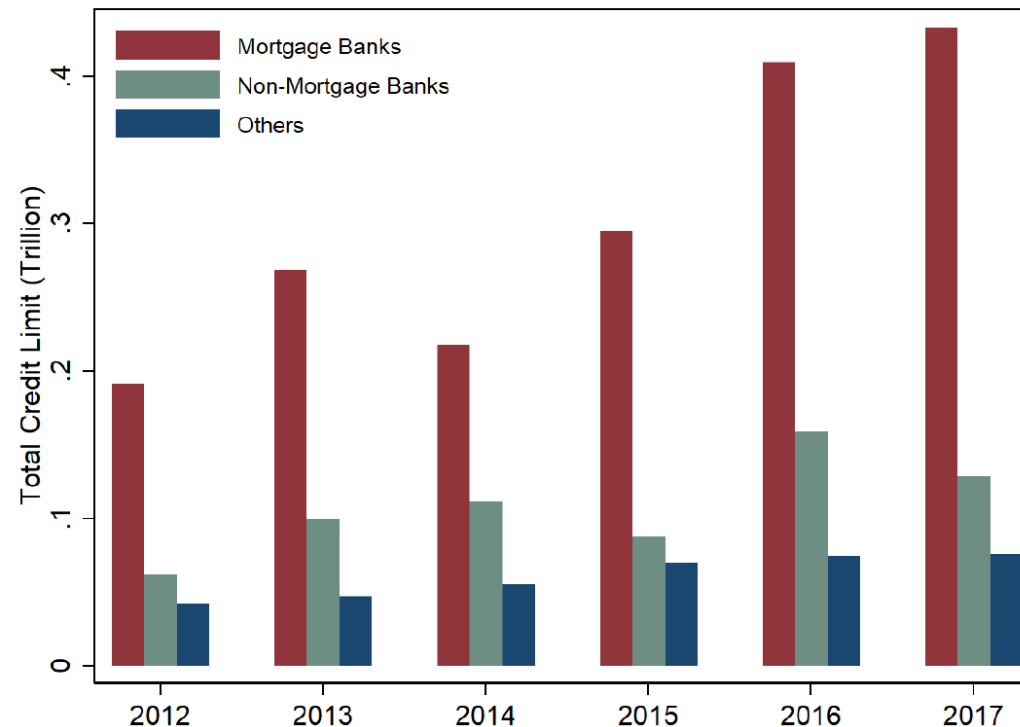
Direct Loans + Outstanding Credit Lines

NBFIs are partly funded by banks

❑ Non-bank mortgage lenders financed with bank credit lines

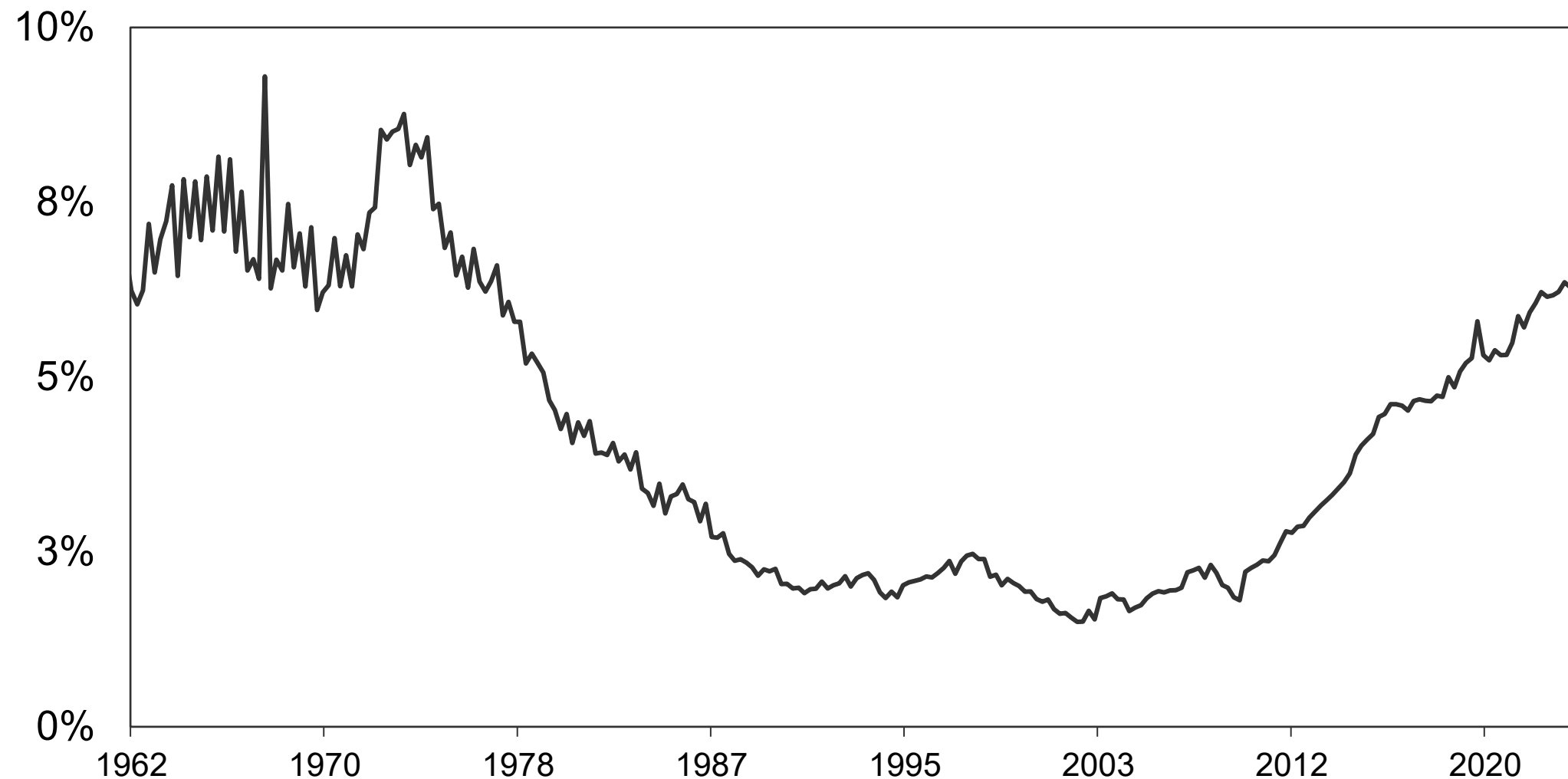
○ Jiang et al. (2020), Jiang (2023).

