

# Macroprudential Policies and Capital Flows: *Insights from the Covid Shock*

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Workshop on International Capital Flows and Financial Policies

BoE, BdF, IMF, OECD, Banca d'Italia

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# Not Just Important for this World...

## *Macropru in the Clone Wars*



Plan to make deregulation a reality: <https://www.youtube.com/watch?v=AYJDKz92A1I>

“Long Live the Banks”: <https://www.youtube.com/watch?v=vv87xc082JQ>



# Comments Today

- I. What happened during the “*Covid Shock*”?
- II. Macroprudential Policies: *Working as Intended?*
- III. Macroprudential Policies: *Generating New Fragilities?*
- IV. Macroprudential Policies: *A Closer Look at the Financial Fragilities*
- V. Insights and Priorities for the Future



# With Thanks

## **Coauthors on projects/papers I draw on today**

- Katharina Bergant (IMF)
- Anusha Chari (UNC)
- Karlye Dilts-Stedman (Kansas City Fed)
- Christian Friedrich (BoC)
- Dennis Reinhardt (BoE)
- Frank Warnock (UVA-Darden)

**And many IMF researchers, papers and databases!**

*But all interpretations/comments/conclusions are mine and do not reflect the views of the institutions with which any of the above are affiliated*

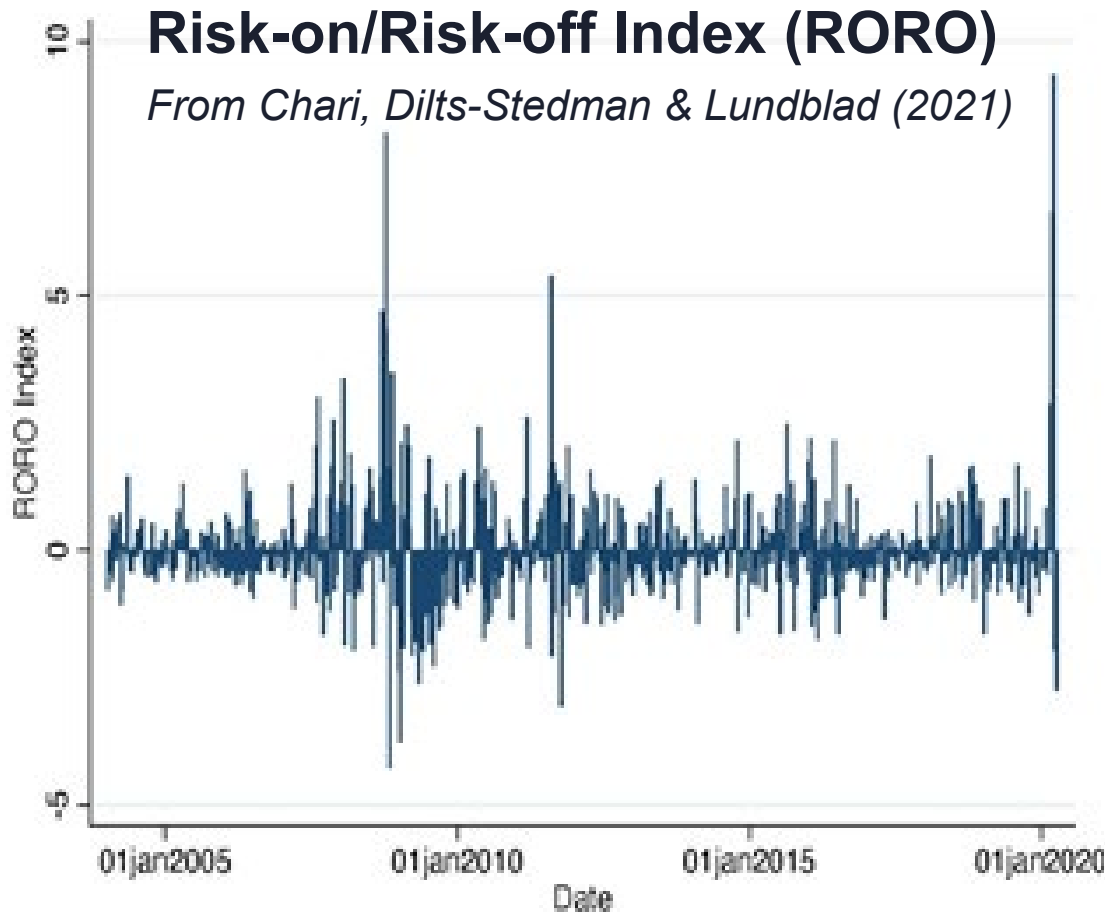


# *I. What Happened During the “Covid Shock”?*

- Capital flows
- Policy responses



# Sharp Tightening of Global Financial Conditions



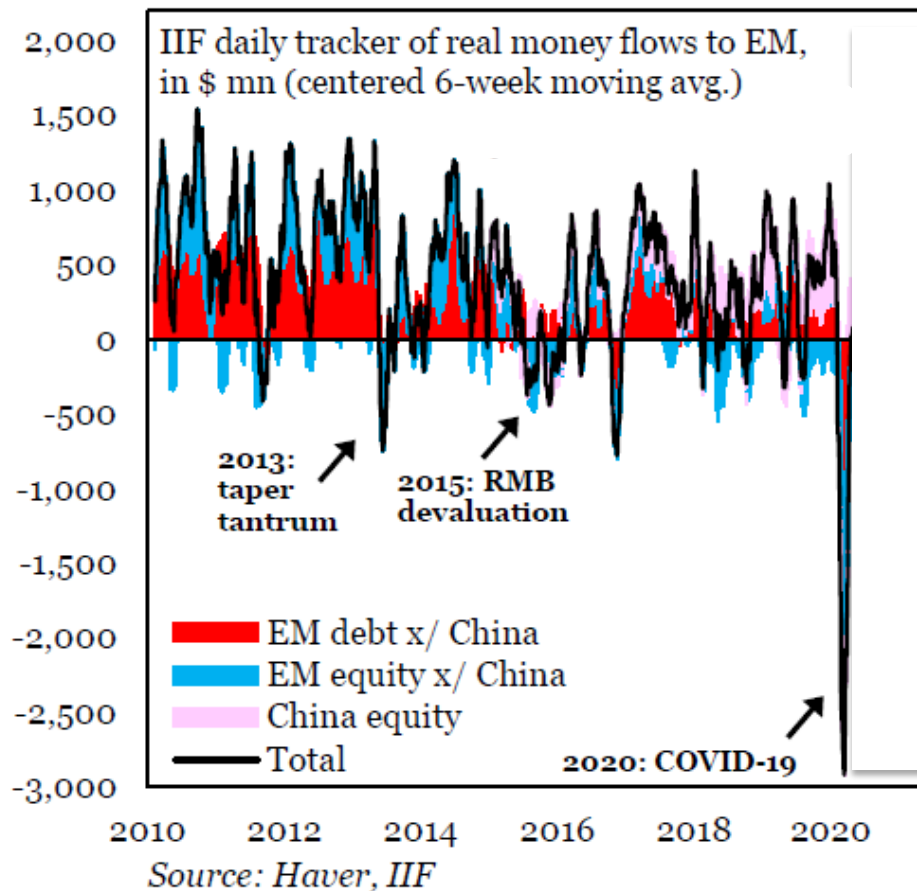
## RORO index:

- Realized variation in global investor risk appetite across range of assets
- Z-score of principal component of daily changes (all normalized, higher value=risk off)
- 15 series capturing:
  - *Credit risk*
  - *Risk aversion*
  - *Funding liquidity*
  - *US Dollar Index*
  - *Gold price*



