



# International Monetary Fund

*Global Financial Stability Report*  
*April 2022*



## THE SOVEREIGN-BANK NEXUS IN EMERGING MARKETS: A RISKY EMBRACE

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# Motivation

- The sovereign-bank nexus has **intensified** in EMs during the COVID-19 pandemic
- The nexus has become more complex as **interdependencies** of the sovereign and banking sectors with the real sector have increased
- EMs are particularly vulnerable to an adverse shock amid **elevated fiscal vulnerabilities** and large external financing needs
- Raising the risk of an **adverse sovereign-bank feedback loop**

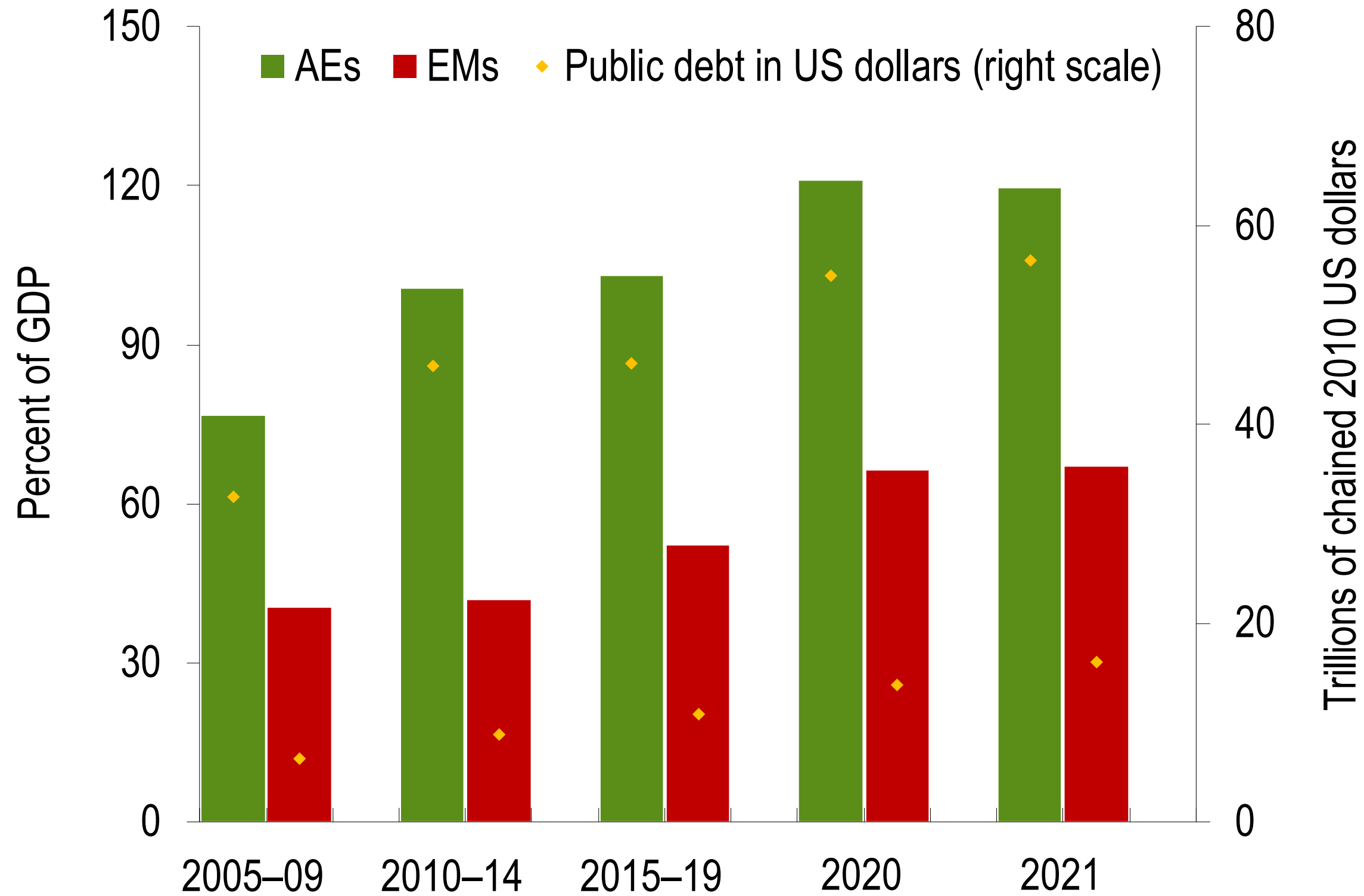


- How **relevant** is the risk? What are the **key channels** of transmission?
- What are the **policy options** to mitigate the risk?

# The COVID-19 Crisis Has Brought the Sovereign-Bank Nexus in EMs to the Fore

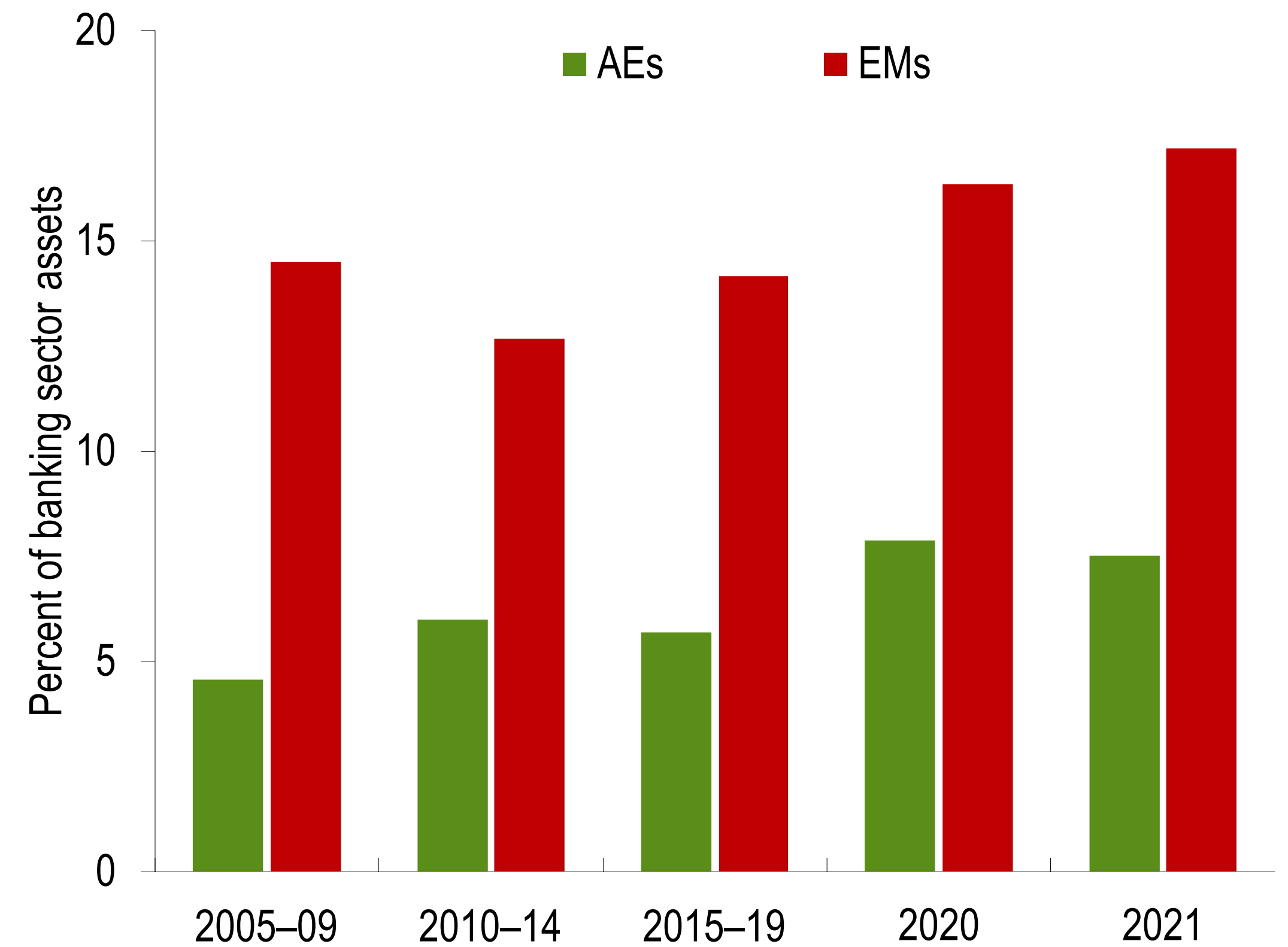
*Public debt has risen significantly globally*

**Public Debt: Level and Ratio to GDP**  
(2005-2021)



*Banks' sovereign debt exposure has reached historic highs in EMs*

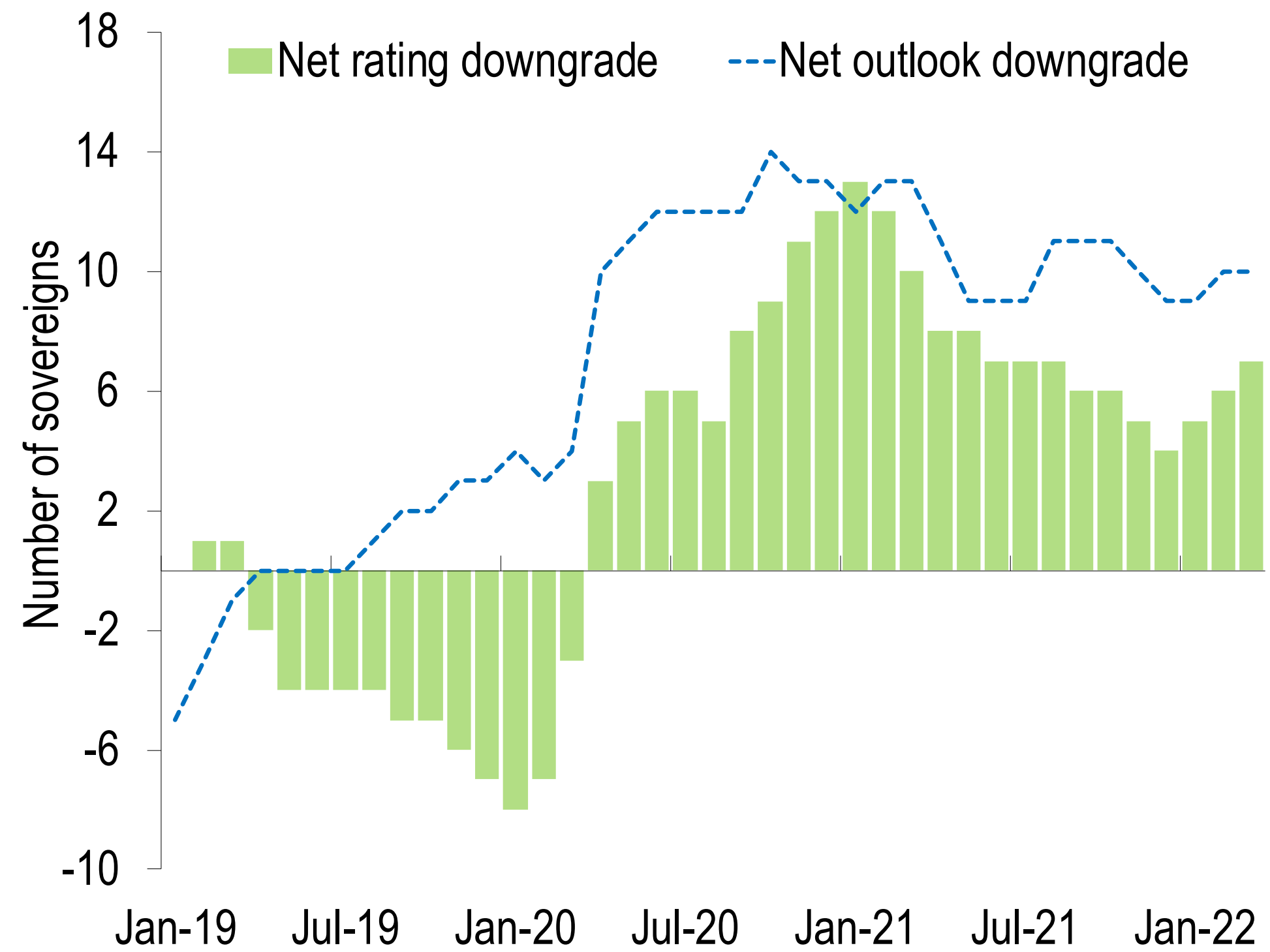
**Banks' Sovereign Debt Exposure, 2005-2021**  
(In percent of banking sector assets, GDP-weighted average)



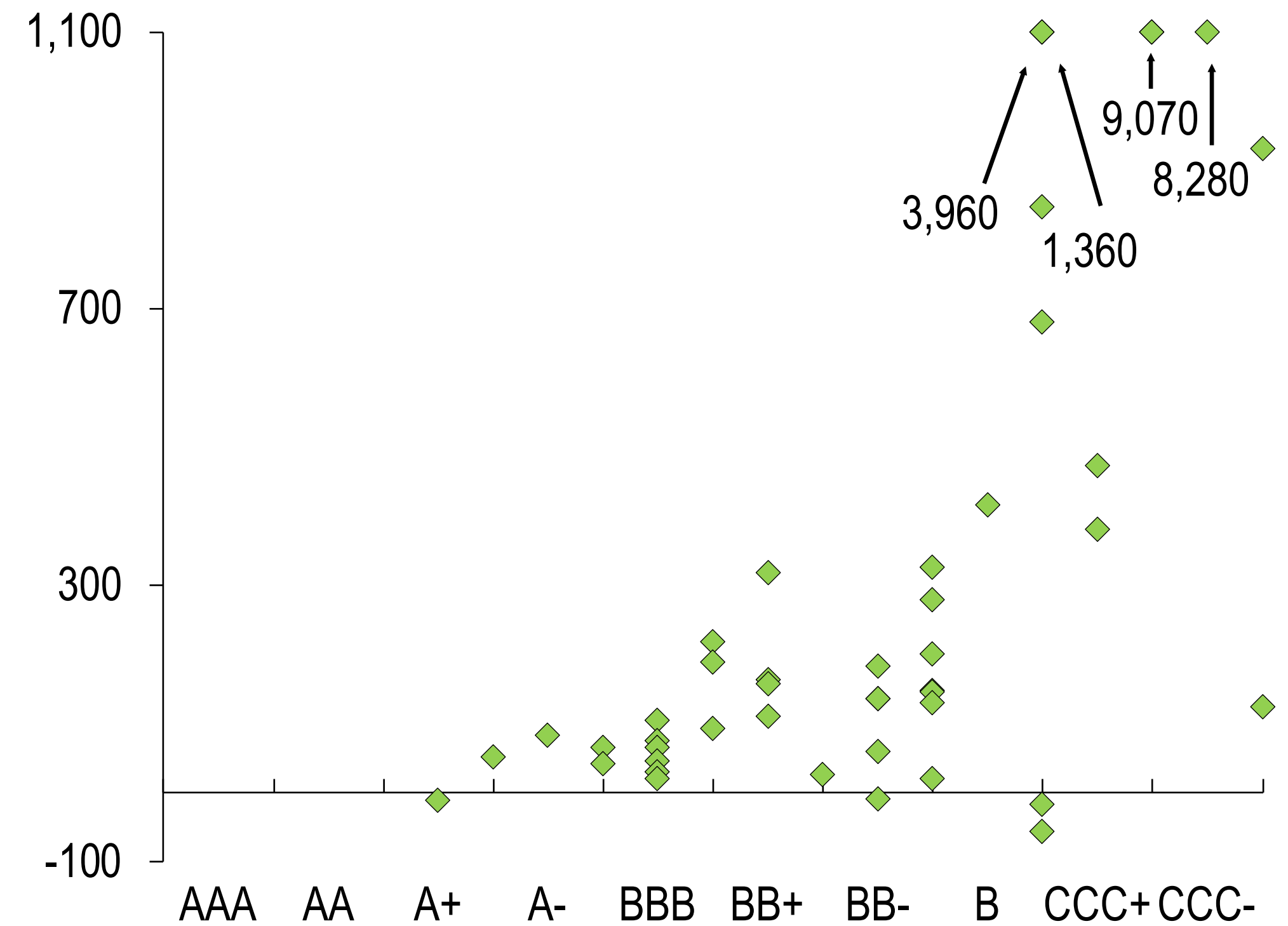
# The EM Sovereign Outlook Has Worsened...

