The Sovereign-Bank Nexus in Emerging Markets: A Risky Embrace

April 2022 GFSR Chapter 2

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)

- AEs
- EMs
- Public debt in US dollars (right scale)

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)
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)
Banks’ exposures to sovereign debt is higher in countries with higher public debt and lower bank capital.

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

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

**EMs Tier1 Capital and Banks' Holdings of Sovereign Debt (In percent, 2021)**
Increasing credit risk and funding risk

Tightening of global financial conditions

Foreign investors

Sovereign exposure channel

Mark-to-market loss on sovereign bond holdings and higher funding costs for banks

Lower demand for sovereign bonds and higher funding costs for banks

Weaker backstops and higher funding costs for sovereign

Higher contingent liabilities (resolution policies)

Safety net channel

Lower spending and transfers / economic slowdown
- Downward pressure on corporate ratings

Sovereign

Banks

Corporate sector

Macroeconomic channel

Higher nonperforming loans and funding costs

Macroeconomic channel

- Tighter lending and funding conditions
- Crowding out

Lower tax revenues
- Higher contingent liabilities

...Through Three Key Channels
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

Frequency of Sovereign Default Crises and Other Economic Crises in EMs and AEs
(Percentage, 1971-2016)

<table>
<thead>
<tr>
<th>Type of crisis</th>
<th>EMs</th>
<th>AEs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sovereign (domestic)</td>
<td>6.3</td>
<td>0.1</td>
</tr>
<tr>
<td>Sovereign (external)</td>
<td>18.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Banking</td>
<td>15.0</td>
<td>16.1</td>
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<tr>
<td>Currency</td>
<td>25.8</td>
<td>10.9</td>
</tr>
<tr>
<td>Banking and sovereign</td>
<td>6.6</td>
<td>0.5</td>
</tr>
<tr>
<td>Banking, sovereign, and currency</td>
<td>5.1</td>
<td>0.0</td>
</tr>
</tbody>
</table>

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.

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

Median Correlation Between Sovereign Stress, Bank, and NFC Sector Stress and Global Financial Conditions
(Index)

<table>
<thead>
<tr>
<th>Year</th>
<th>Sovereign-Banks</th>
<th>Sovereign-NFCs</th>
<th>Banks-NFCs</th>
<th>Global financial conditions (right scale)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>0.8</td>
<td>0.6</td>
<td>0.4</td>
<td>-6</td>
</tr>
<tr>
<td>2010</td>
<td>0.6</td>
<td>0.4</td>
<td>0.2</td>
<td>-4</td>
</tr>
<tr>
<td>2012</td>
<td>0.4</td>
<td>0.2</td>
<td>0.0</td>
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</tr>
<tr>
<td>2014</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>2016</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
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<td>2018</td>
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<td>2020</td>
<td>0.4</td>
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<td>2022</td>
<td>0.6</td>
<td>0.4</td>
<td>0.6</td>
<td>8</td>
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</tbody>
</table>

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
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.

**Cumulative Change in Sovereign Credit Risk Following a Global Financial Conditions Shock**

- **Estimated range of coefficients**
- **Average effect**

**Cumulative Change in Bank Credit Risks Following a Global Financial Conditions Shock**

- **High banks’ government exposure**
- **Average banks’ government exposure**

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…

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

(Percentage points)

sCDS > 300 bps > 400 bps > 500 bps > 600 bps > 700 bps > 800 bps > 900 bps > 1000 bps

Average Effect

Less-Capitalized Banks

Sovereign distress (baseline threshold)

…as well as lower capital and lending to the private sector

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

Average-capitalized banks

Less-capitalized banks

Change in equity to assets

Change in loans to assets

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

Fitch Support Rating Floor
(Higher value = higher likelihood of receiving gov. support during stress)

- 2020
- 2007

Cumulative Abnormal Returns with one Notch Higher Government Support Rating in Countries with Different Fiscal Vulnerability
(Percentage points)

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

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)

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

… and lower their investment more than peers after a sovereign downgrade

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**?

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**Asset Growth of Traditional and FinTech Lenders**

(2013:H1=100)

- Traditional bank
- FinTech bank
- Traditional nonbank
- FinTech nonbank

**Total Value Locked in DeFi and the Growth of Stablecoins**

(Billions of US dollars)

Source: S&P Global Market Intelligence, IMF Staff

Note: Sample comprises 13 advanced economies and 7 emerging market economies.

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. FinTech providing services to banks
   - Credit intermediation processes: Loan processing, credit scoring etc.
   - Deposit-taking processes: Identity verification, KYC and AML/CFT checks etc.

2a. FinTech competing in deposit taking
   - Savings products, “out-of-wallet tools” (incl. “open banking”) etc.

2b. FinTech competing in credit provision
   - SME lending, consumer credit (incl. “buy-now-pay-later”) etc.

Mortgage origination

Credit (longer-term and risky)

Traditional banks

Credit

Deposits

Liquidity, maturity, and credit risk transformation via balance sheet

3. Neobanks

Deposits (liquid, short-term and safe)

4. DeFi

By-passing / short-cutting intermediation chain

Savers / depositors / liquidity providers

By-passing / short-cutting intermediation chain
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)

Source: Bloomberg, SNL/S&P Capital IQ, Morgan Stanley Research
2. Case Study: US Mortgage Market – FinTechs’ impact on banks

FinTechs follow an aggressive growth model...

US home mortgage originations
(Growth rates, percent)

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

...and tend to be favored by riskier borrowers

Source: US HMDA data; IMF staff.
Note: New FinTechs are Better Mortgages and SoFi, which started to fully operate in 2016
2. Case Study: US Mortgage Market – FinTechs’ impact on banks

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

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

Source: US HMDA data; US CALL reports (FFIEC031/041); IMF staff.
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...

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: Chainalysis, CoinGecko, CryptoSec.info, DeFi Llama, ImmuneFi, rekt, IMF staff
3. DeFi: Market and Liquidity Risks

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

Liquidity is provided by only few accounts

Source: Aave v2, Compound v2, CoinGecko, C.R.E.A.M. Finance, DeFi Pulse, The Graph, IMF staff
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.

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Estimated Marginal Costs and Margins

(in percent)

![Bar chart showing estimated marginal costs and margins for different platforms.](chart)

Source: FitchConnect, Aave, Compound, IMF Staff

Estimated Margins and Expected Loss

(in percent)

![Scatter plot showing margins and expected loss for different platforms.](chart)

Note: Each dot represents the average margin and expected loss of banks in a country.

Source: EBA Risk Dashboard, Aave, Compound, CoinGecko, IMF Staff
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)