# EM Capital Flows

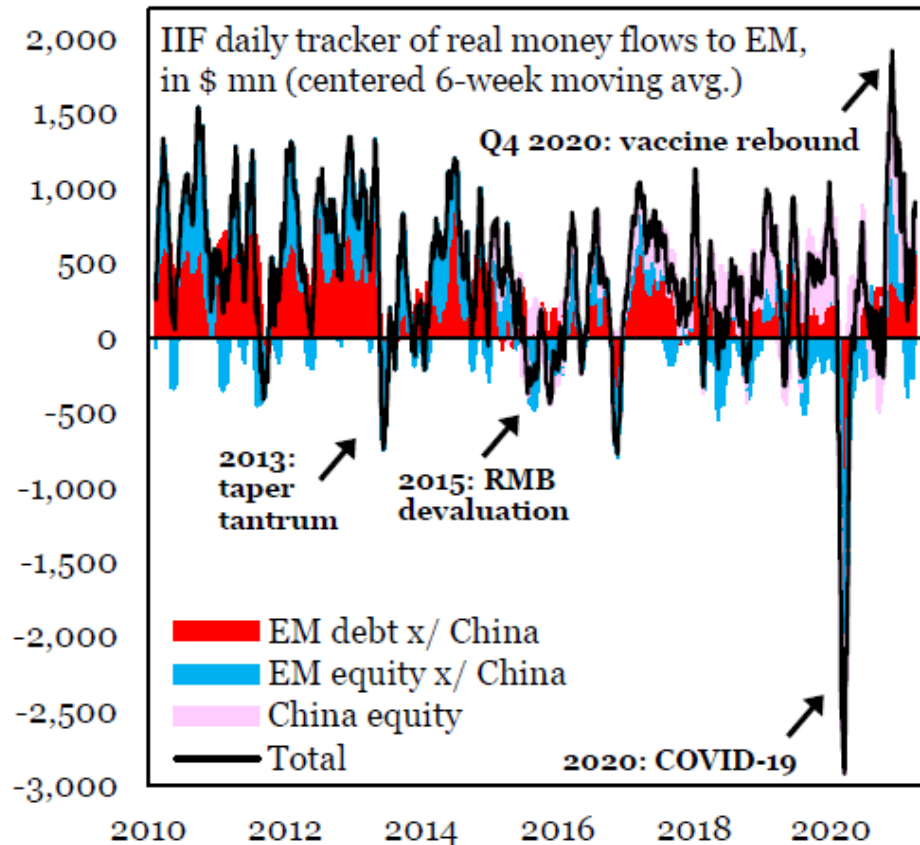
## *Initial Impact as Expected*



Source: IIF, *Capital Flows Report, The EM Capital Flows Tantrum*, 04/01/21



# EM Capital Flows *But Then Stabilization*



Source: Haver, IIF

Source: IIF, *Capital Flows Report, The EM Capital Flows Tantrum*, 04/01/21





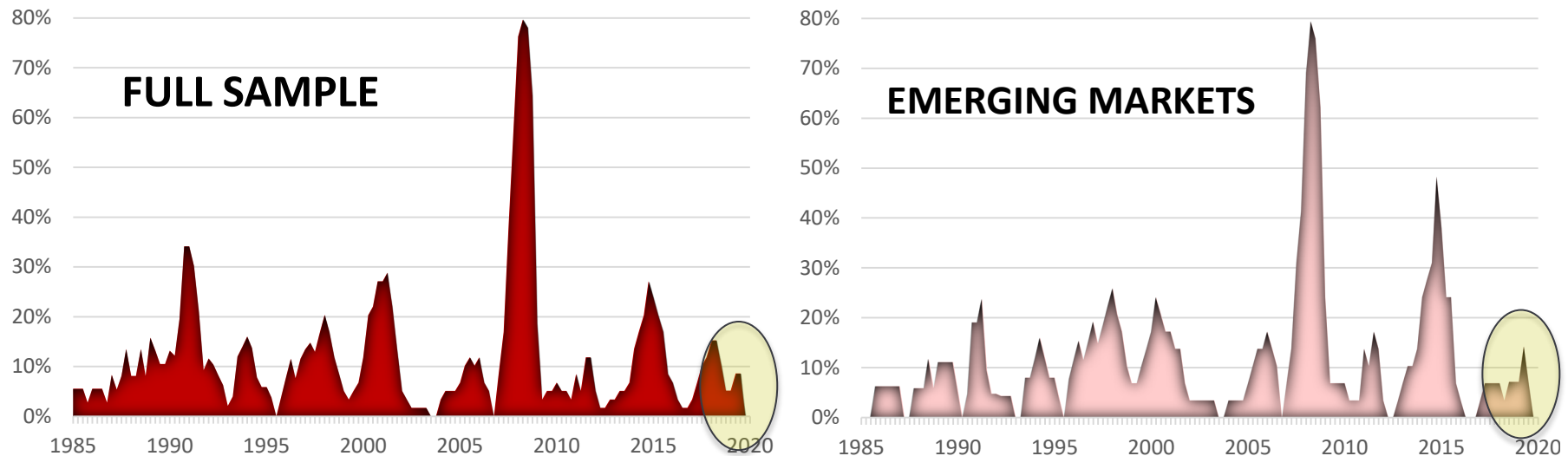
# Confirmed with Analysis

## *Measuring Sudden Stops*

- **Methodology:** Forbes and Warnock (2012), “Capital Flow Waves: Surges, Stops, Flight and Retrenchment,” JIE
  - Updated in Forbes and Warnock (2021), “Capital Flow Waves—or Ripples? Extreme Capital Flow Movements since the Crisis”, *JIMF*
- **To calculate a “sudden stop” of gross inflows:**
  - $C_t$ : 4-quarter moving sum of gross capital inflows from foreigners