Figure 1. Upstream: Who Provides Warehouse Lines



Source: Jiang (2023), Financing Competitors: Shadow Banks' Funding and Mortgage Market Competition, RFS

% of US Non-Bank Lending Supported by Bank Loans



Source: Buchak, Matvos, Piskorski, Seru, 2024, "Secular Decline in Bank Balance Sheet Lending"

Financial Stability Considerations

- ❑ Non-bank lenders have lower financial leverage than banks
- ❑ But less regulatory oversight of what NBFIs do (also limited data)
- ❑ NBFIs do not have the same access to liquidity facilities as banks
- ❑ NBFI-bank dependencies
 - Banks invest in securities issued by NBFIs
 - Banks partly finance NBFIs: loans + credit lines

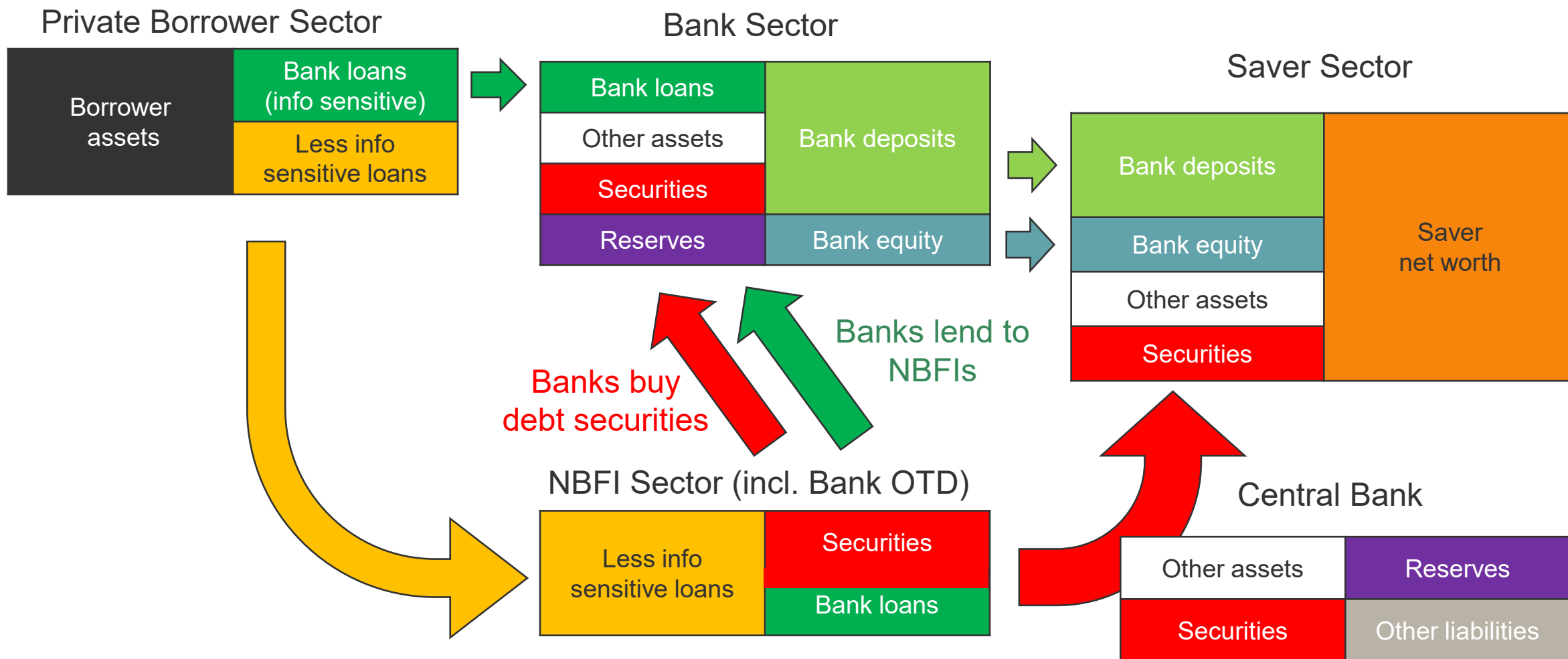
Regulatory Considerations

- ❑ Tension: Expanding NBFI footprint but implicit reliance on bank liquidity.
- ❑ Who decides what lies inside/outside the regulatory perimeter?
- ❑ Fintech, tokenized assets, and decentralized protocols raise new risk channels.
- ❑ What is the ultimate social objective function and frictions we try to address?