*A worsening credit outlook could trigger sovereign credit rating downgrades and further raise sovereign funding costs*

**Net Ratings Downgrades and Net Negative Outlook**  
(Frequency, 12-month sum)



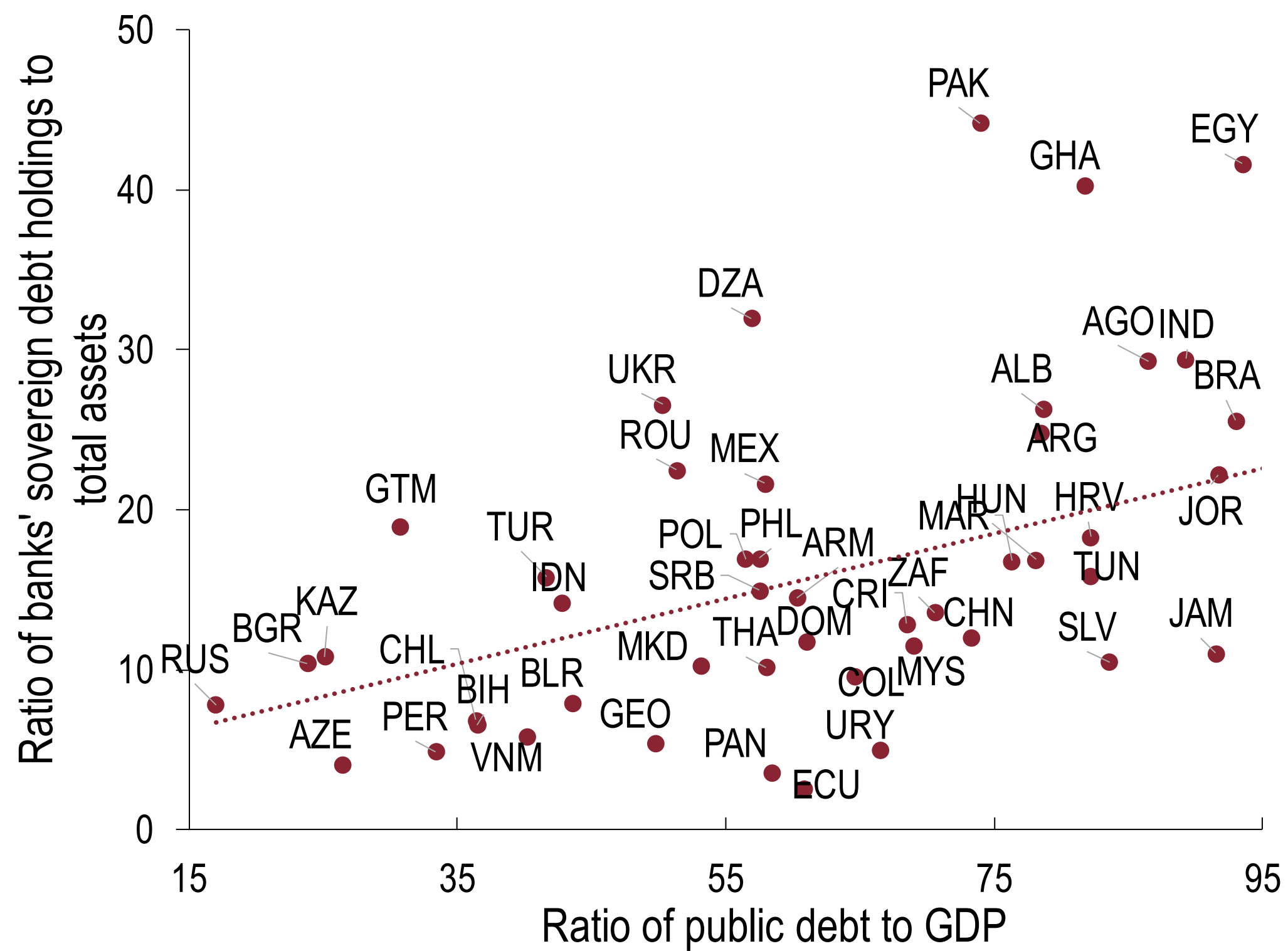
**Change in Sovereign Credit Spread by Rating**  
(Basis points, December 2019-March 2022)



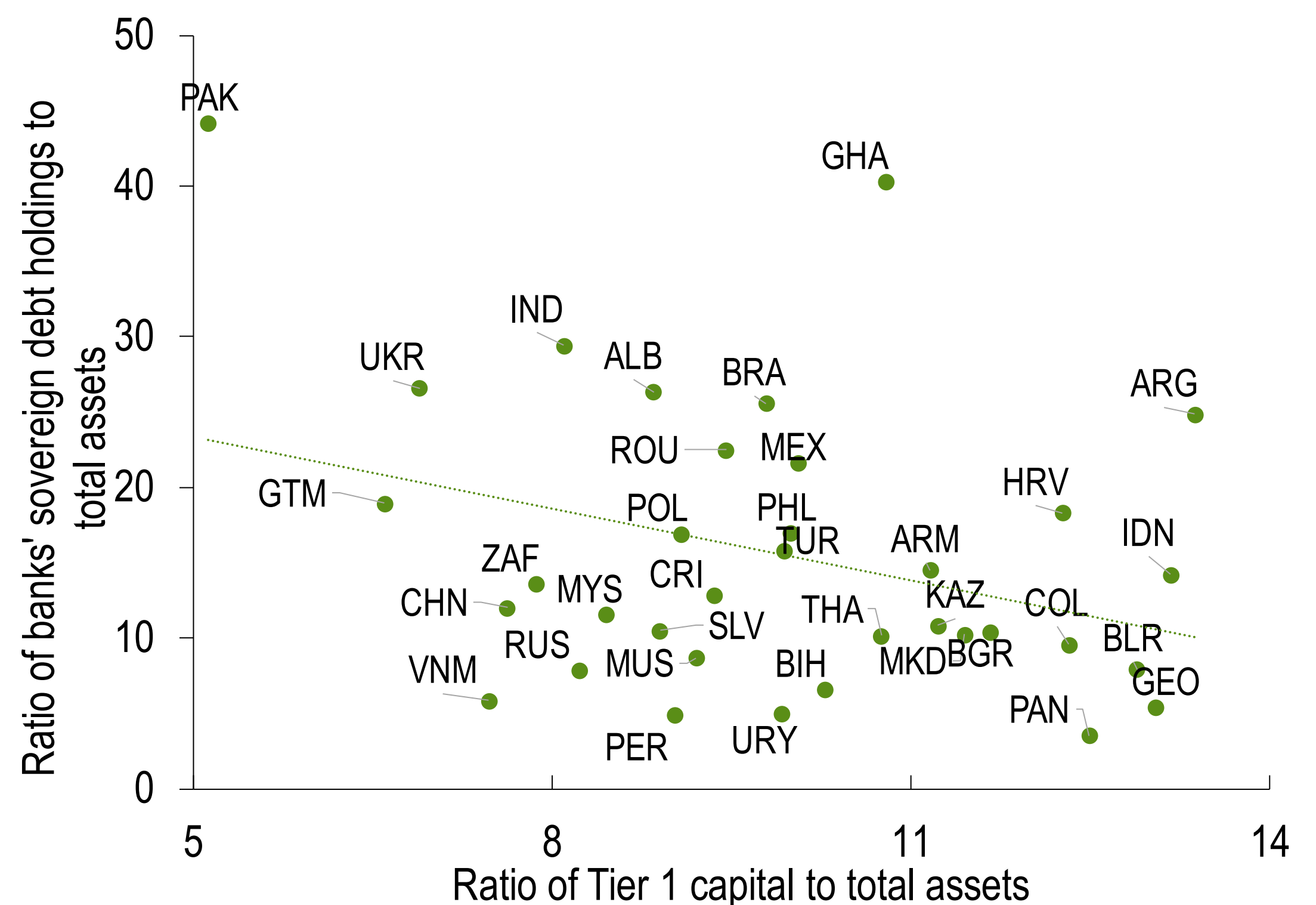
# An Adverse Shock Could Be Amplified by a Negative Sovereign-Bank Feedback Loop

*Banks' exposures to sovereign debt is higher in countries with higher public debt and lower bank capital*

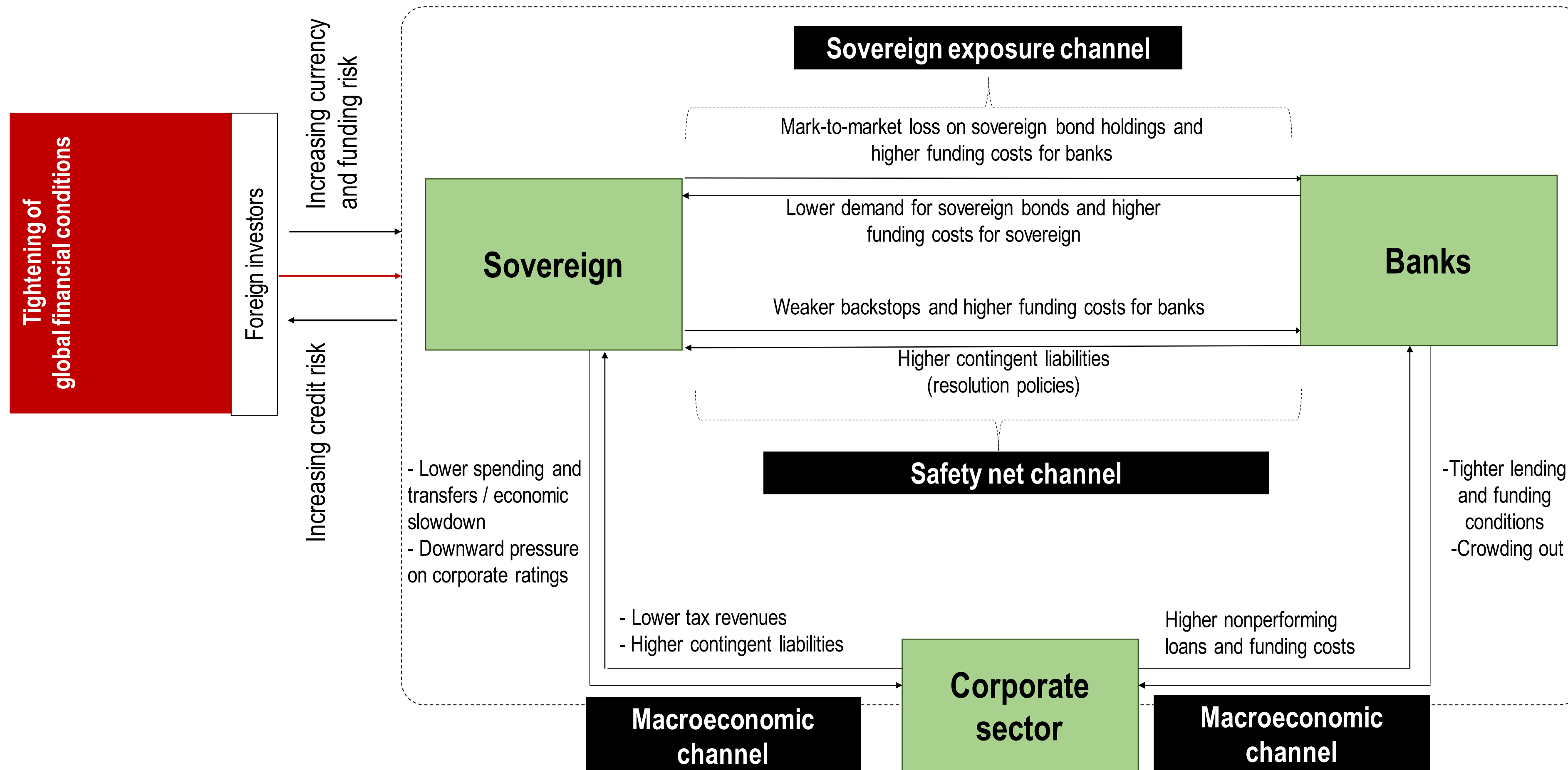
### EMs Sovereign Debt and Banks' Holdings of Sovereign Debt (In percent, 2021)



### EMs Tier1 Capital and Banks' Holdings of Sovereign Debt (In percent, 2021)



# ...Through Three Key Channels



# Main Questions

- 1. How strong is the sovereign-bank nexus in emerging markets?**
- 2. How relevant are the key transmission channels?**





**How strong is the sovereign-bank nexus in emerging markets?**

# The Sovereign-Bank Nexus Has Been Relevant for EMs in the Past

*Banking and sovereign debt crises have often occurred together in EMs*

*The correlation between banks and sovereign stress increases especially when global financial conditions tighten*

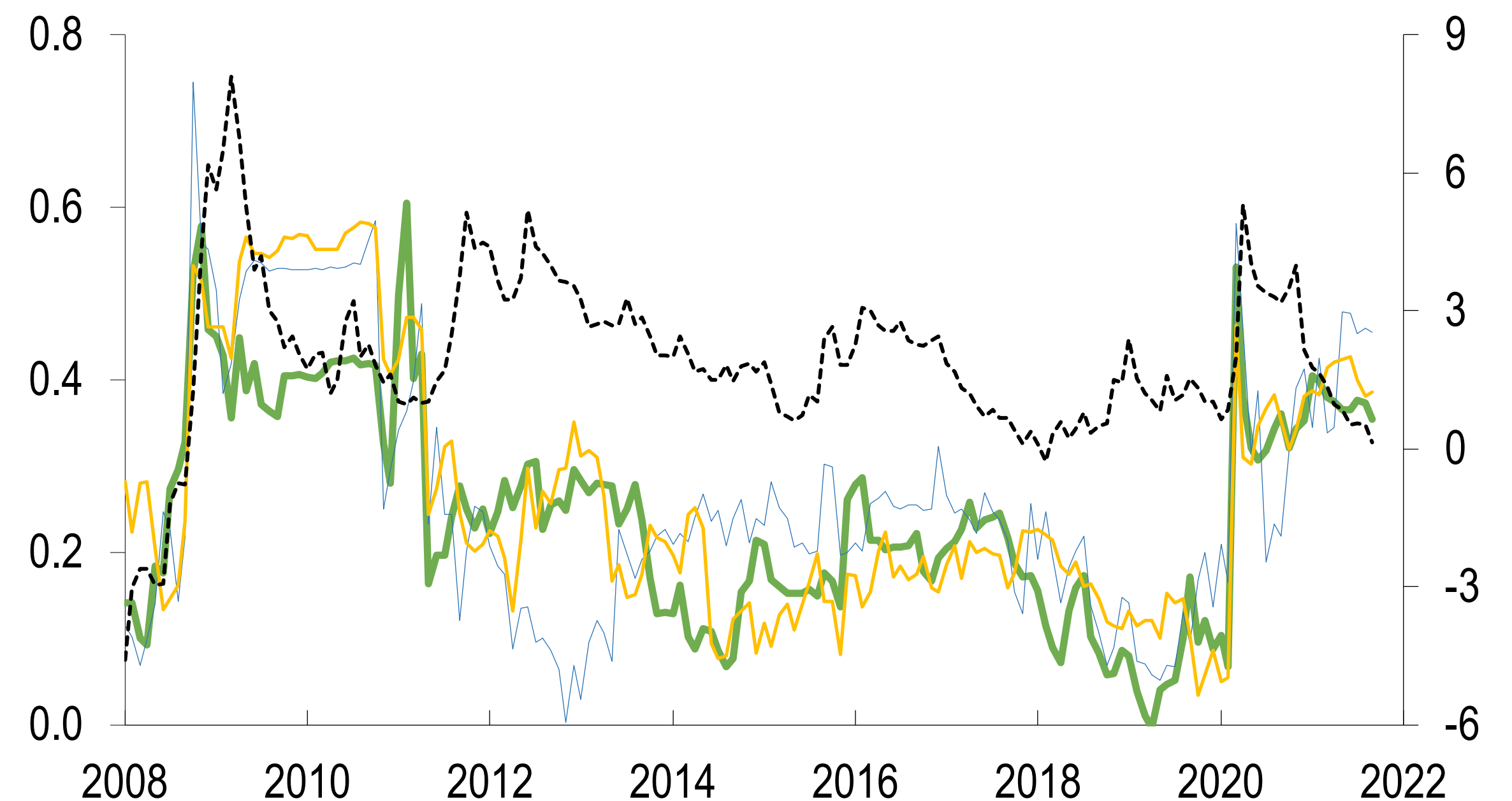
## Frequency of Sovereign Default Crises and Other Economic Crises in EMs and AEs

(Percentage, 1971-2016)

Type of crisis	EMs	AEs
Sovereign (domestic)	6.3	0.1
Sovereign (external)	18.5	0.5
Banking	15.0	16.1
Currency	25.8	10.9
Banking and sovereign	6.6	0.5
Banking, sovereign, and currency	5.1	0.0

## Median Correlation Between Sovereign Stress, Bank, and NFC Sector Stress and Global Financial Conditions

(Index)



— Sovereign-Banks  
— Banks-NFCs

— Sovereign-NFCs  
--- Global financial conditions (right scale)

Source: Reinhart and Rogoff (2020); IMF calculations.

Note: Crisis observations in percent of total number of country observations in specified sample.