$$C_t = \sum_{i=0}^3 GINFLOW_{t-i} \quad \Delta C_t = C_t - C_{t-4}$$
  - A stop is when  $\Delta C_t$  decreases more than 1 standard deviation below its rolling historical (+5-year) mean, provided:
    - $\Delta C_t$  increases at least 2 standard deviation at some point in episode
    - The entire episode lasts more than 1 quarter
- **Data:** 59 countries, GINFLOW from 1978q1 – 2020q3



# A “Ripple” instead of a “Wave”



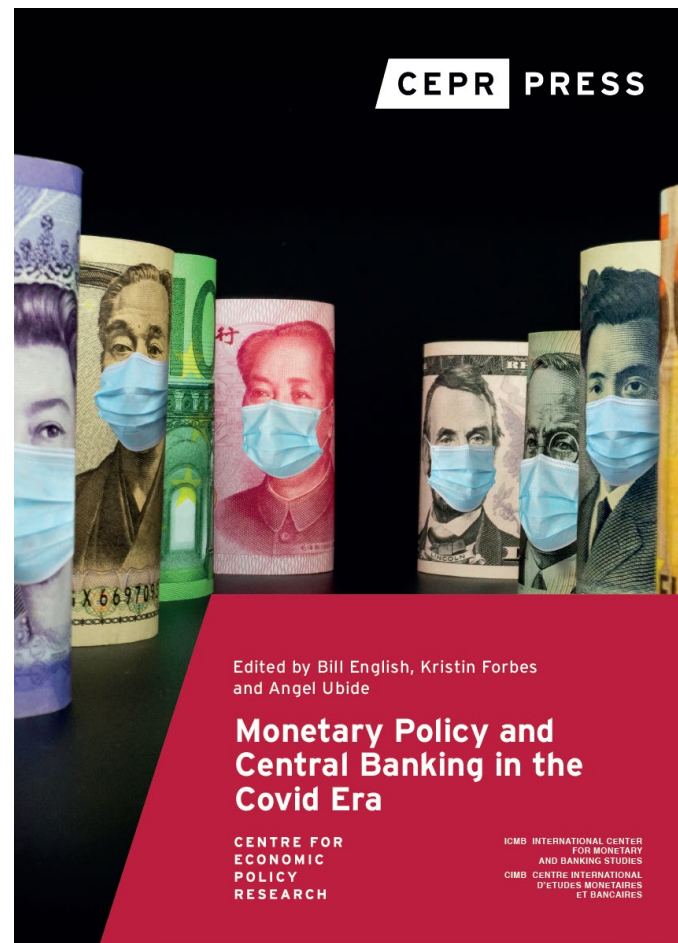
- Consistent with evidence pre-Covid of weaker link since 2008 between “capital flows” and the VIX
- **Did tighter macroprudential regulations play a role?**

**Source:** Forbes and Warnock (2021), “Capital Flow Waves—or Ripples? Extreme Capital Flow Movements since the Crisis”, *JIMF* .