Summary

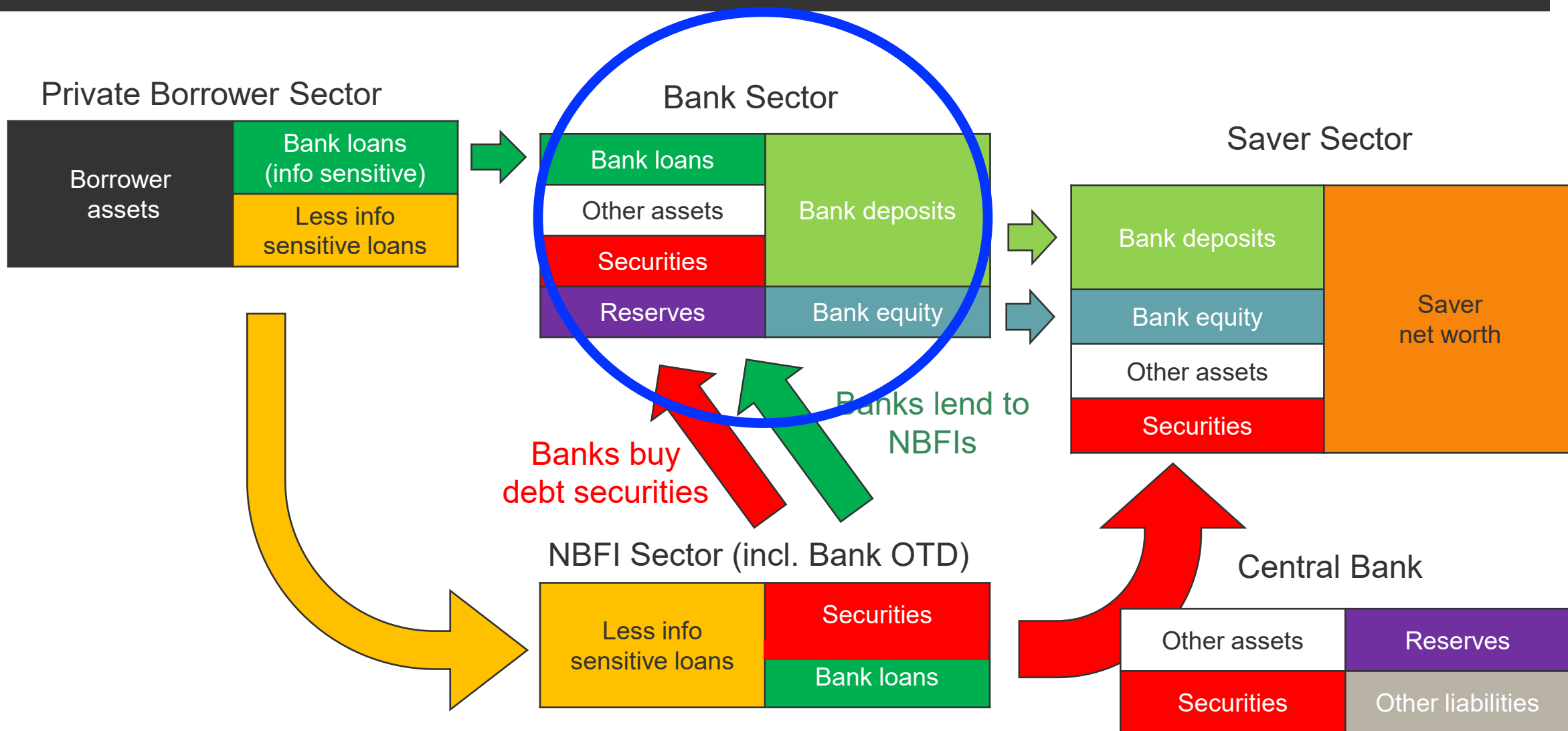
- ❑ Secular decline of traditional banking (last several decades)
 - Also importantly driven by tech innovations on the lending/borrower & saver side
 - New wave of tech can accelerate it further (DeFi, stable coins, AI....)
- ❑ Regulatory policy analysis should focus more on
 - NBFIs (debt securities, shadow money, private credit, ...)
 - Bank-NBFI linkages and evolving tech developments
 - Need to consider holistic (inter-agency) view beyond “siloed” regulators
- ❑ We need new financial intermediation framework
 - Recognizing modern and evolving IO of the financial intermediation market
 - Recognizing equilibrium interactions between bank and NBFI sectors
 - Allowing for full analysis of pass-through of regulatory & monetary policy

Outline: Modern Financial Intermediation



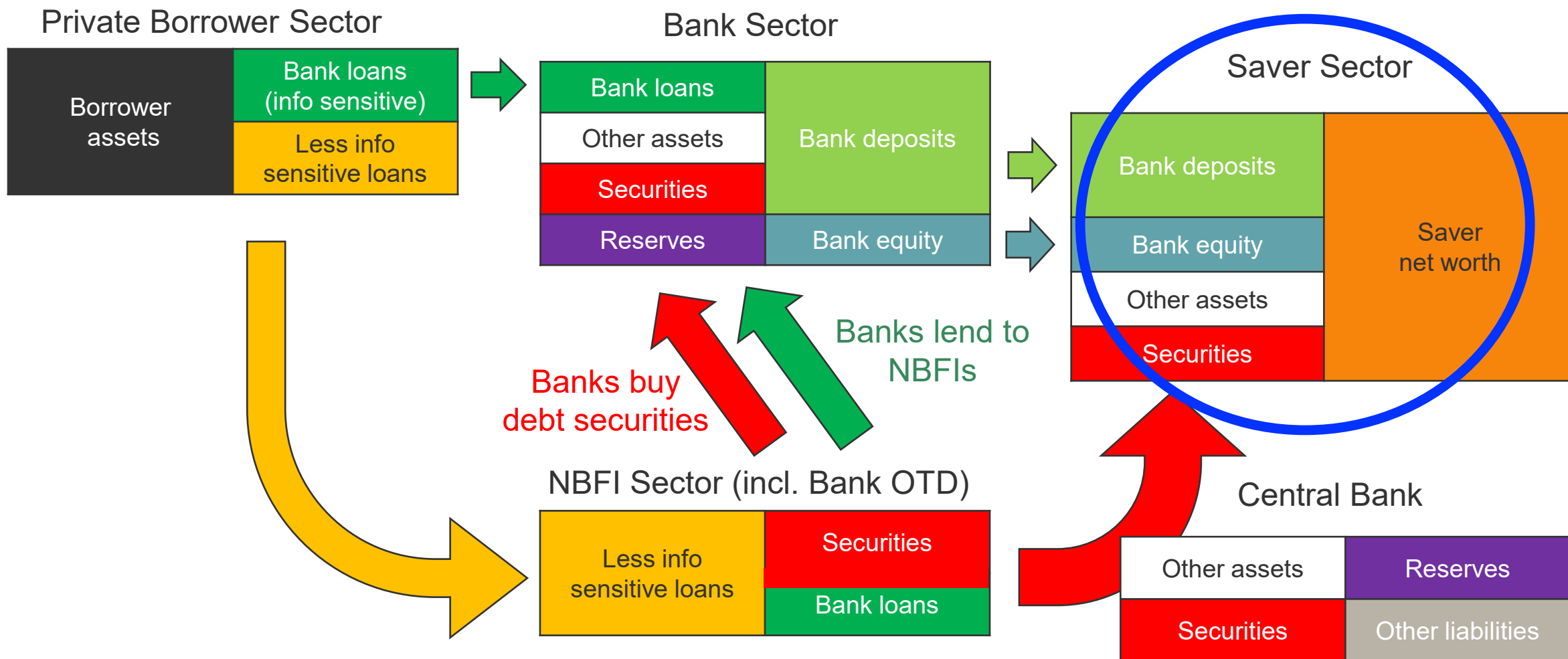
Source: Buchak, Matvos, Piskorski, Seru (2024): "Monetary Policy, Bank Regulation, and the Secular Decline of Bank Balance Sheet"