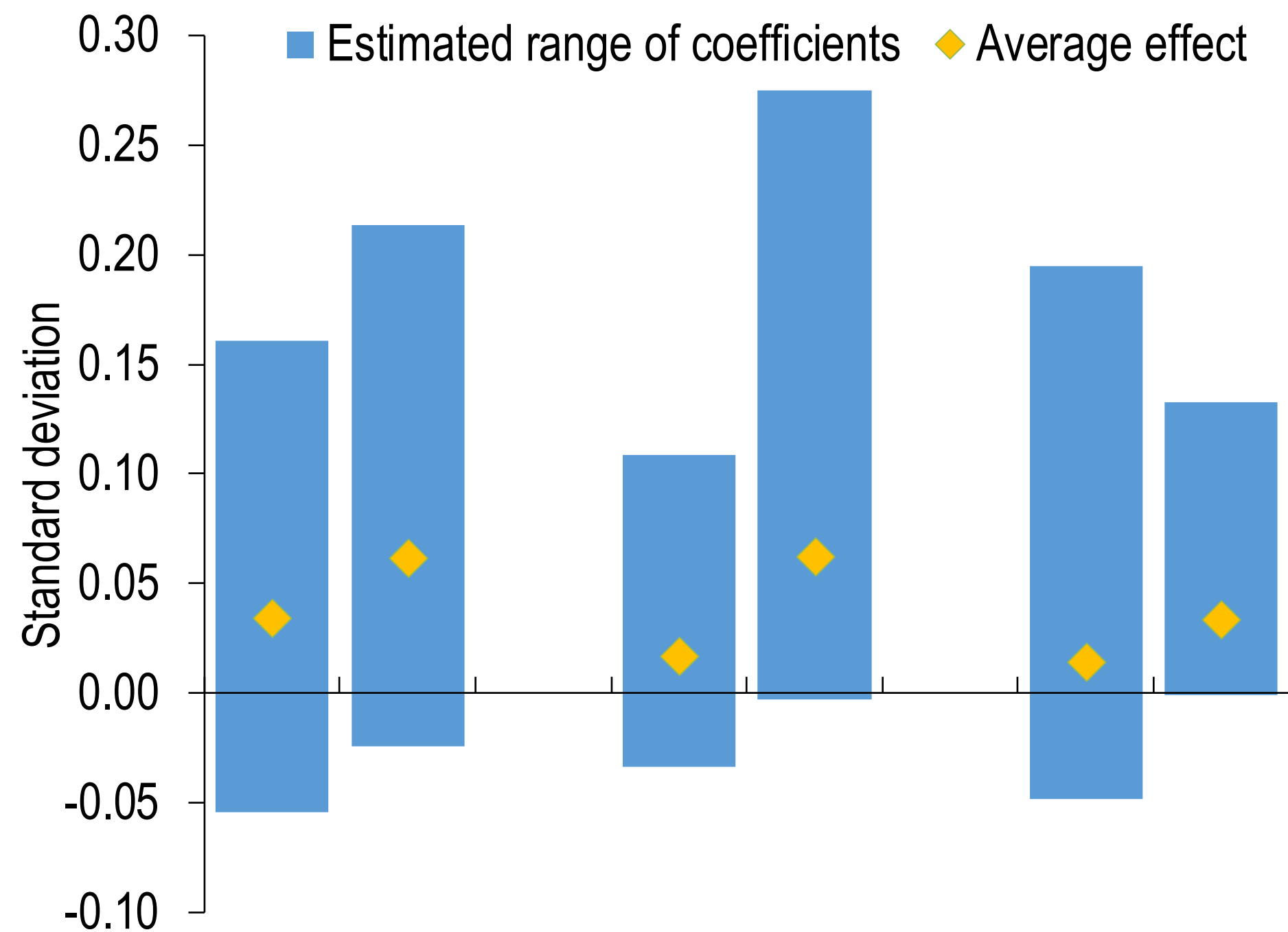
Currency crisis is defined as an annual depreciation of at least 15 percent.

# Stress Transmits Across Sovereign, Banking and Corporate Sectors

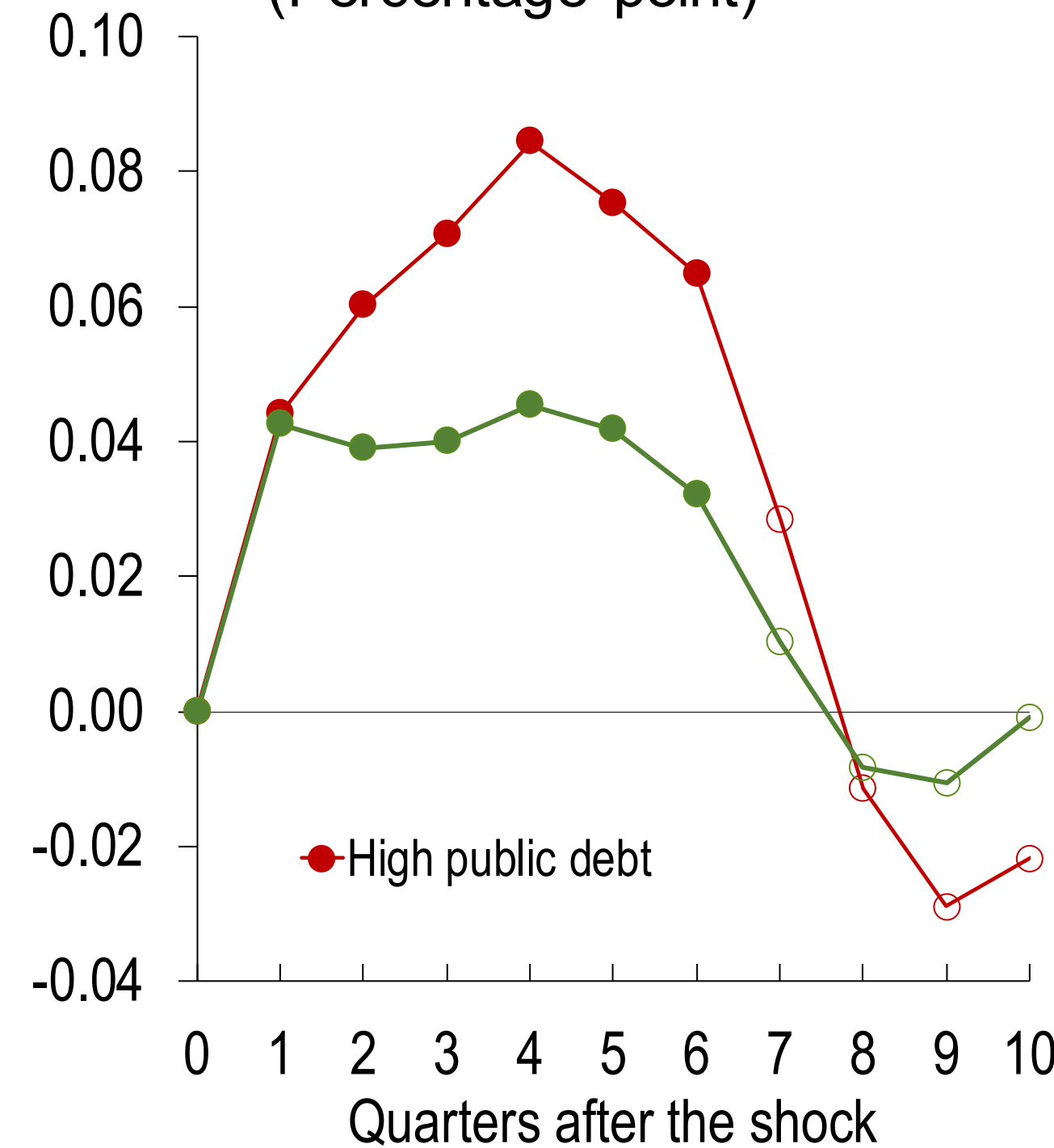
*An increase in sovereign, bank, and corporate credit risk transmits across sectors, especially from sovereign to banks and the corporate sectors*

*Higher public debt and a higher sovereign exposure of banks increases the effect of global shocks on the sovereign and banking sector*

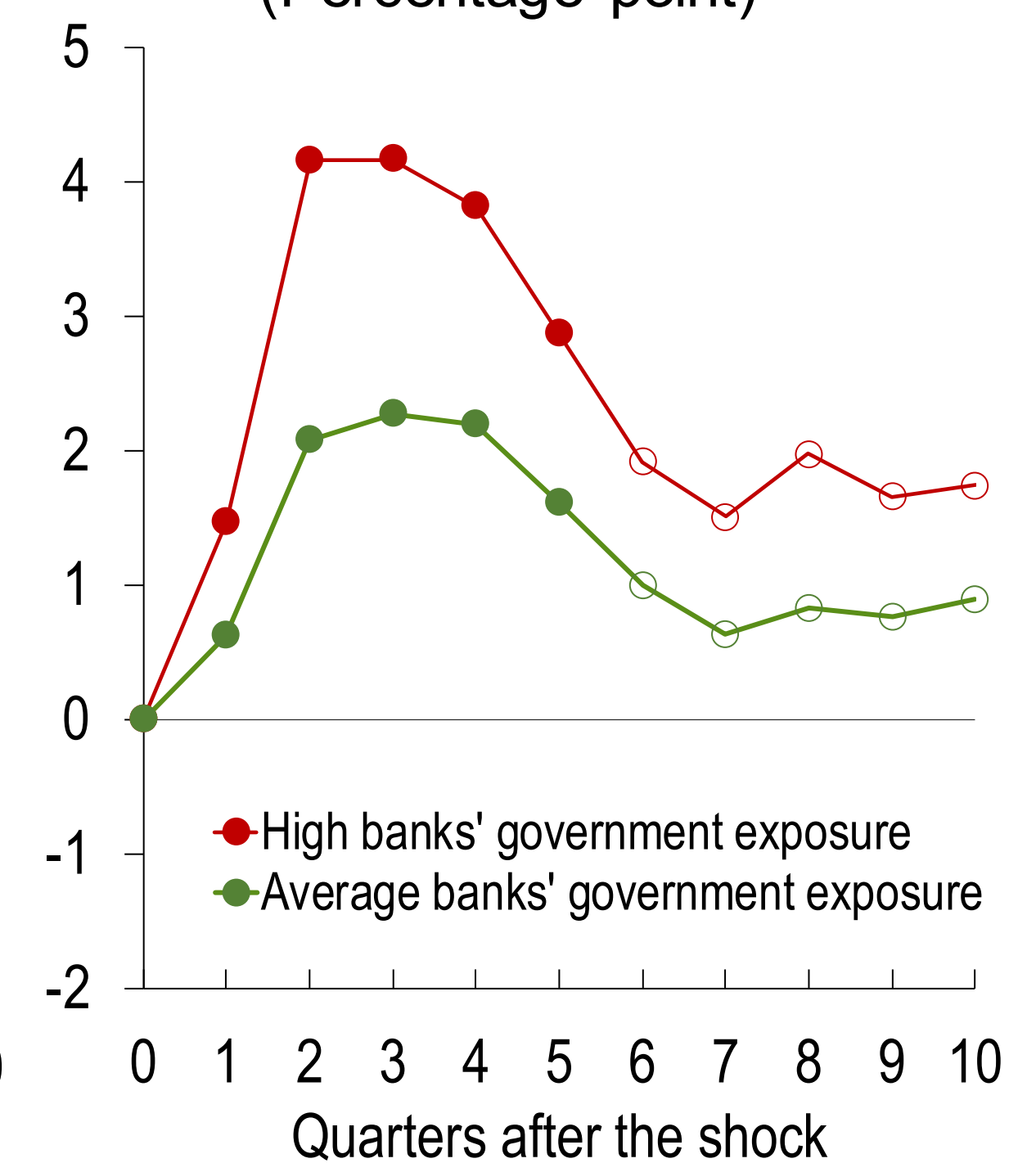
**Strength of the Main Channels of the Nexus across EMs**  
(Effect of a one standard deviation shock on other sectors' default risk)



**Cumulative Change in Sovereign Credit Risk Following a Global Financial Conditions Shock**  
(Percentage point)



**Cumulative Change in Bank Credit Risks Following a Global Financial Conditions Shock**  
(Percentage point)



Note: Full dots indicate significance at 90 percent or higher.



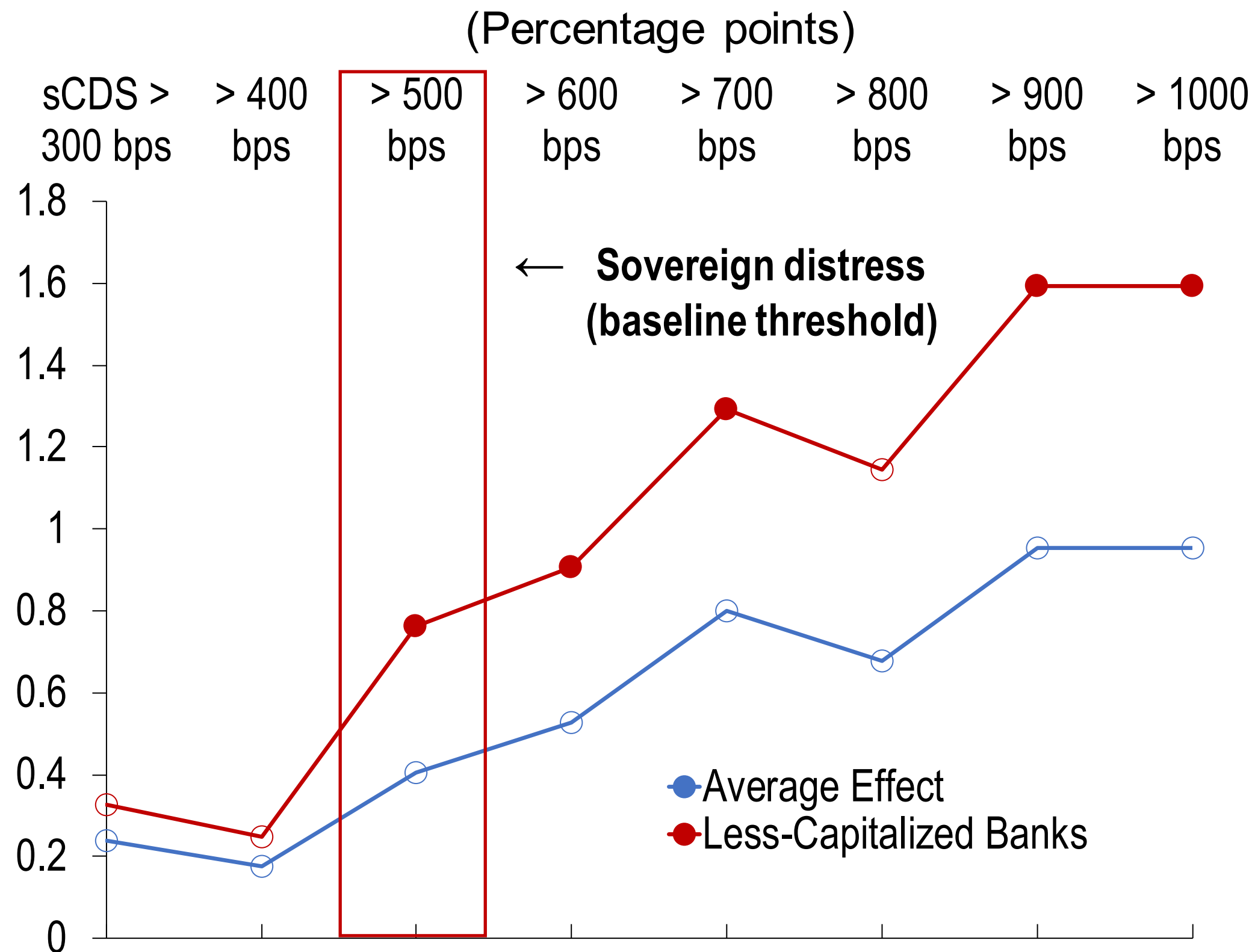
**How relevant are the key channels of transmission?**