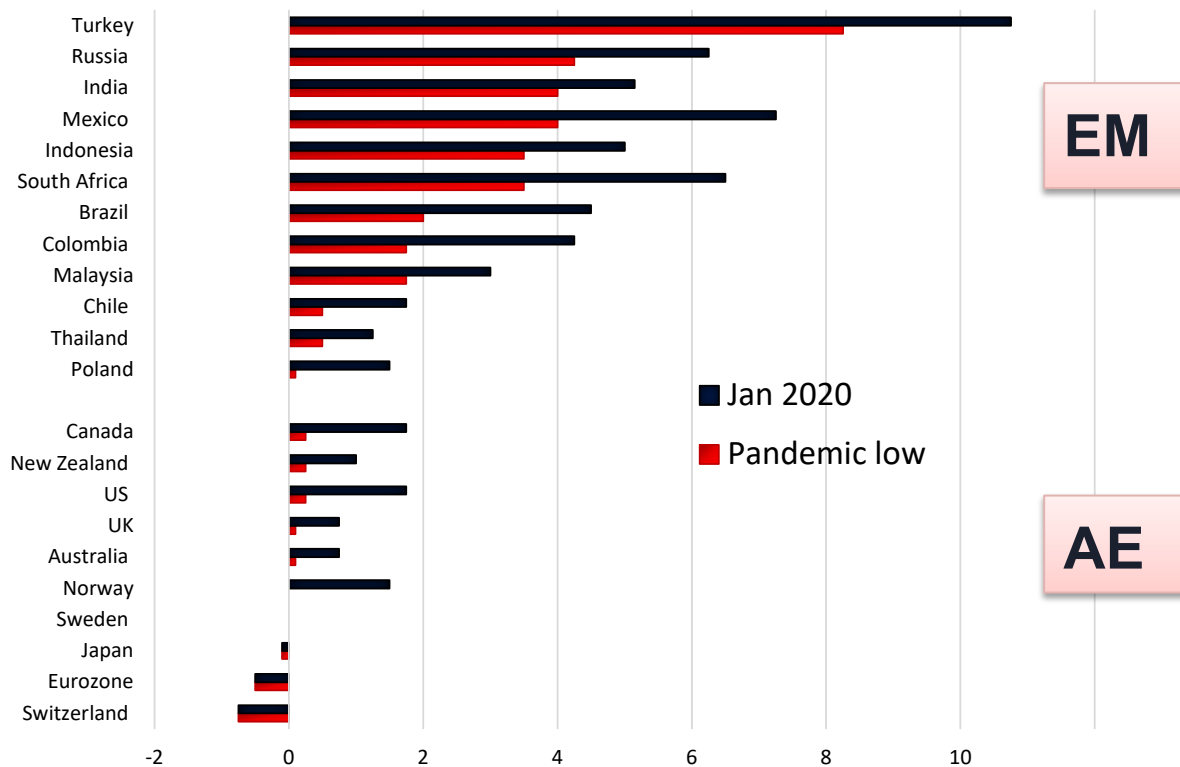
# Multifaceted Policy Responses

- **Large fiscal stimulus**
- **Monetary policy**
  - Rate cuts
  - Forward guidance
  - Asset purchases (sovereign debt + others)
- **Credit and liquidity provision**
  - Direct liquidity provision
  - Direct lending
  - Programs to encourage bank lending
- **FX Intervention**
  - FX operations
  - Swap lines
- **Regulatory easing**
  - CCyB, other macroprudential regulations
  - Other capital requirements
- **Capital controls**
- **Health interventions/mobility restrictions**