Outline: Modern Financial Intermediation



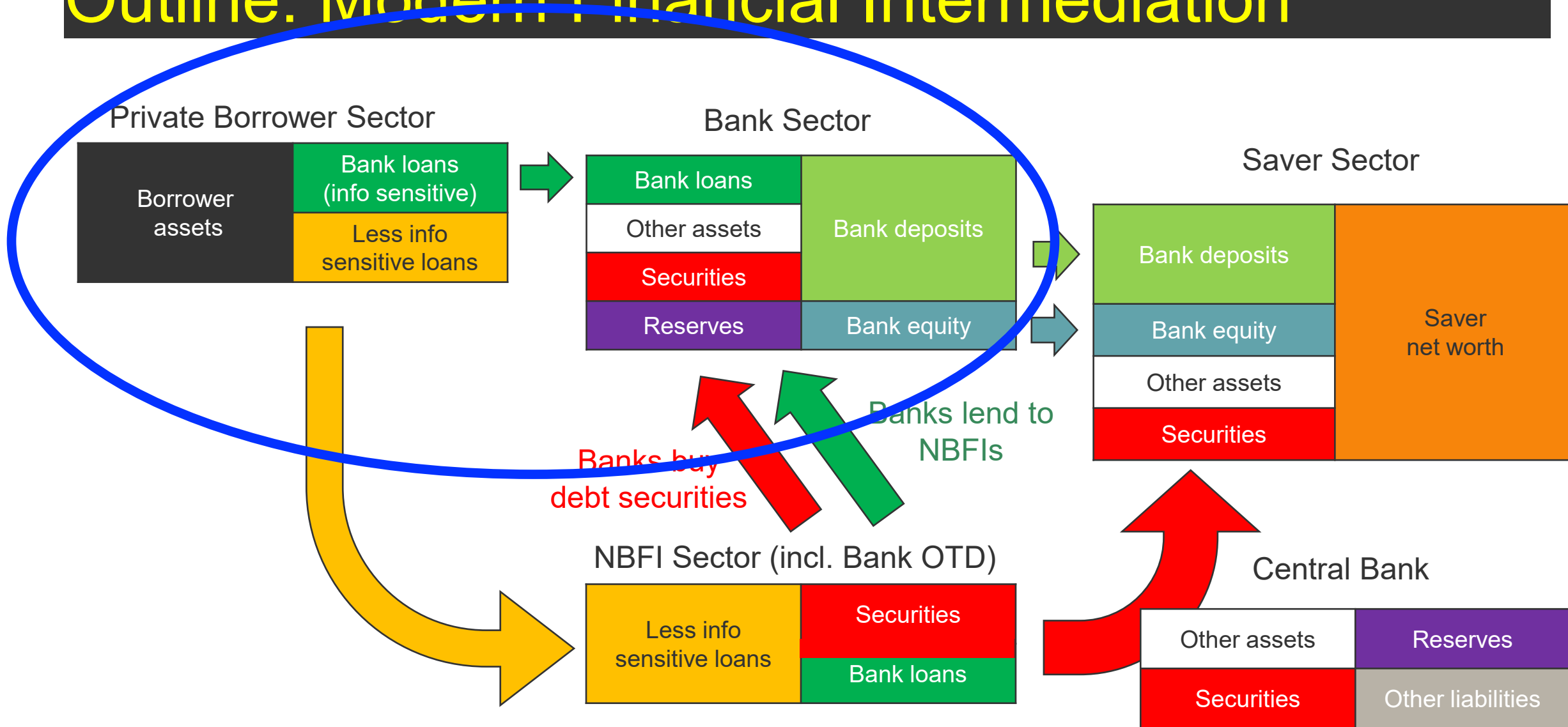
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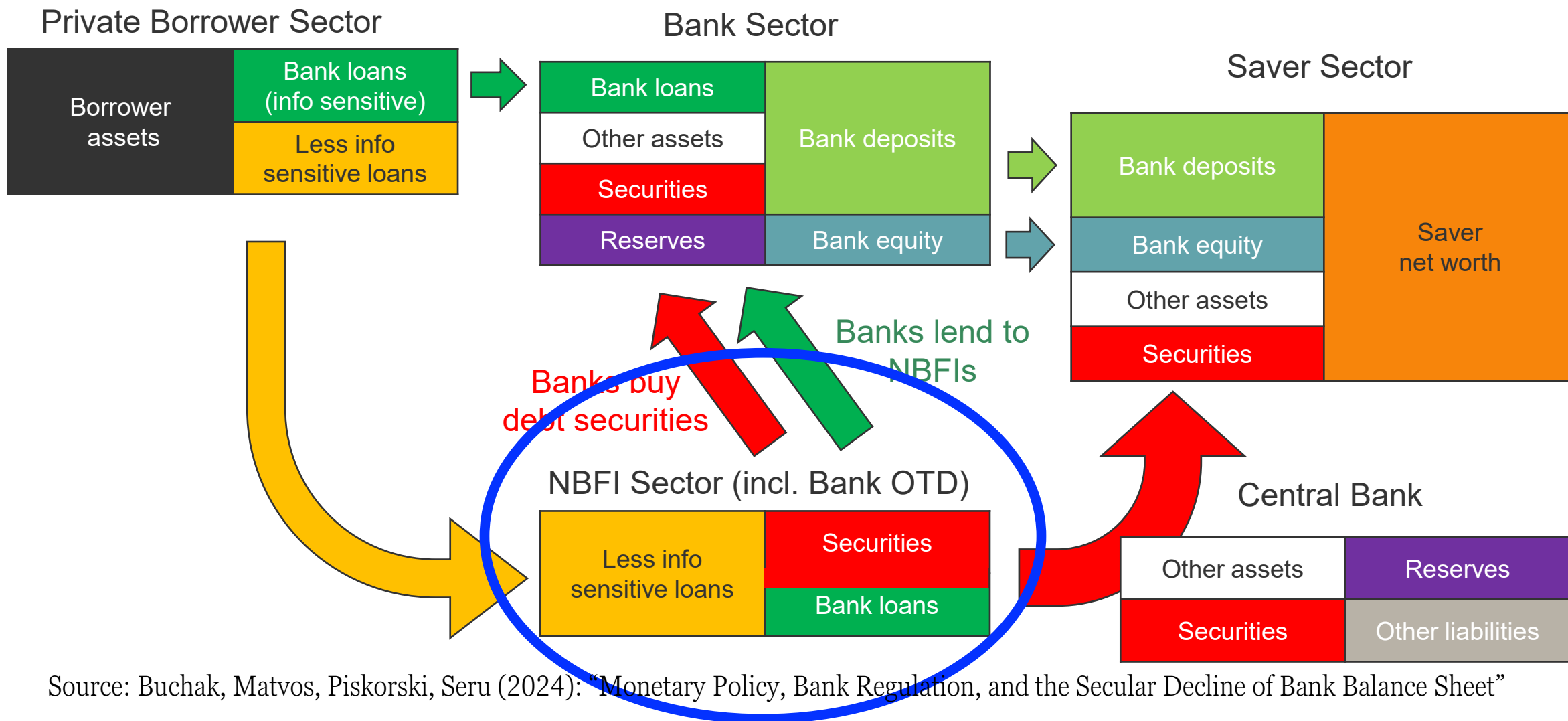