# Exposure Channel: The Effect of Sovereign Stress on Banks is Large

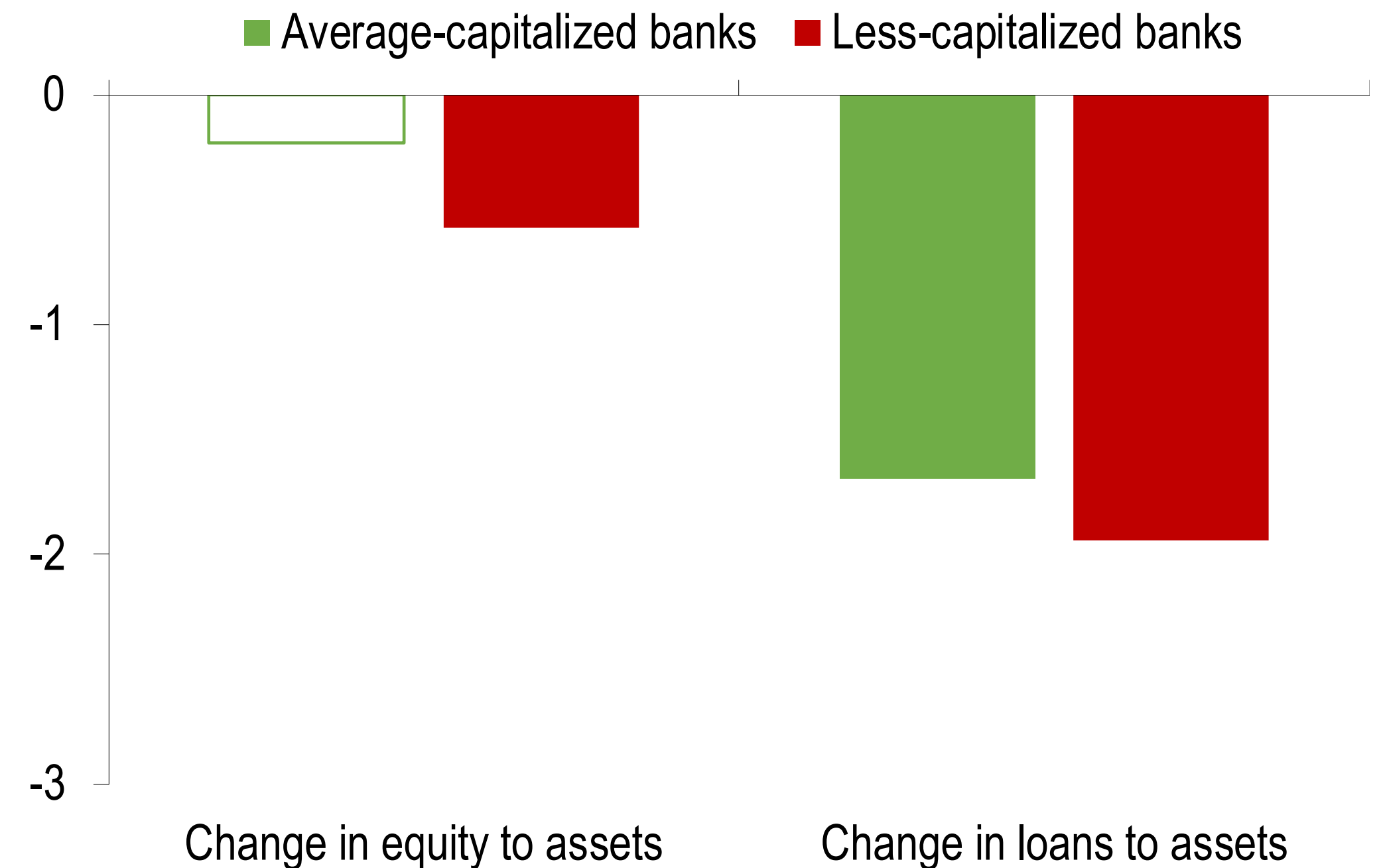
*Banks with higher sovereign debt exposure and weaker balance sheets experience a higher default risk post-sovereign distress...*

*...as well as lower capital and lending to the private sector*

## Change in Bank EDF following Sovereign Distress with Higher Bank Sovereign Bond Holdings for Different Levels of Sovereign Distress



## Change in Bank Capital and Lending following Sovereign Distress with Higher Bank Sovereign Bond Holdings (Percentage points)



**The reduction in bank capital and lending is also significant following external shocks.** ➔

Note: Higher sovereign debt exposure refers to banks with ex-ante 10 ppt (1 std) higher government debt securities-to-total assets ratio. Sovereign distress in the baseline models is identified by explicit defaults and sovereign CDS premia above 500 bps. A full dot or a solid bar indicates significance at 90 percent or higher.

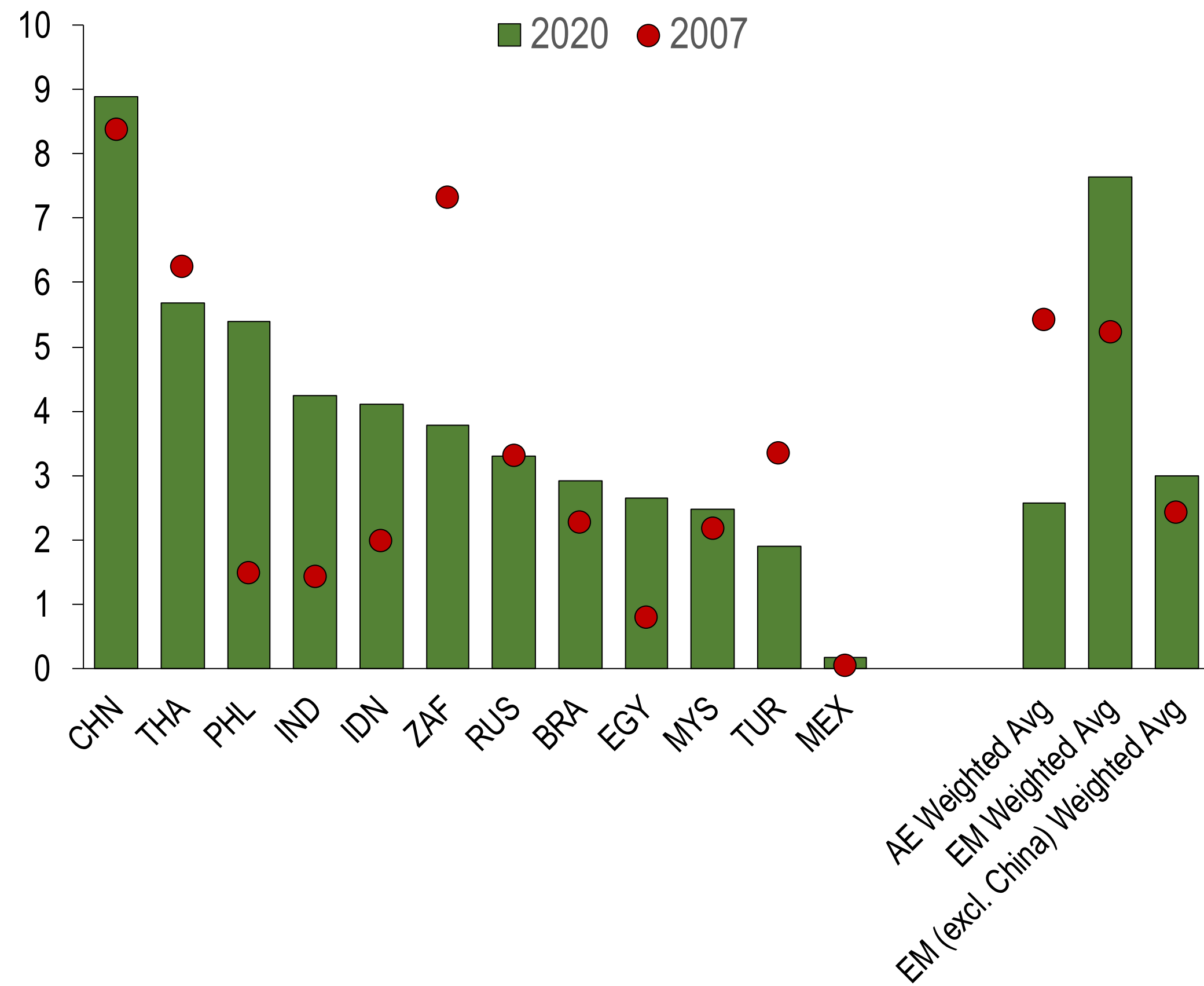
# Safety Net Channel: A Weaker Safety Net After Sovereign Distress Affects Bank Stability

Government implicit guarantees to EM banks have increased since the Global Financial Crisis

Government guarantees support banks after sovereign distress, but not so much in countries with high public debt

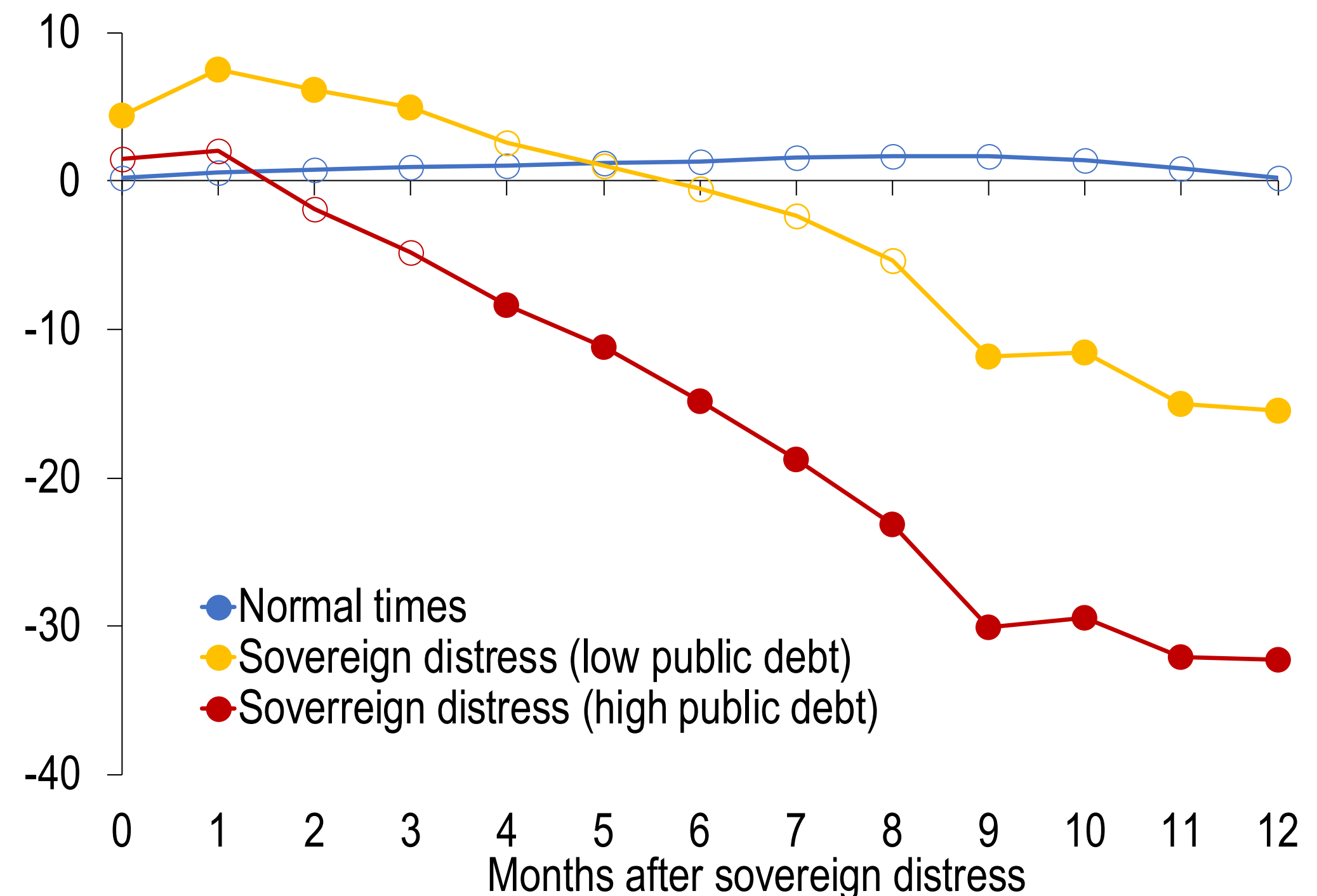
## Fitch Support Rating Floor

(Higher value = higher likelihood of receiving gov. support during stress)



## Cumulative Abnormal Returns with one Notch Higher Government Support Rating in Countries with Different Fiscal Vulnerability

(Percentage points)

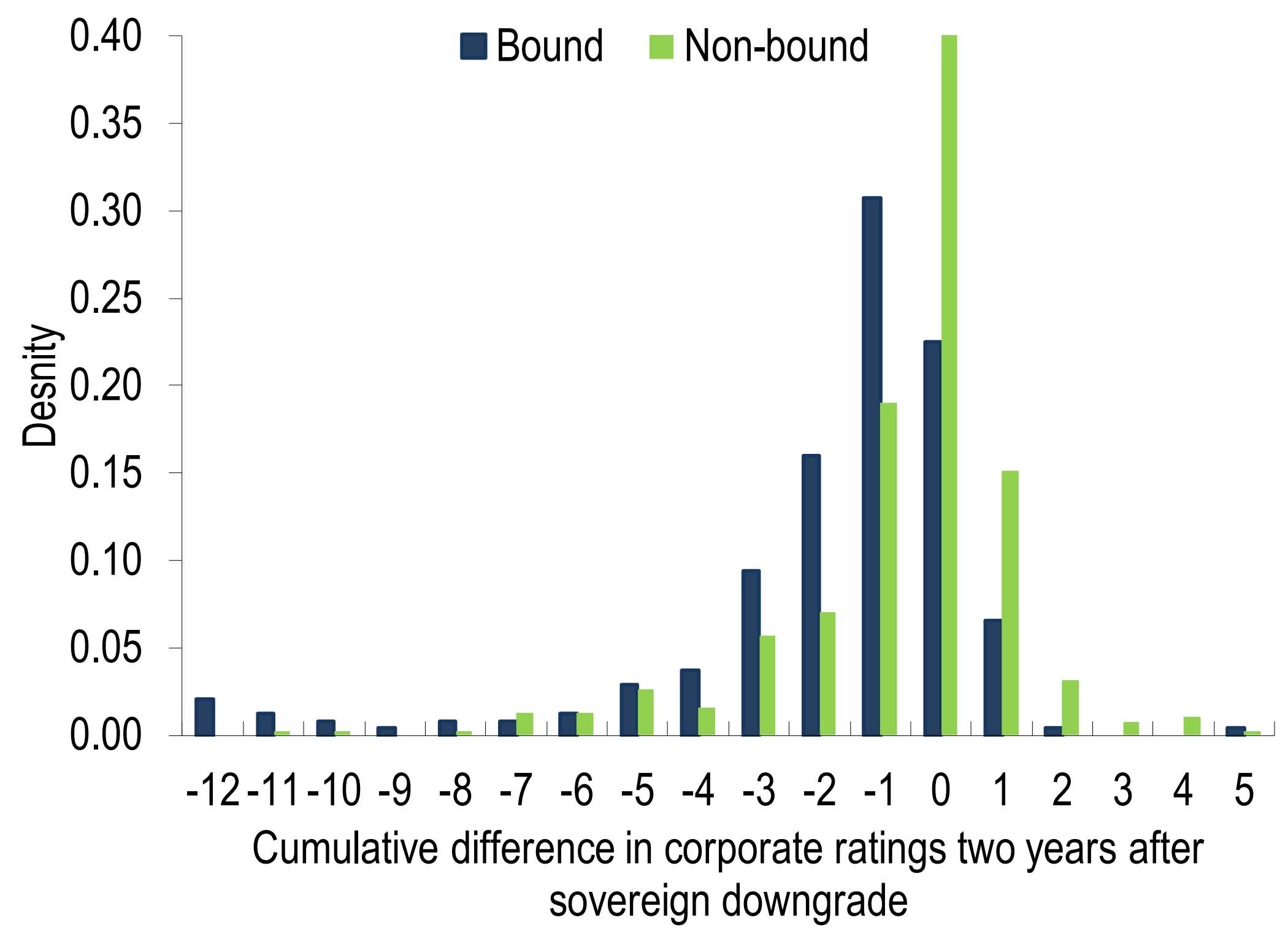


**The strength of sovereign support in turn matters for banks' risk-taking behavior** ➔

# Macroeconomic channel: Sovereign Downgrades Hurt the Corporate Sector

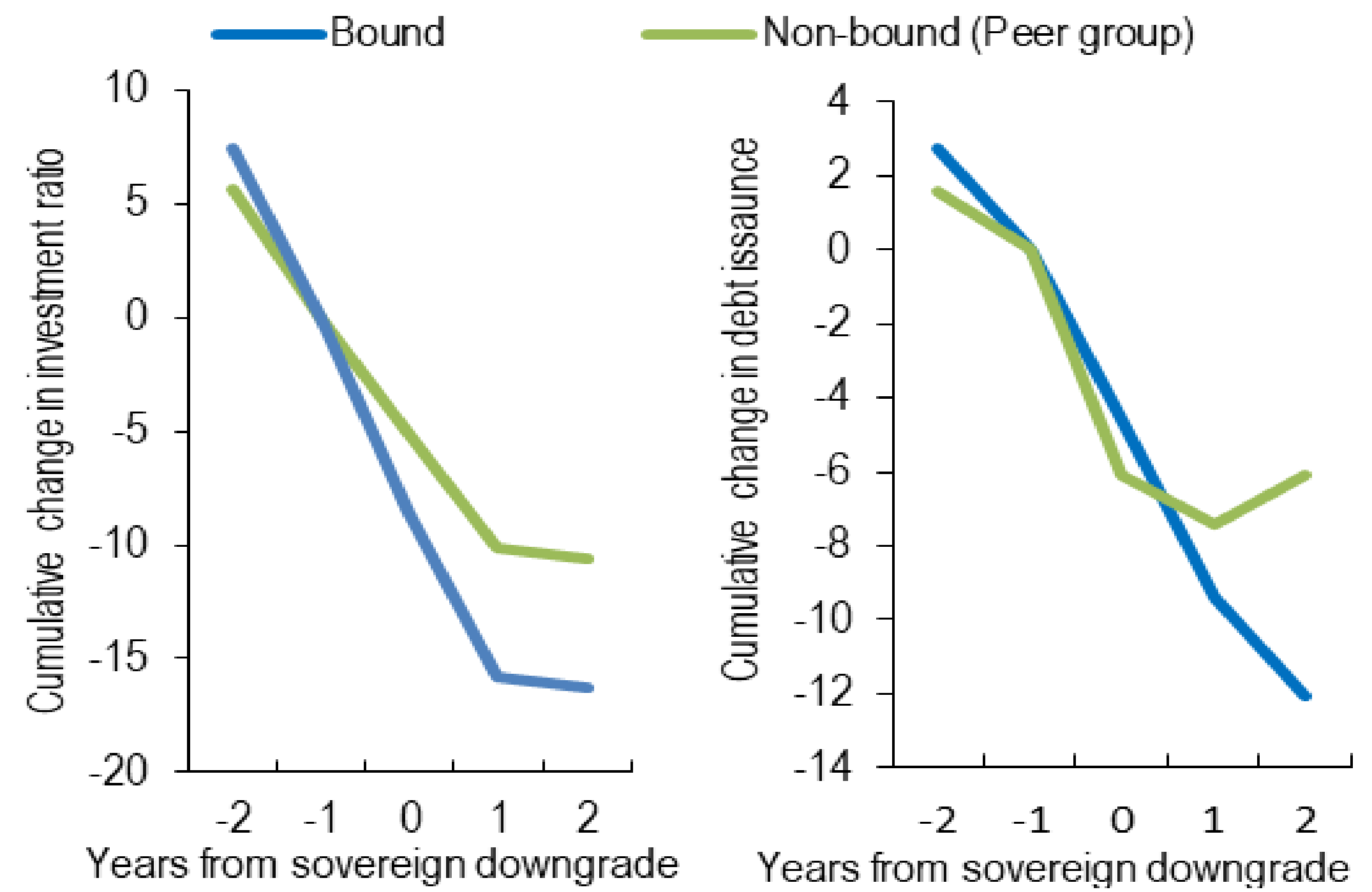
*Firms with a rating equal to or above the sovereign (“bound firms”) have a higher probability of downgrade after a sovereign downgrade...*