# Widespread Easing of Policy Interest Rates

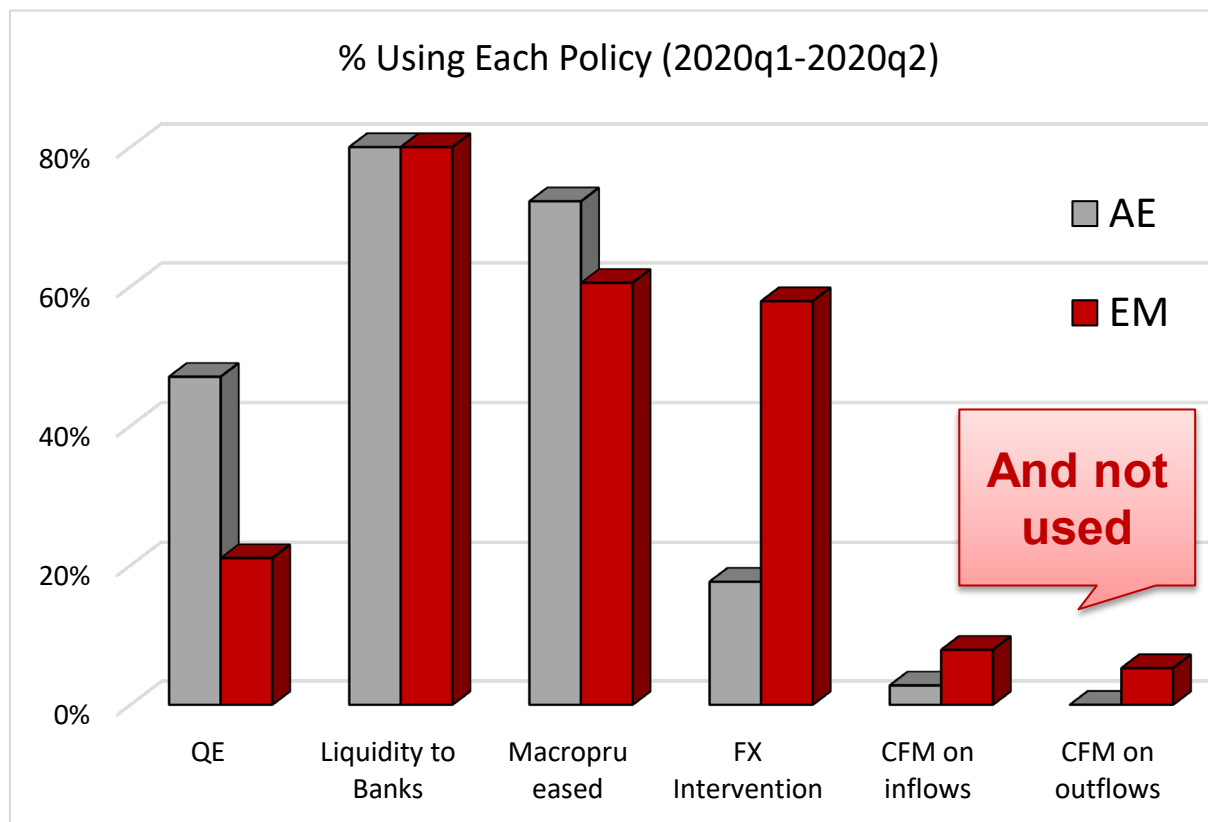
Central Bank Policy Rates: Pre-Covid to Pandemic Low



Source: English, Forbes and Ubide (2021), CEPR e-book, *Monetary Policy and Central Banking in the Covid Era*