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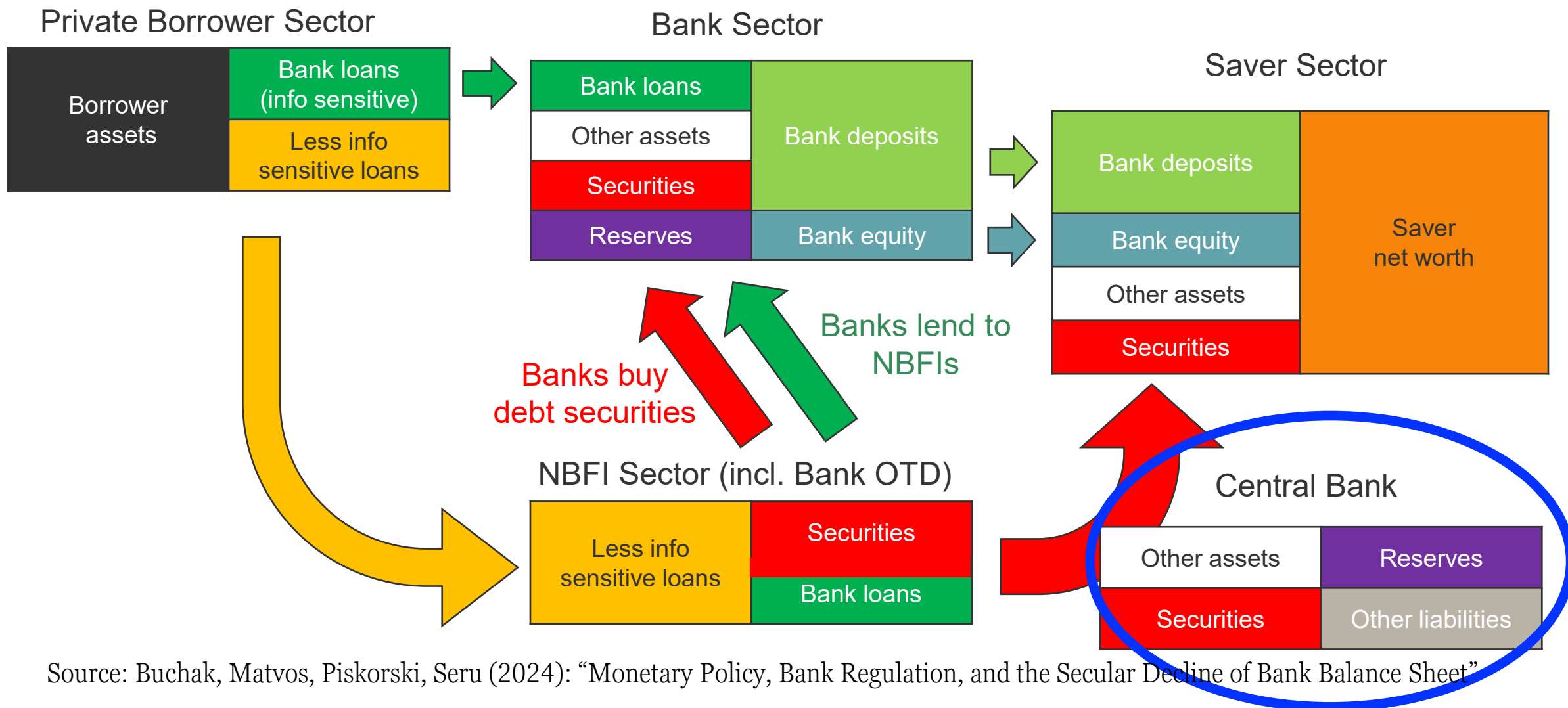
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