**Distribution of the Change in Corporate Ratings Following a Sovereign Downgrade (Density)**



*... and lower their investment more than peers after a sovereign downgrade*

**Change in Investment and Debt Issuance Following a Sovereign Downgrade (Percent)**



**The effect of sovereign distress on NFCs can also lead to spillover effects on banks' asset quality** ➔



**What can be done?**



# Policy Recommendations

- More targeted and efficient spending and **strengthening of medium-term fiscal frameworks** to mitigate the impact of an adverse shock.
- Conducting **stress testing exercises** for banks considering the multiple channels.
- Consider **measures to avoid excessive sovereign exposure** of banks, such as appropriately calibrated capital surcharges on sovereign exposure above certain thresholds, after the economic recovery has taken hold.
- Promote a **deep and diversified local investor** base to strengthen market resilience.
- Improving **data disclosure** of sovereign exposures and contingent liabilities (BCBS, '21).

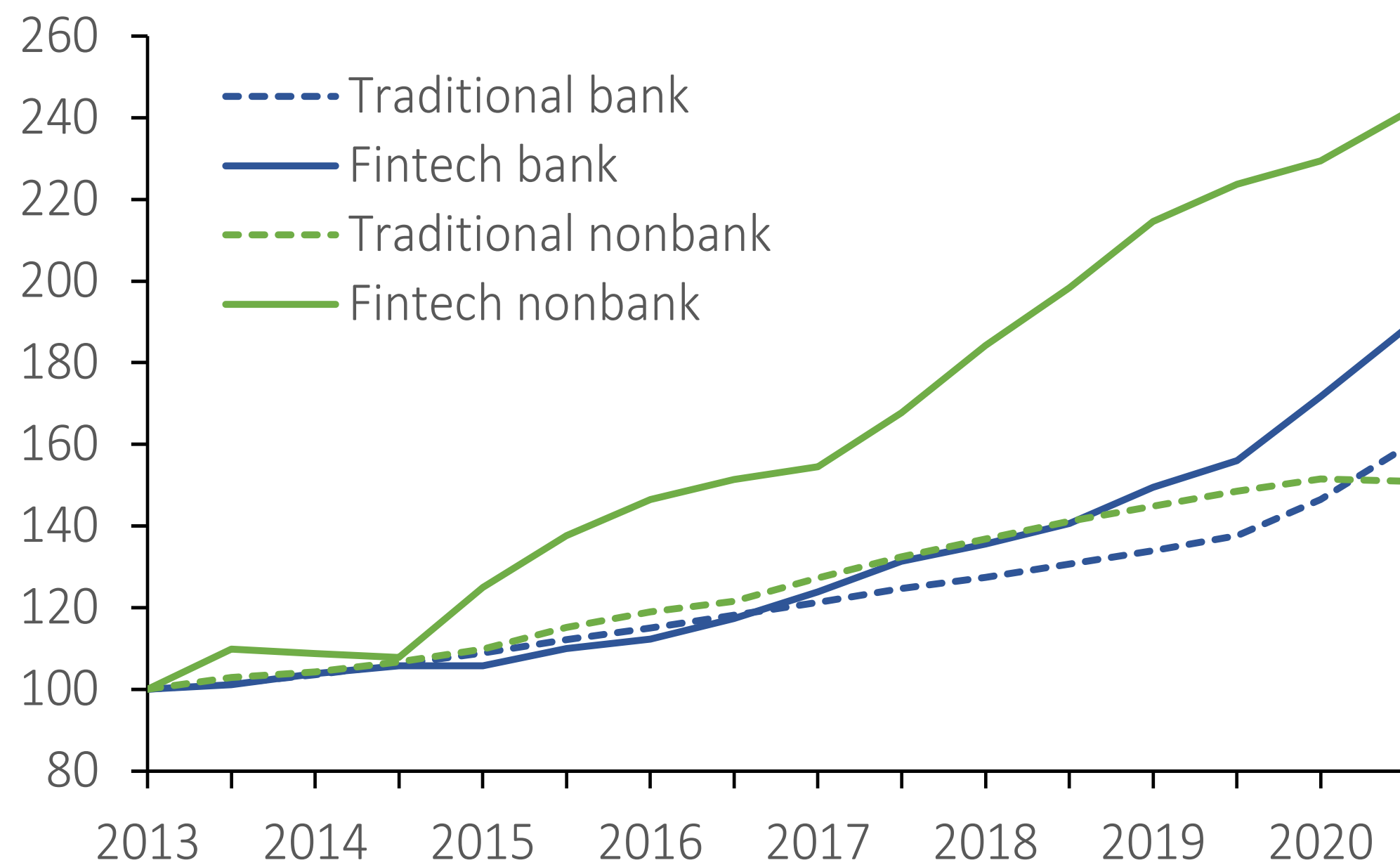
## THE RAPID GROWTH OF FINTECH: VULNERABILITIES AND CHALLENGES FOR FINANCIAL STABILITY

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# Overview

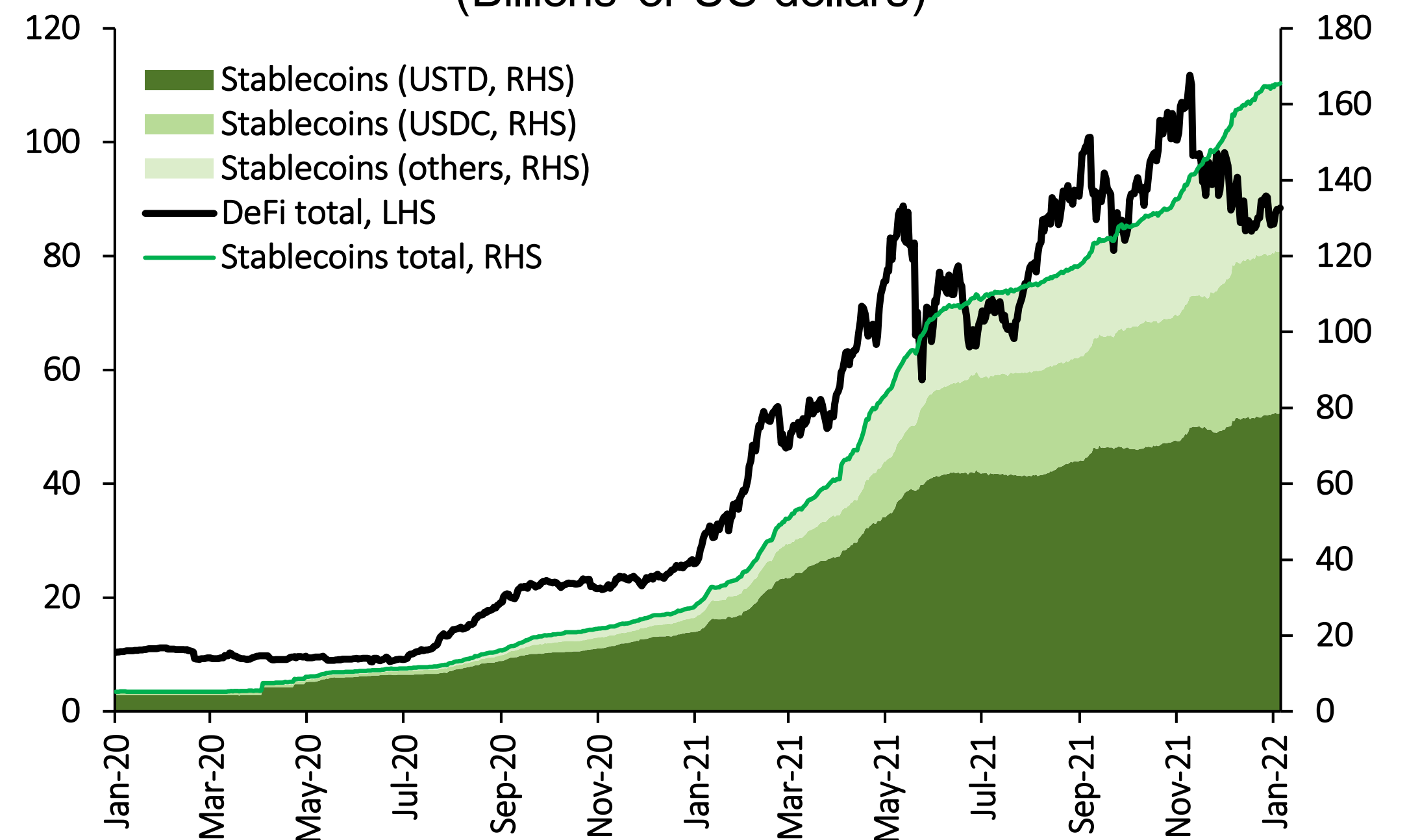
1. How is **FinTech** transforming core banking services?
2. Which risks and opportunities does decentralized finance (**DeFi**) bring?
3. What are the **financial stability** and key **policy implications**?

**Asset Growth of Traditional and FinTech Lenders**  
(2013:H1=100)



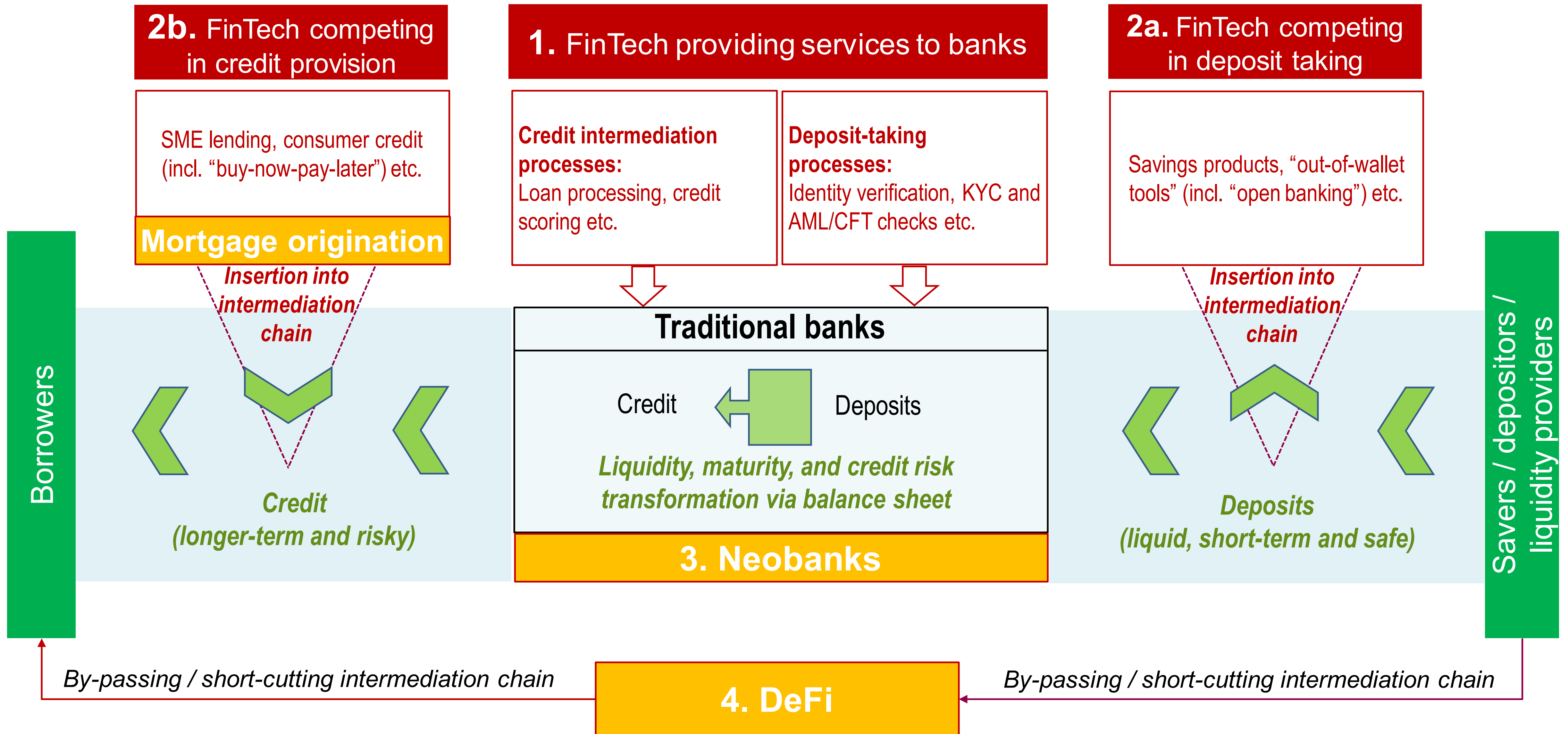
Source: S&P Global Market Intelligence, IMF Staff  
Note: Sample comprises 13 advanced economies and 7 emerging market economies.

**Total Value Locked in DeFi and the Growth of Stablecoins**  
(Billions of US dollars)



Source: CoinGecko, DeFi Pulse, IMF Staff  
Note: Total value locked represents the total nominal value of assets deposited in DeFi platforms.

# FinTechs vs Banks in Financial Intermediation – Conceptual Framework



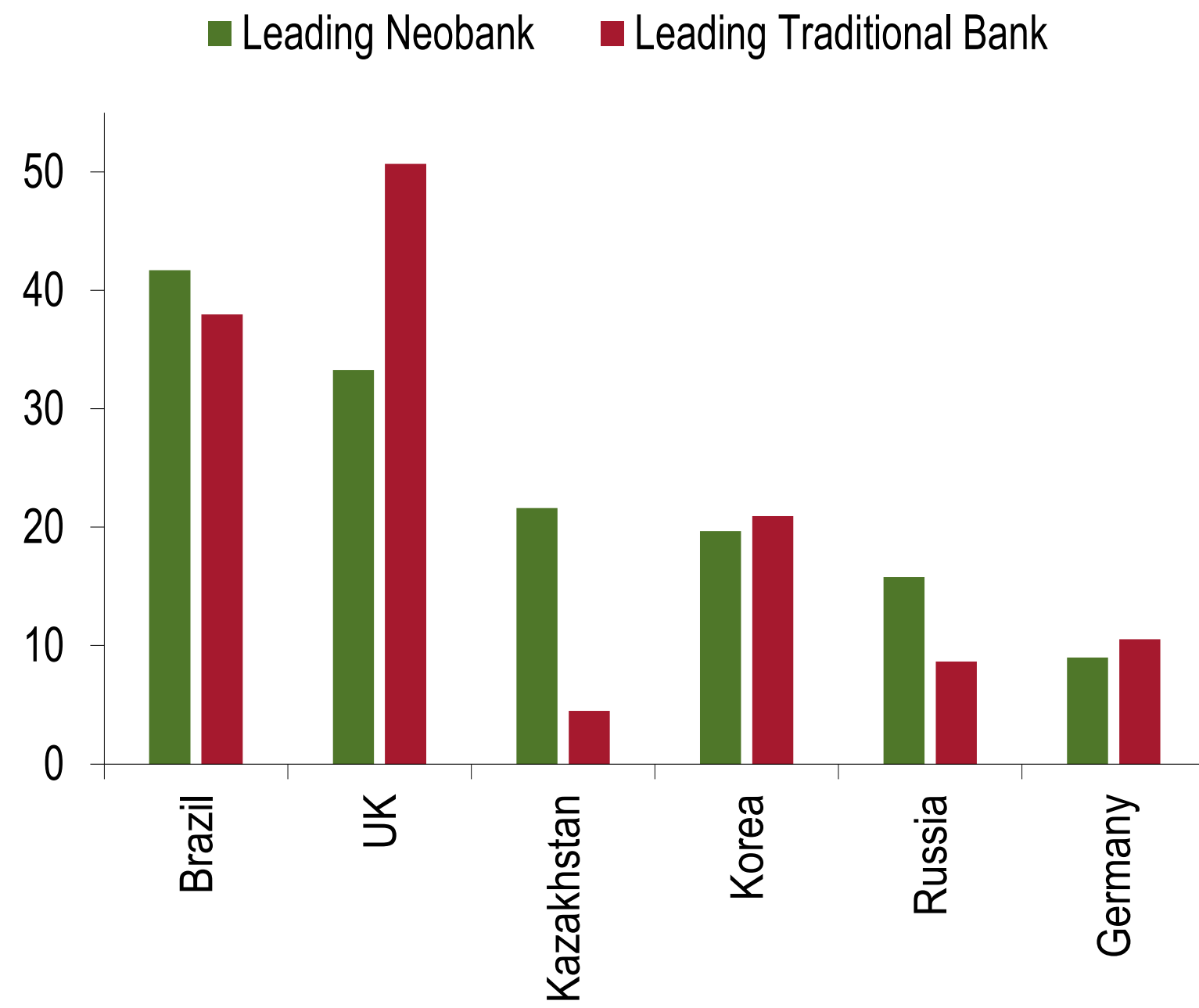
# 1. Case Study: Neobanks - High valuations, strong growth in risky exposures

Neobanks have reached high valuations...

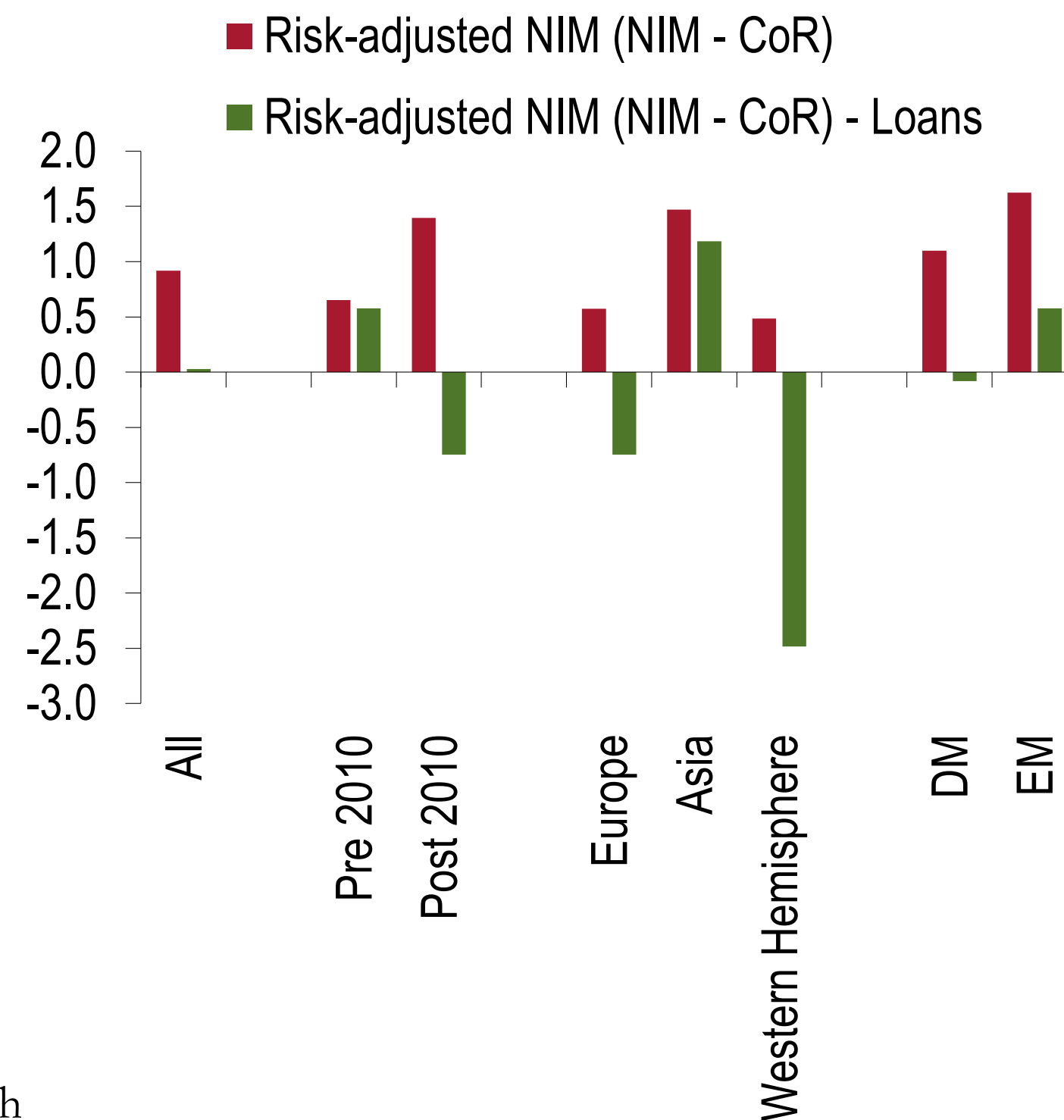
... with higher asset yields driven by the securities portfolio, masking an underpricing of credit risk.

The ratio of liquid assets over deposits falls short of that at traditional peers.

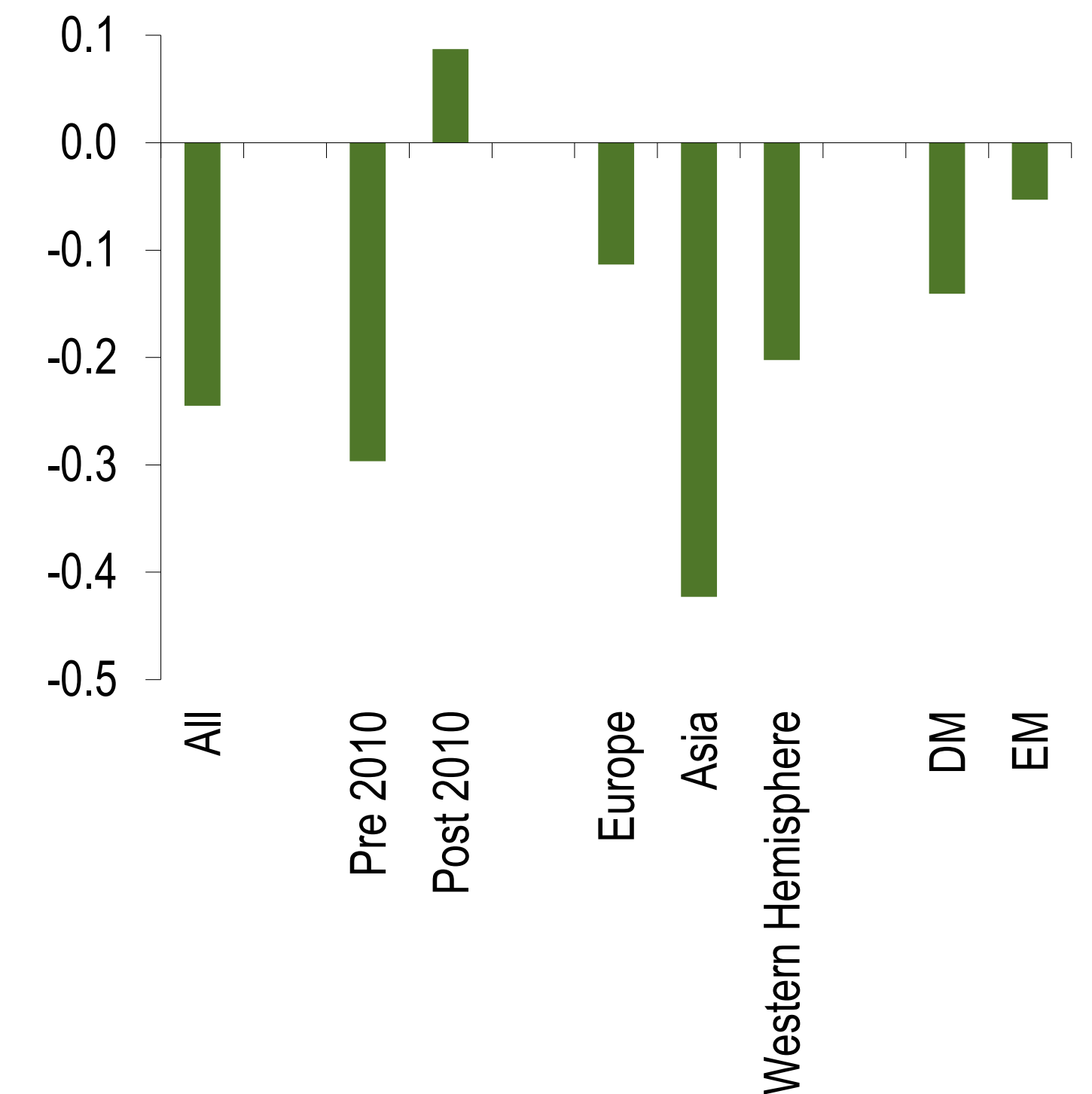
**Neobanks vs traditional banks: Market cap**  
(USD billion, as of January 11)



**Risk-adjusted NIM, with and without securities income**  
(as % of earning assets, 2020; in # STDEV vs traditional peers)



**Liquid assets**  
(% of deposits, 2020; in # STDEV vs traditional peers)

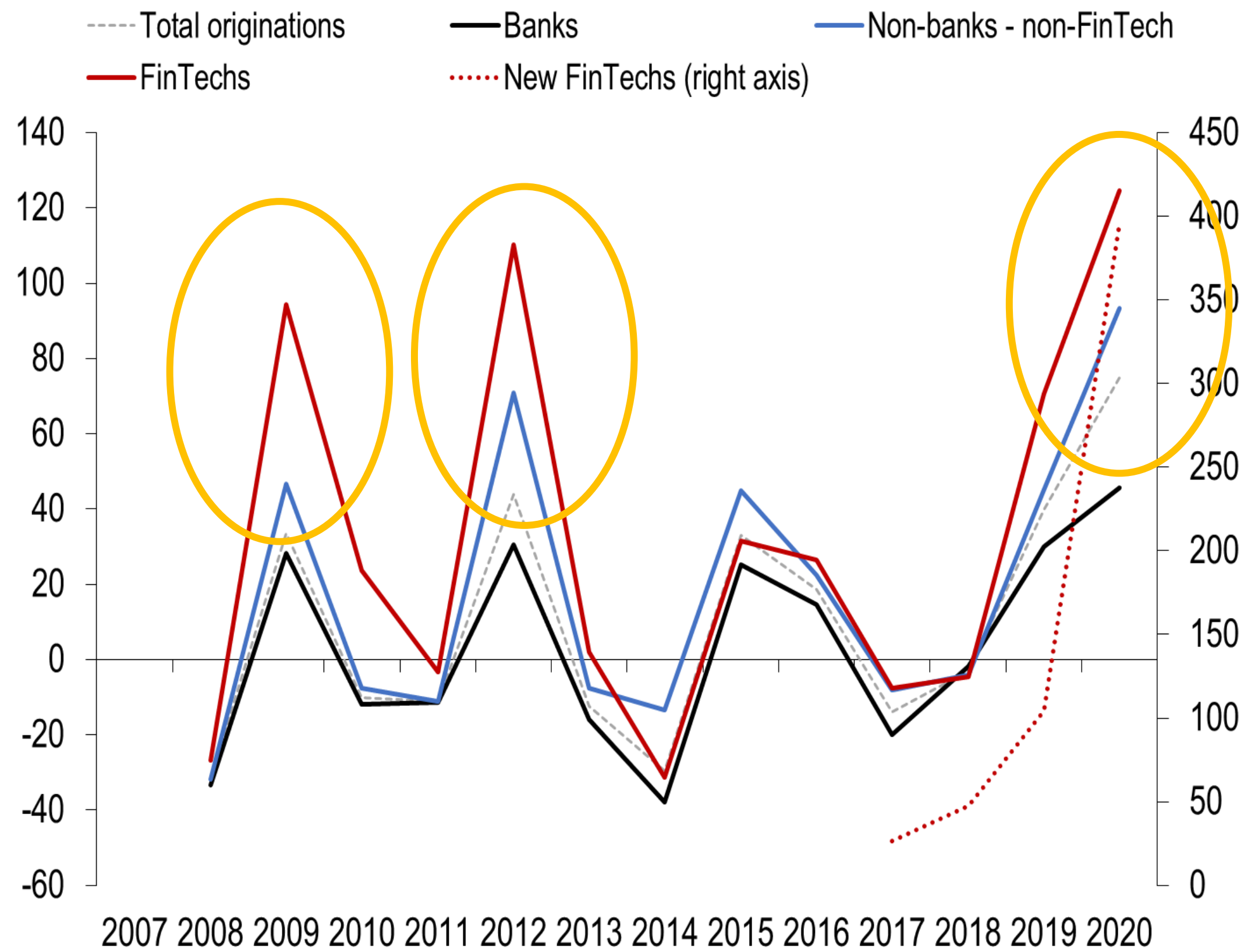


# 2. Case Study: US Mortgage Market – FinTechs' impact on banks

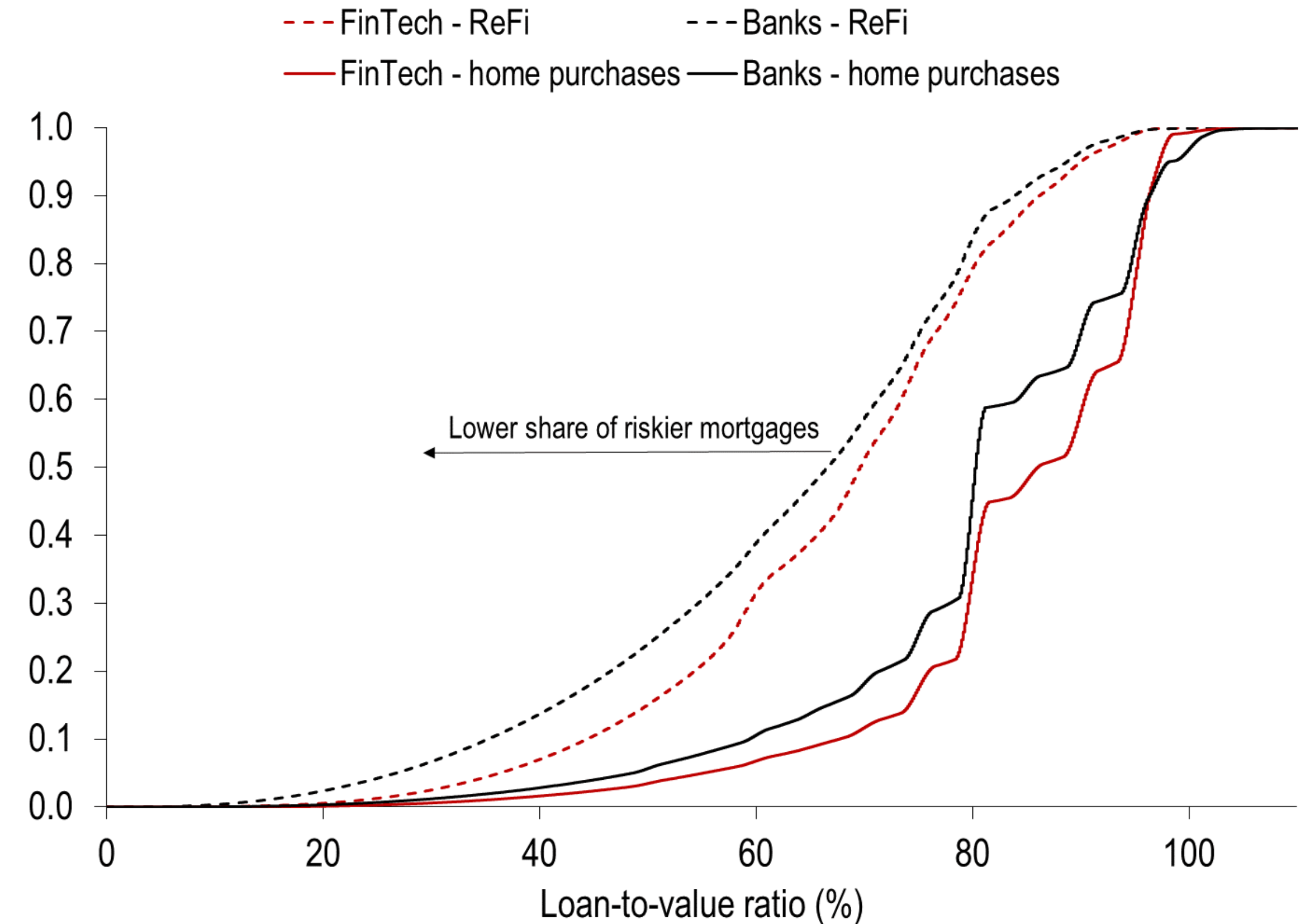
*FinTechs follow an aggressive growth model...*

*...and tend to be favored by riskier borrowers*

**US home mortgage originations**  
(Growth rates, percent)



**Distribution of Loan-to-Value Ratios, 2018–20**  
(Smoothed cumulative distribution)



Source: US HMDA data; IMF staff.