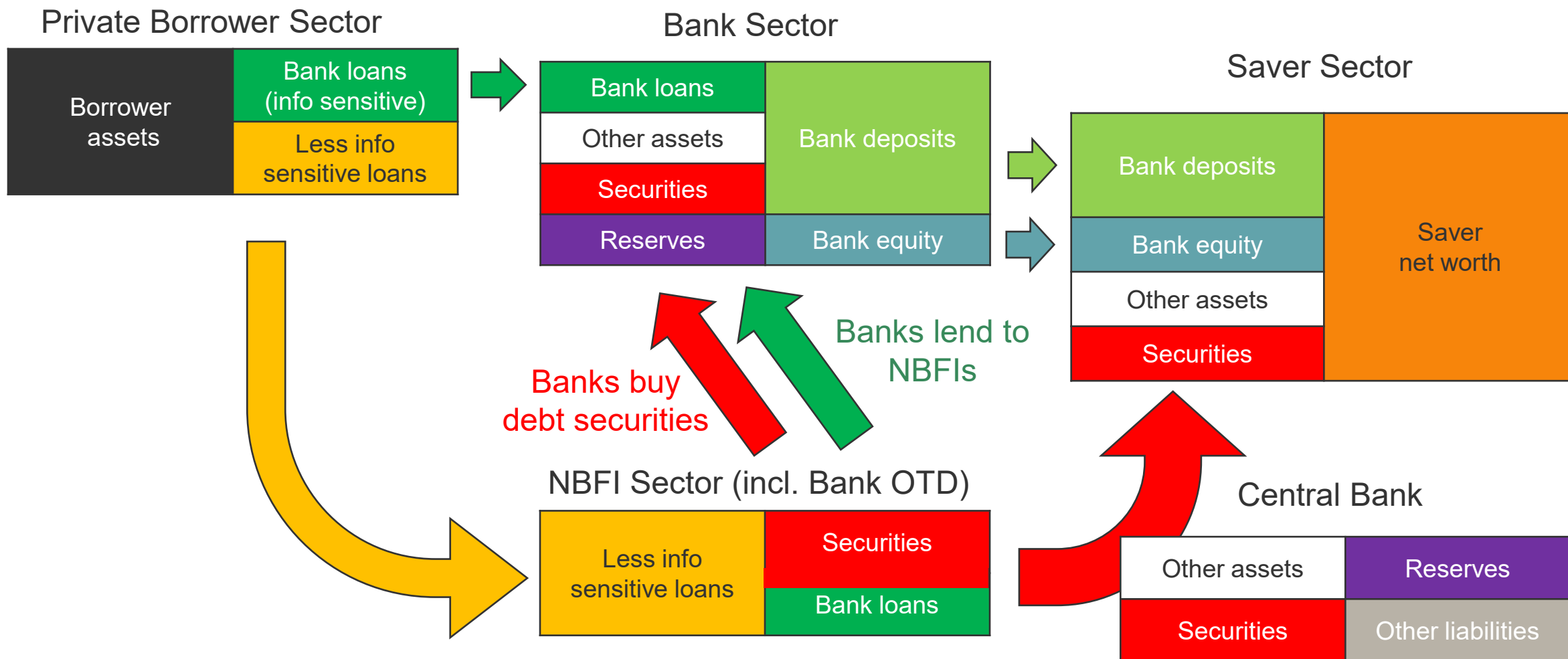
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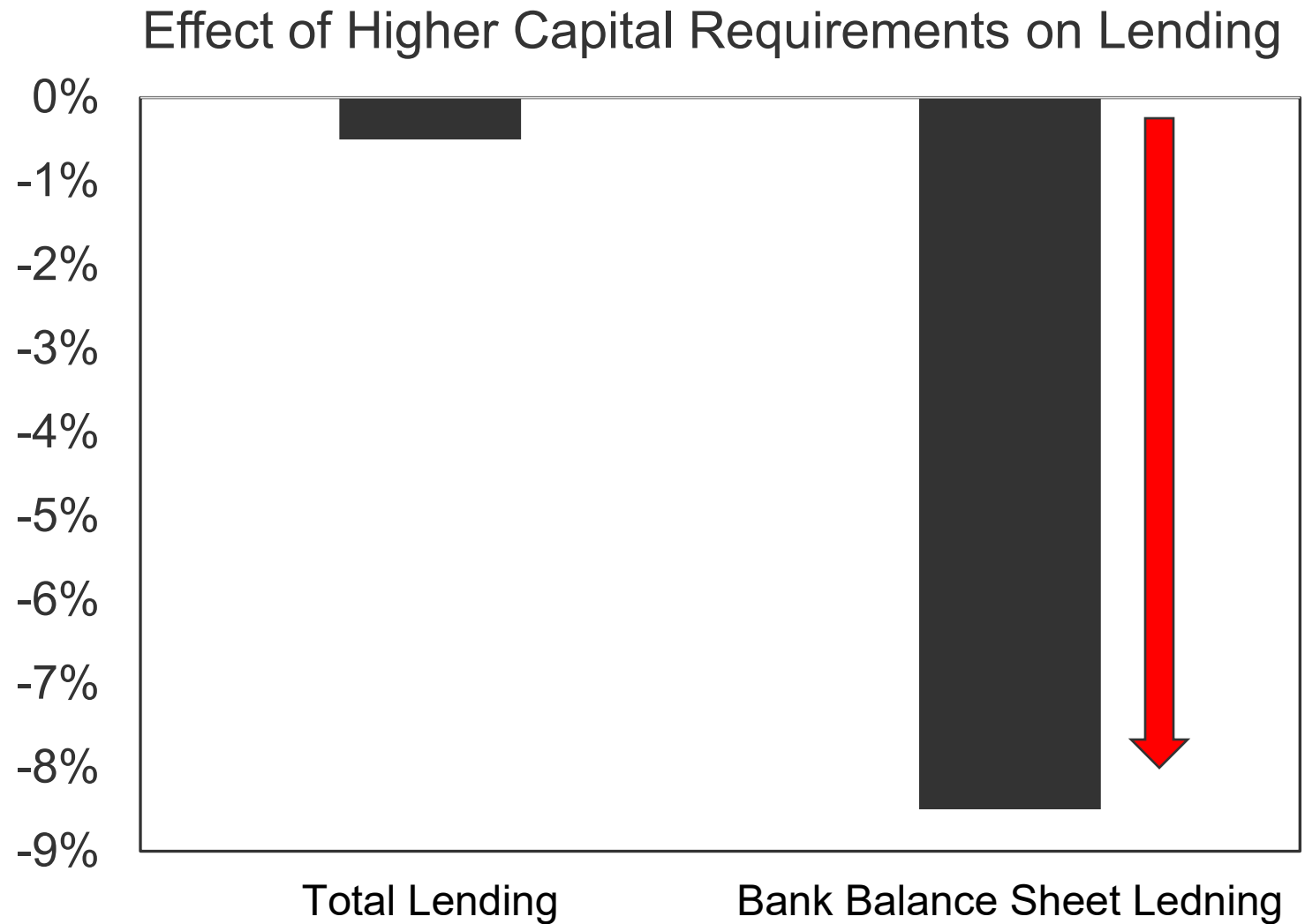
Outline: Modern Financial Intermediation