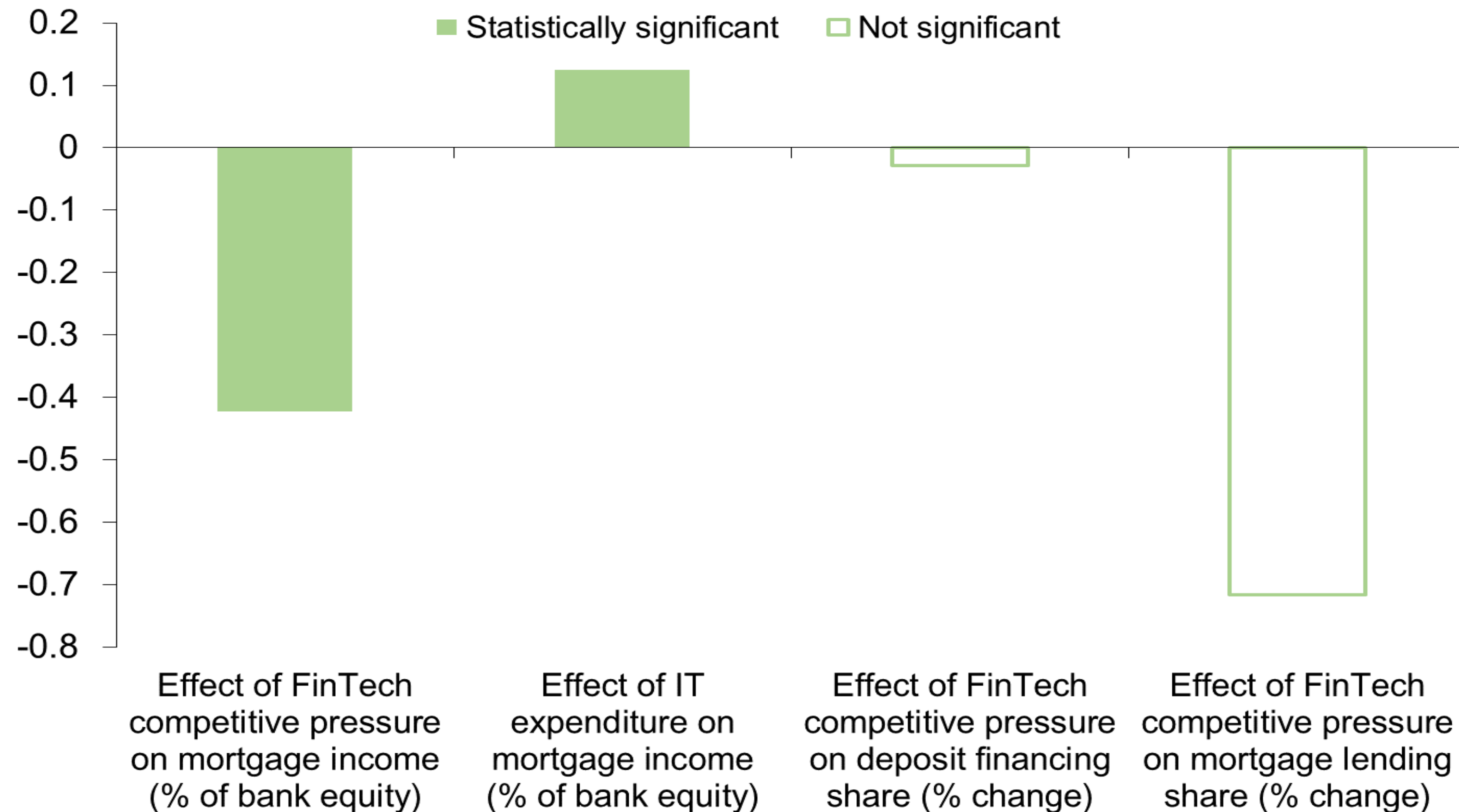
Note: New FinTechs are *Better Mortgages* and *SoFi*, which started to fully operate in 2016

Source: US HMDA data; IMF staff.

## 2. Case Study: US Mortgage Market – FinTechs' impact on banks

*FinTech competition impacts traditional bank earnings, but less so for banks investing in technology*

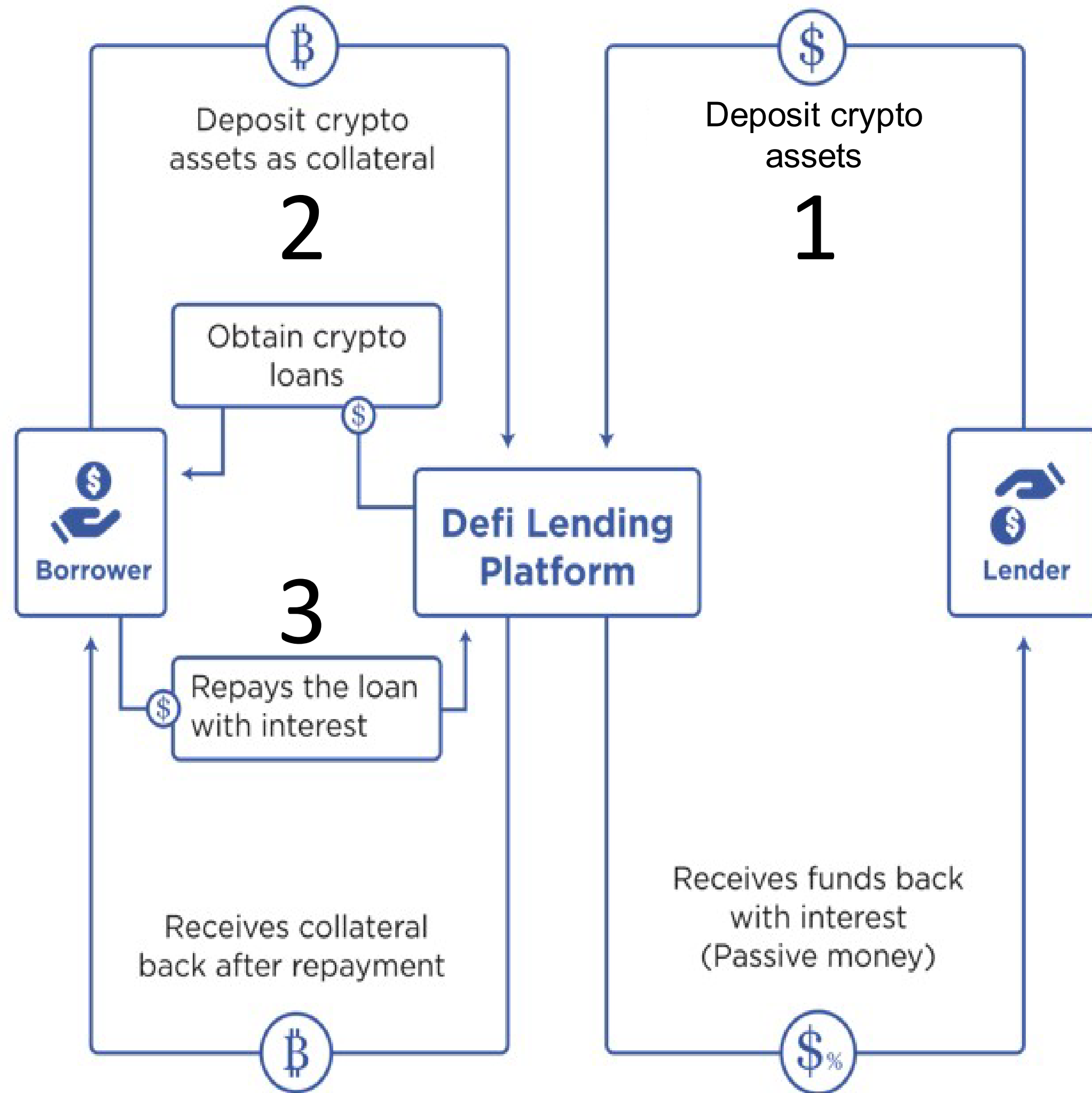
**Effect of competitive pressure from FinTechs on banks**  
(Percentage points)



**Two important take-aways:**

- 1. Aggressive growth model of FinTechs**, taking on high credit risk, even if their share is still small (about 11%)
- 2. Banks are under pressure to adjust**; particularly smaller banks with inferior financial technology

# 3. DeFi: Opportunities and Risks



## Risks:

- **Market Risks:** heavy reliance on crypto collateral, particularly stablecoins
- **Liquidity Risks:** concentration of liquidity providers  
(no deposit insurance and CB liquidity)
- **Cyber Risks:** cyber attacks
- **Other risks related to crypto assets:** operational, governance, AML/CFT

## Opportunities:

- **Enhanced efficiency:** lower intermediation cost (no labor or operational costs)
- **Promote competition:** between DeFi and traditional financial institutions

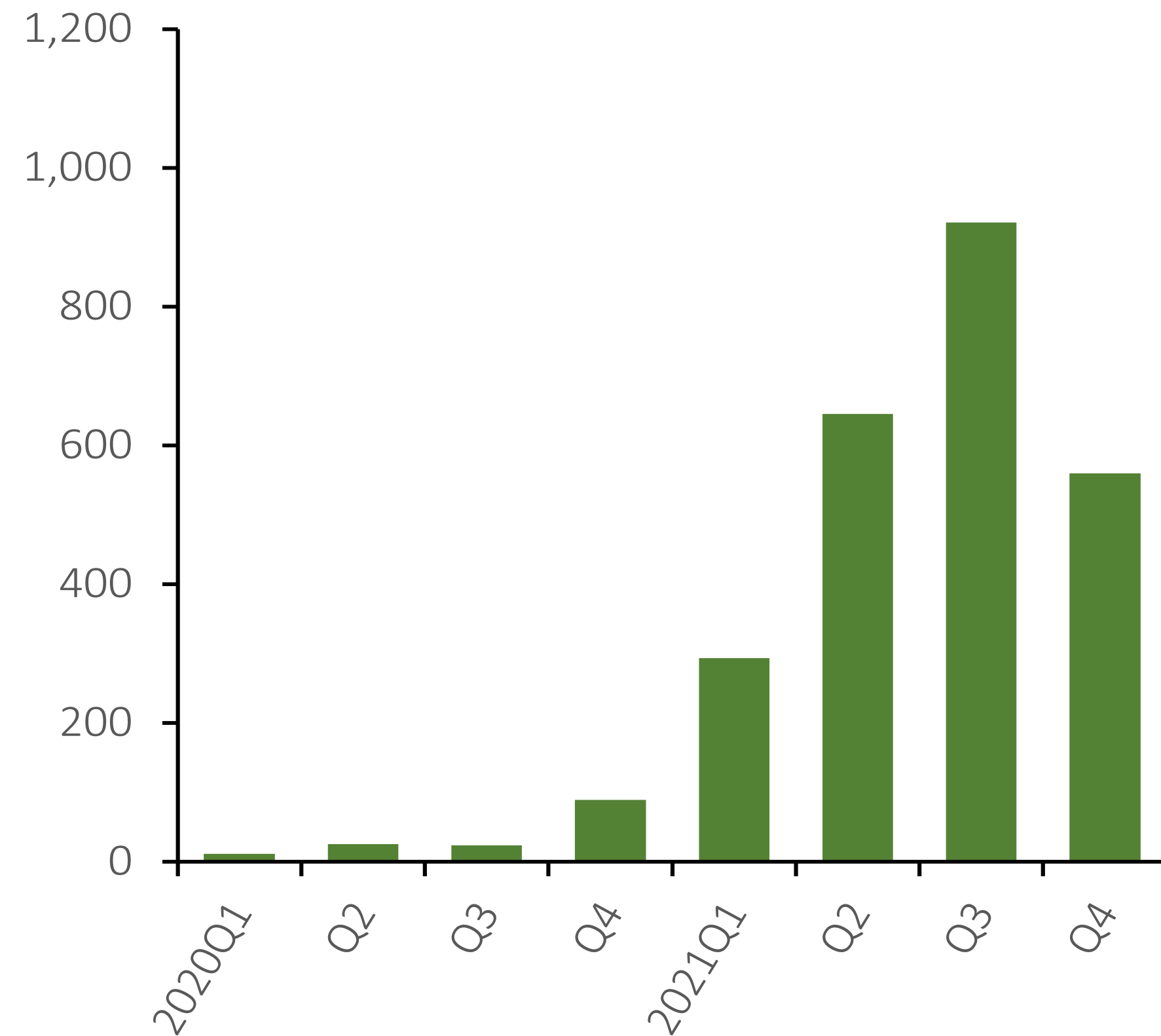


# 3. DeFi: Cyberattack is a Critical Risk

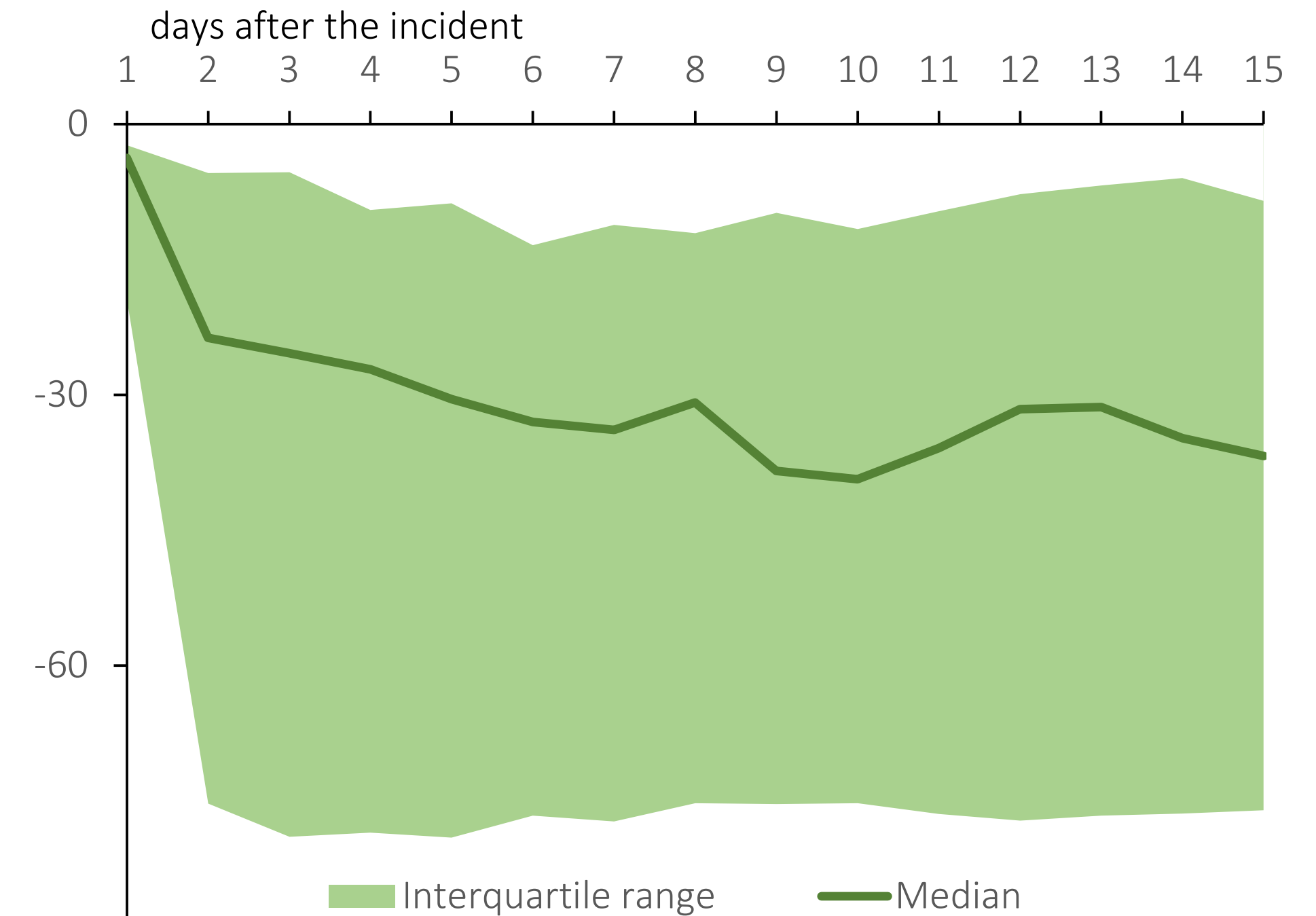
*Cyber attack increased substantially after 2021...*

*... and in most cases over 30% of deposit was lost or went away after attack*

**Gross value stolen by DeFi related cyberattacks**  
(Millions of US Dollars)



**Cumulative abnormal growth of total value locked after cyberattack** (% deviation relative to total market growth)

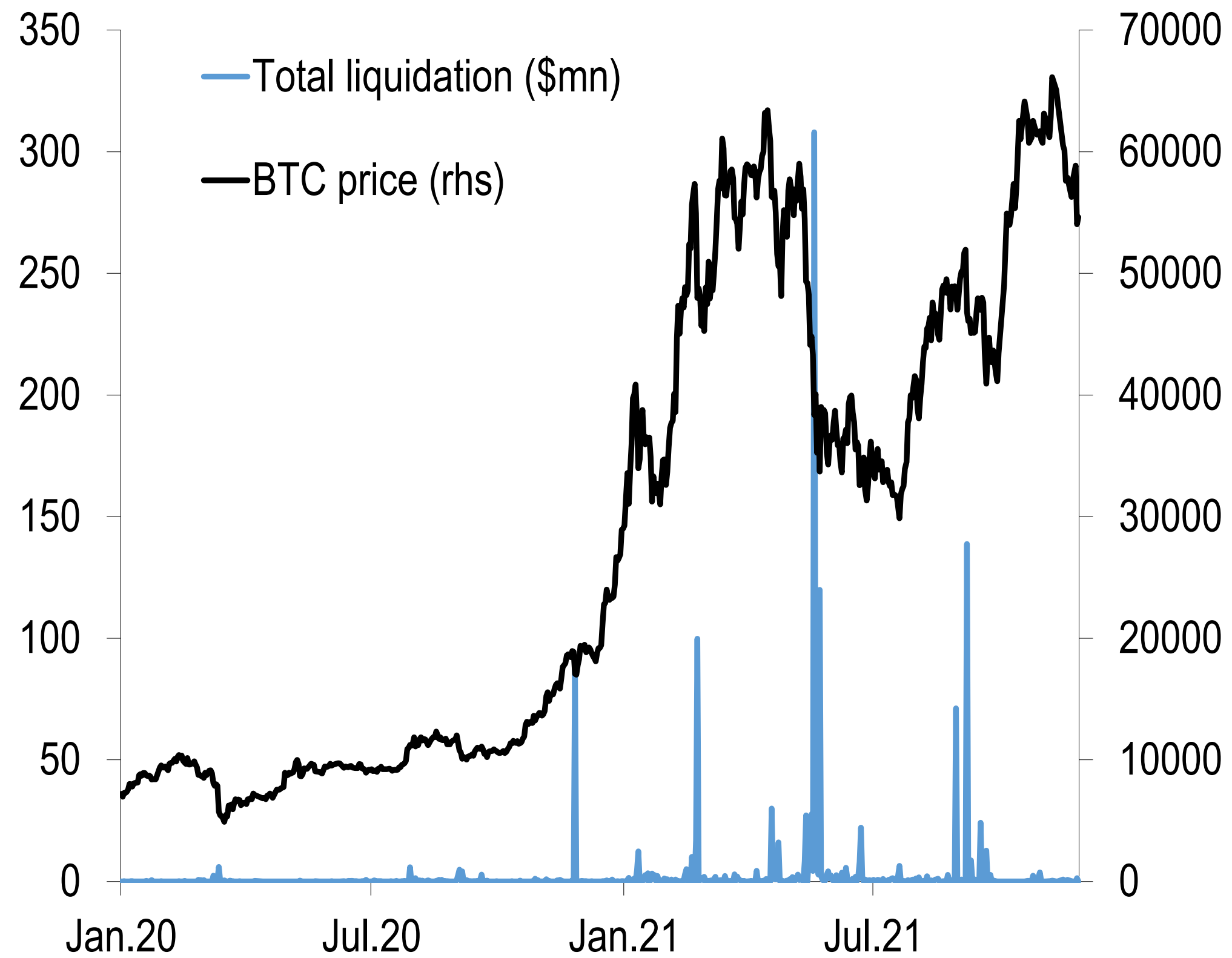


Source: Chaianalysis, CoinGecko, CryptoSec.info, DeFi Lhama, ImmuneFi, rekt, IMF staff

# 3. DeFi: Market and Liquidity Risks

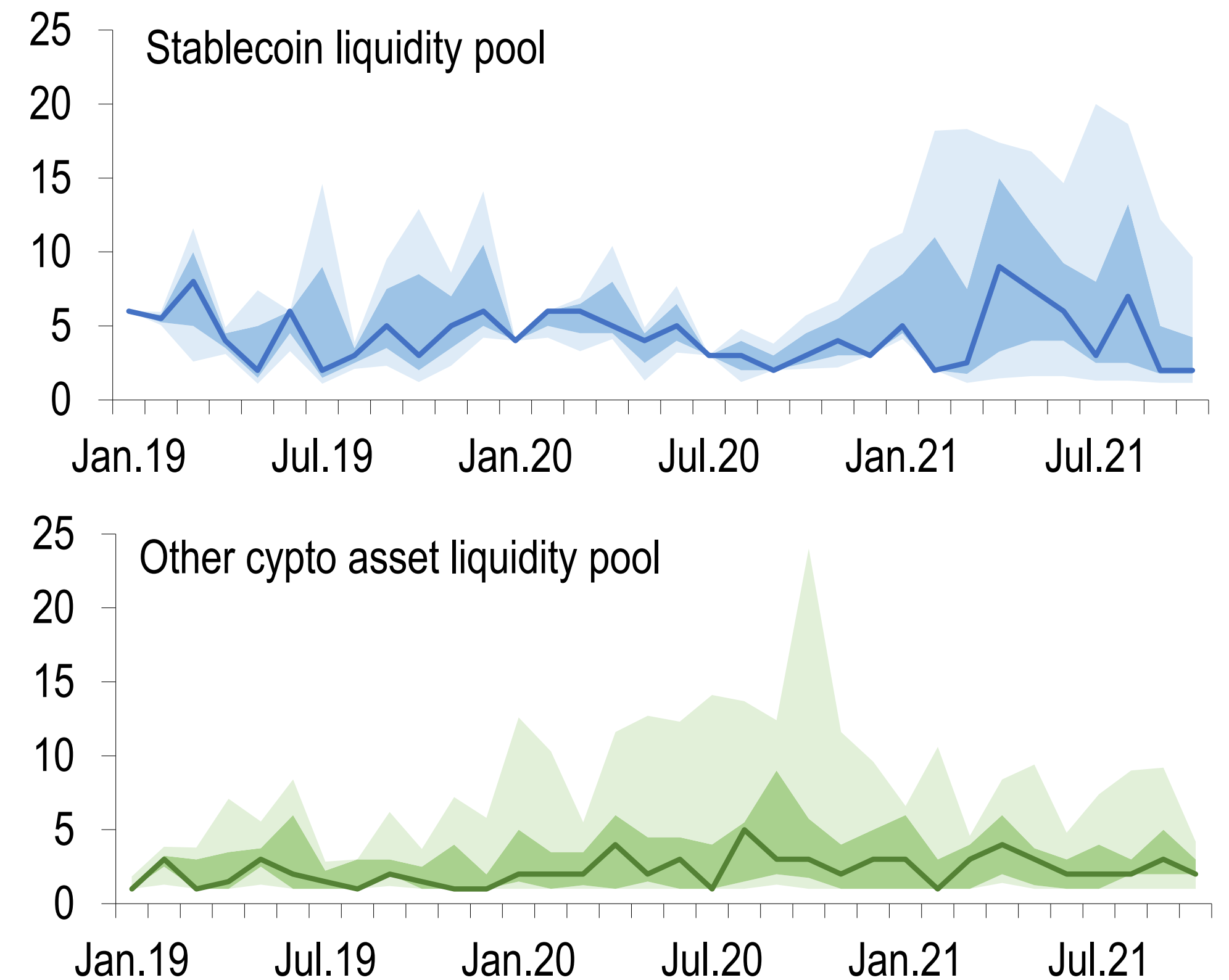
*High volatility of crypto asset prices lead to frequent liquidation of DeFi lending*

**Liquidation Volume**  
(\$mn, weekly)



*Liquidity is provided by only few accounts*

**Number of Accounts Providing 50% of Liquidity Pool**  
(interquartile distribution across collateral assets)

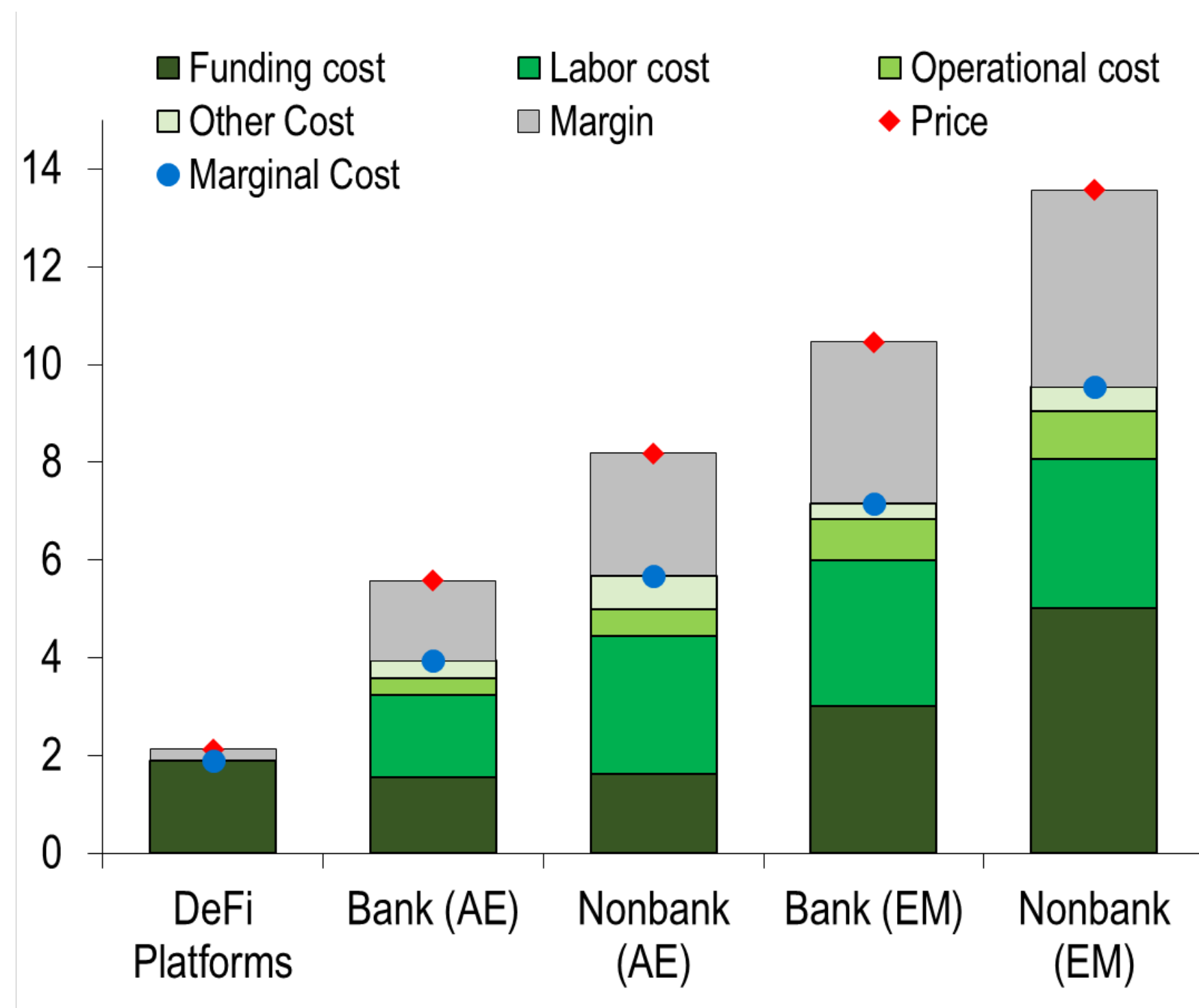


# 3. DeFi: More Cost-Efficient but More Vulnerable Than Banks

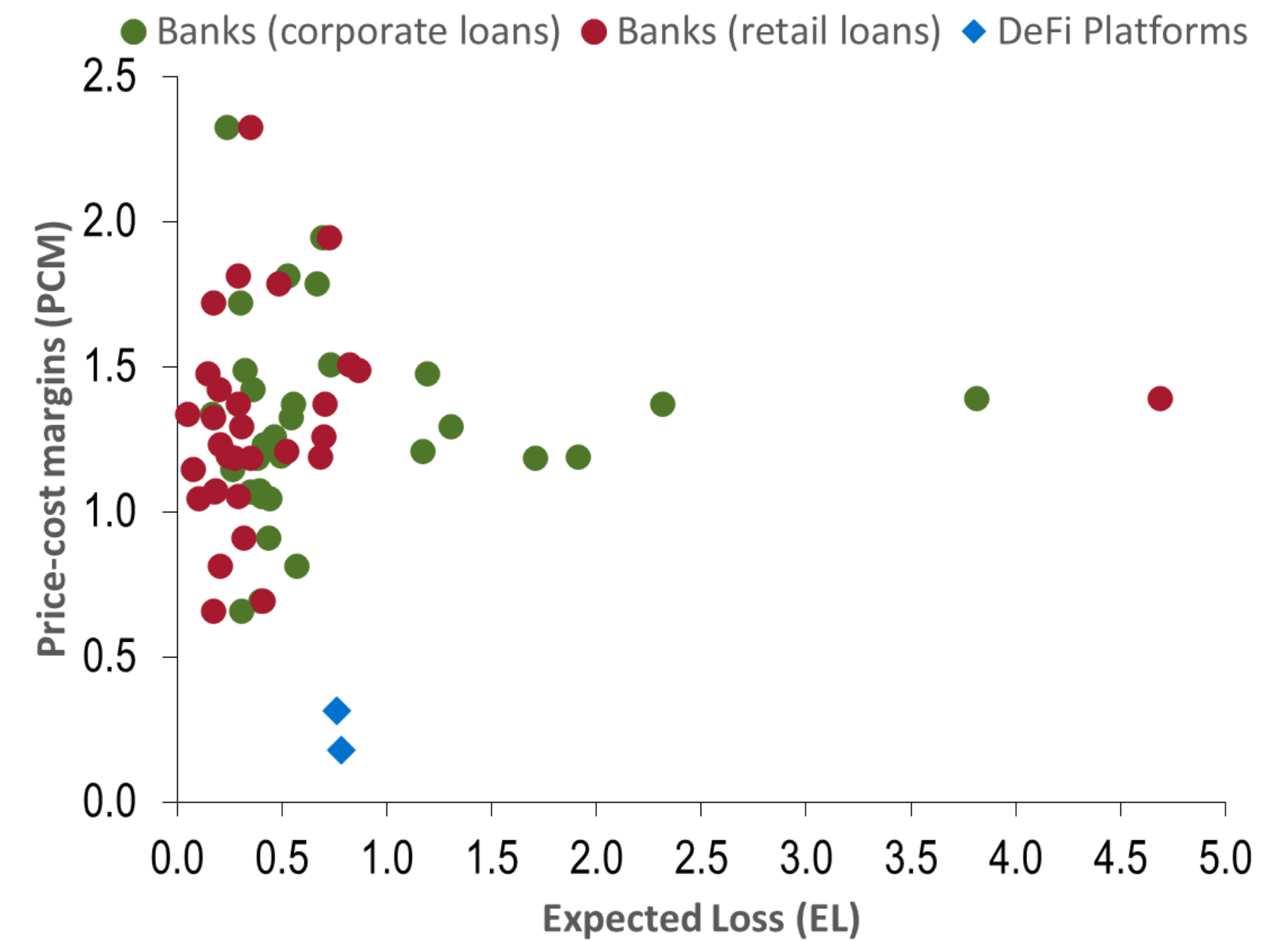
*DeFi is cost-efficient in lending compared to incumbents, having lower marginal costs.*

*However, DeFi has riskier borrowers than banks with thinner margins.*

**Estimated Marginal Costs and Margins**  
(in percent)



**Estimated Margins and Expected Loss**  
(in percent)



Source: FitchConnect, Aave, Compound, IMF Staff

Note: Each dot represents the average margin and expected loss of banks in a country.  
Source: EBA Risk Dashboard, Aave, Compound, CoinGecko, IMF Staff

# Financial Stability and Policy Issues

Policies that target both fintech firms and incumbents proportionately are needed

- **Neobanks:** more robust risk-management requirements (capital, liquidity, and OpRisk) commensurate with their risks are desirable.
- **For incumbents:** prudential supervision may need greater focus on the health of less technologically advanced banks, as their existing business models may be less sustainable over the long term
- **DeFi poses fundamental challenges** to effective regulation and supervision due to lack of centralized entity responsible for the governance:
  - Regulation should focus on elements of the crypto ecosystem that enable DeFi (stablecoin issuers and centralized exchanges.)
  - DeFi platforms should be subject to robust governance schemes, including industry codes and self-regulatory organizations (these entities could provide an effective conduit for regulatory oversight)