Source: Buchak, Matvos, Piskorski, Seru (2024): "Monetary Policy, Bank Regulation, and the Secular Decline of Bank Balance Sheet"

Impact of higher bank capital requirement on lending

Significant decline of bank balance sheet lending

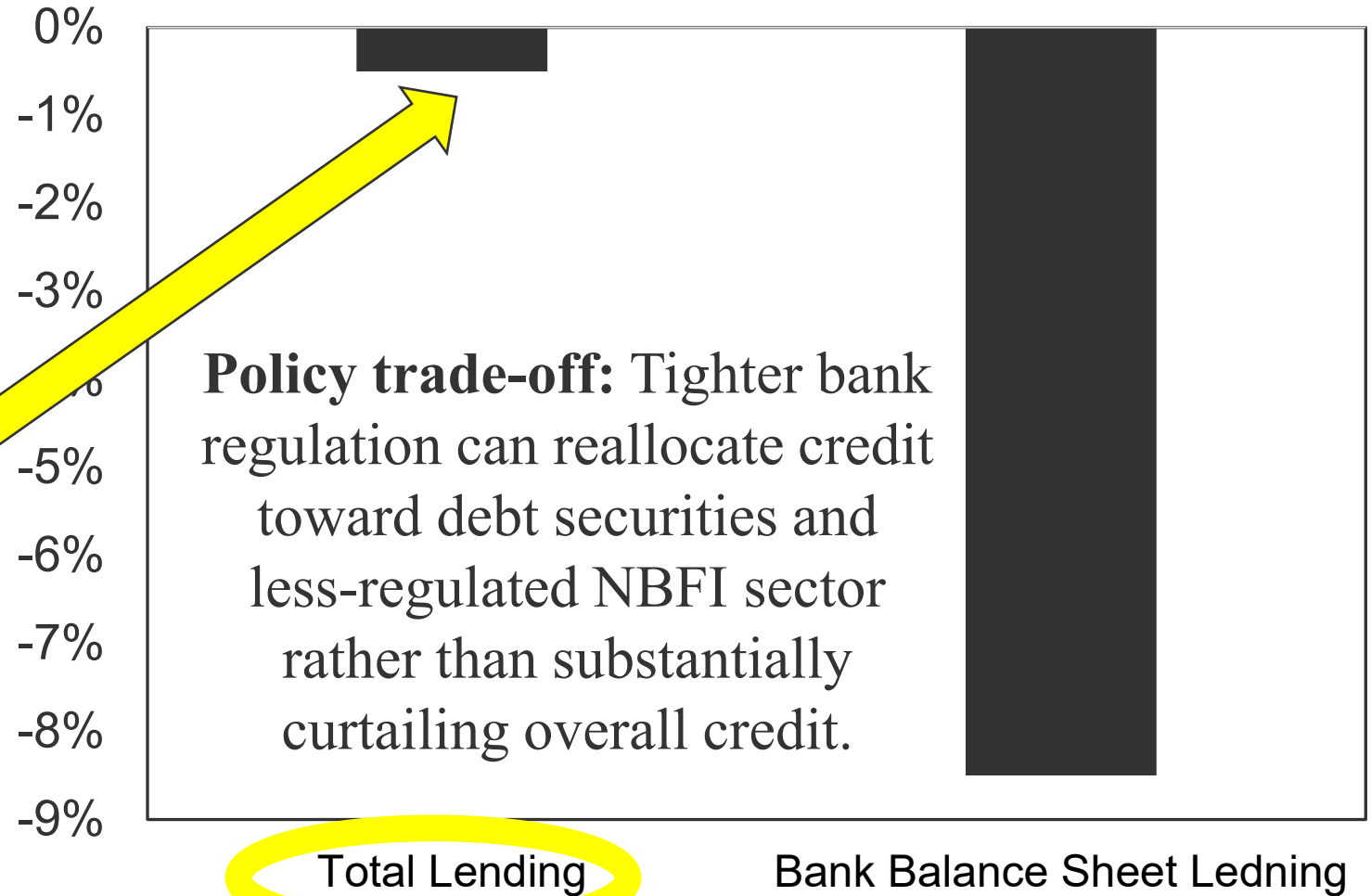


Source: Buchak, Matvos, Piskorski, Seru (2024): “Monetary Policy, Bank Regulation, and the Secular Decline of Bank Balance Sheet”

Impact of higher bank capital requirement on lending

Modest aggregate effect as banks sell more loans & NBFI credit expand

Effect of Higher Capital Requirements on Lending

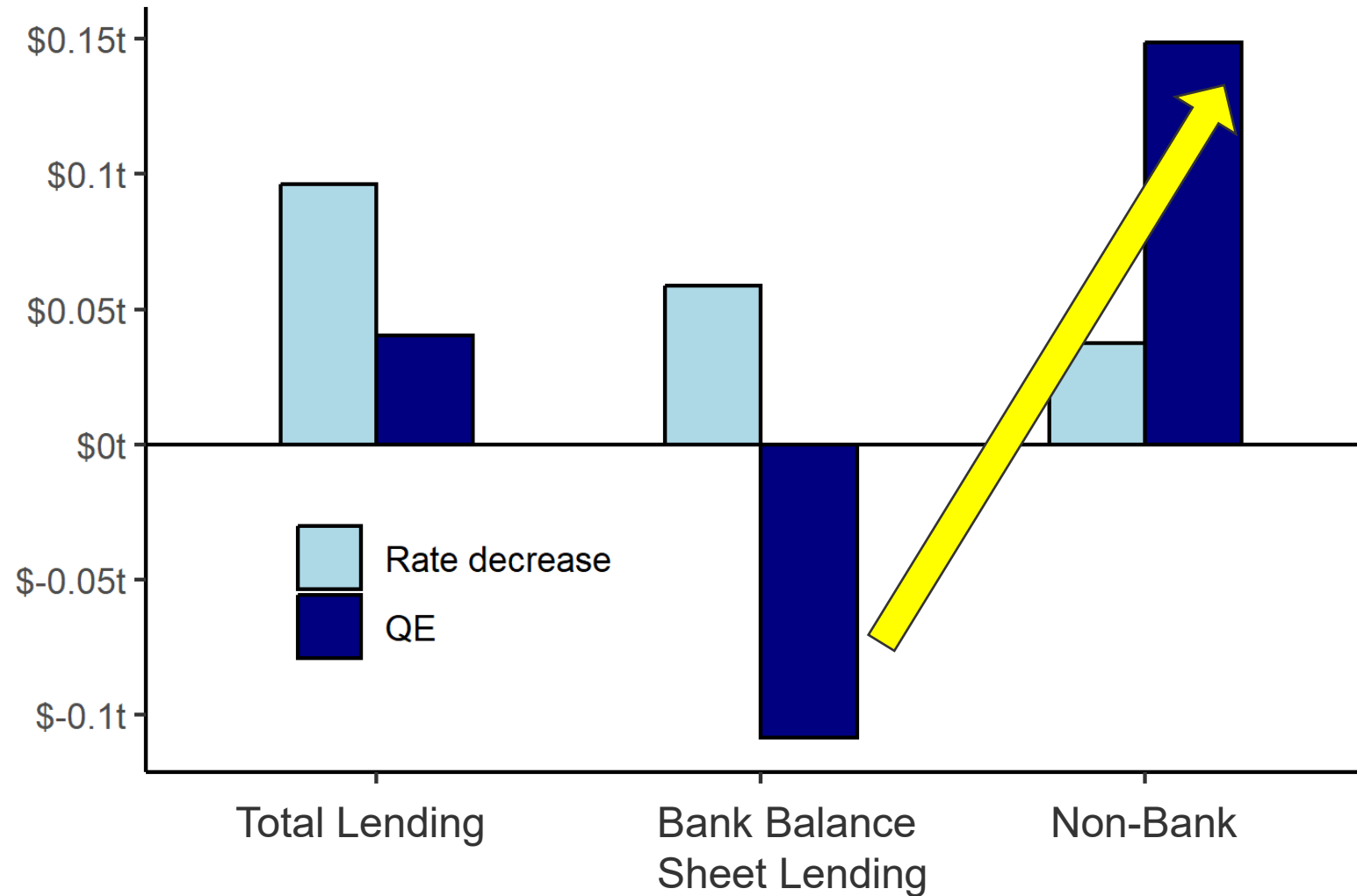


Source: Buchak, Matvos, Piskorski, Seru (2024): "Monetary Policy, Bank Regulation, and the Secular Decline of Bank Balance Sheet"

Impact of monetary policy on lending

QE can reallocate
credit away from bank
balance sheets to
non-bank financing

Impact of Rate Decrease & QE on Lending



Source: Buchak, Matvos, Piskorski, Seru (2024): “Monetary Policy, Bank Regulation, and the Secular Decline of Bank Balance Sheet”

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 - Allowing for full analysis of pass-through of regulatory & monetary policy
 - ...and ultimately allowing for welfare assessments