# Range of Policies Used in AEs and EMs

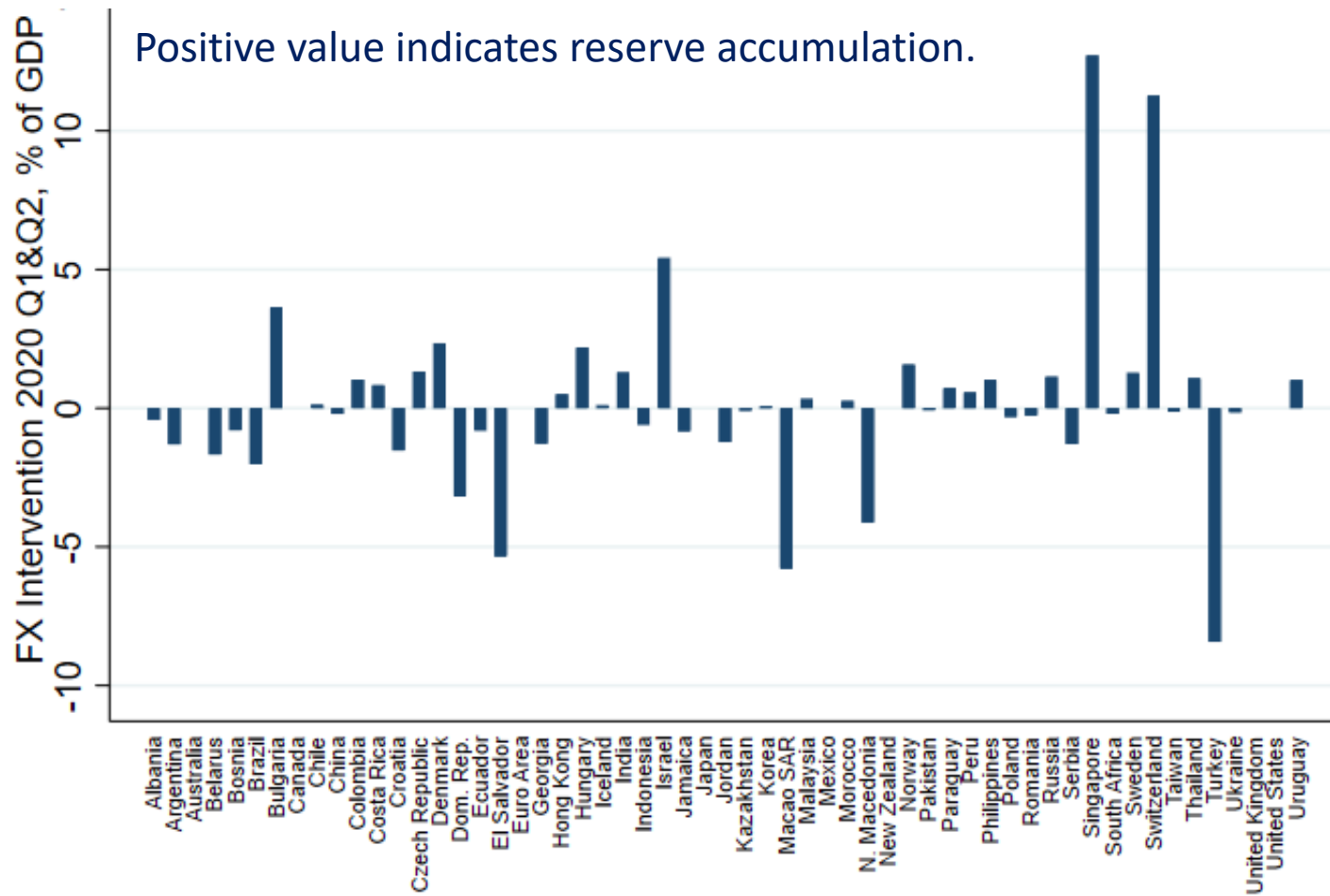


**Note:** Share of advanced economies and emerging markets that used each policy response during 2020q1-2020q2.

**Source:** Based on analysis in Bergant and Forbes (2021), Policy Space and Policy Options. underlying data from the IMF policy tracker



# FX Intervention: Variation



**Source:**  
Bergant and Forbes (2021).  
Based on data from Adler et al. (2021).



# Factors Supporting Resilience?

- **Better Financial and Macro Policies pre-Covid**
  - Stronger macroprudential (and prudential) regulation
  - Inflation-targeting, independent central banks
  - More flexible exchange rates
  - Reserve accumulation (as a cushion)
- **Global factors**
  - Low interest rate environment
  - Changing norms around high debt & role for stimulus
- **Characteristics of Covid**
  - Exogenous shock, not domestic imbalances
  - Expected to be short-lived
  - Health/pandemic shock



# *II. Macroprudential Policies: Working As Intended?*





# Macroprudential Tools

## *Increased Focus After 2008 Crisis*

- **Goal: Build resilience in overall financial system**
  - Address excessive credit expansion
  - Reduce key amplification mechanisms of systemic risk
  - Mitigate structural vulnerabilities related to important institutions and key markets

- **4 broad sets of tools**

Capital &  
reserve  
requirements

Liquidity  
requirements

Credit  
regulations

Resolution/  
stress tests/  
SIFIs



# Macprudential Tools

## *New Body of Research*

### ➤ **Initial work: theoretical**

- Bengui & Bianchi (2018), Bianchi & Mendoza (2018), Brunnermeier et al. (2013), Caballero & Krishnamurthy (2001), Engel (2016), Farhi & Werning (2016), Galati & Moessner (2018), Jeanne & Korinek (2019), Korinek (2018)

### ➤ **Workstream in international groups/organizations:** BIS, CGFS, FSB, IMF

### ➤ **Development of new datasets**

- Noteworthy early on: Lim et al. (2011), Cerutti et al. (2017), Kuttner & Shim (2016)
- **Comprehensive: IMF's integrated Macprudential Policy (iMaPP), Alam et al. (2019)**

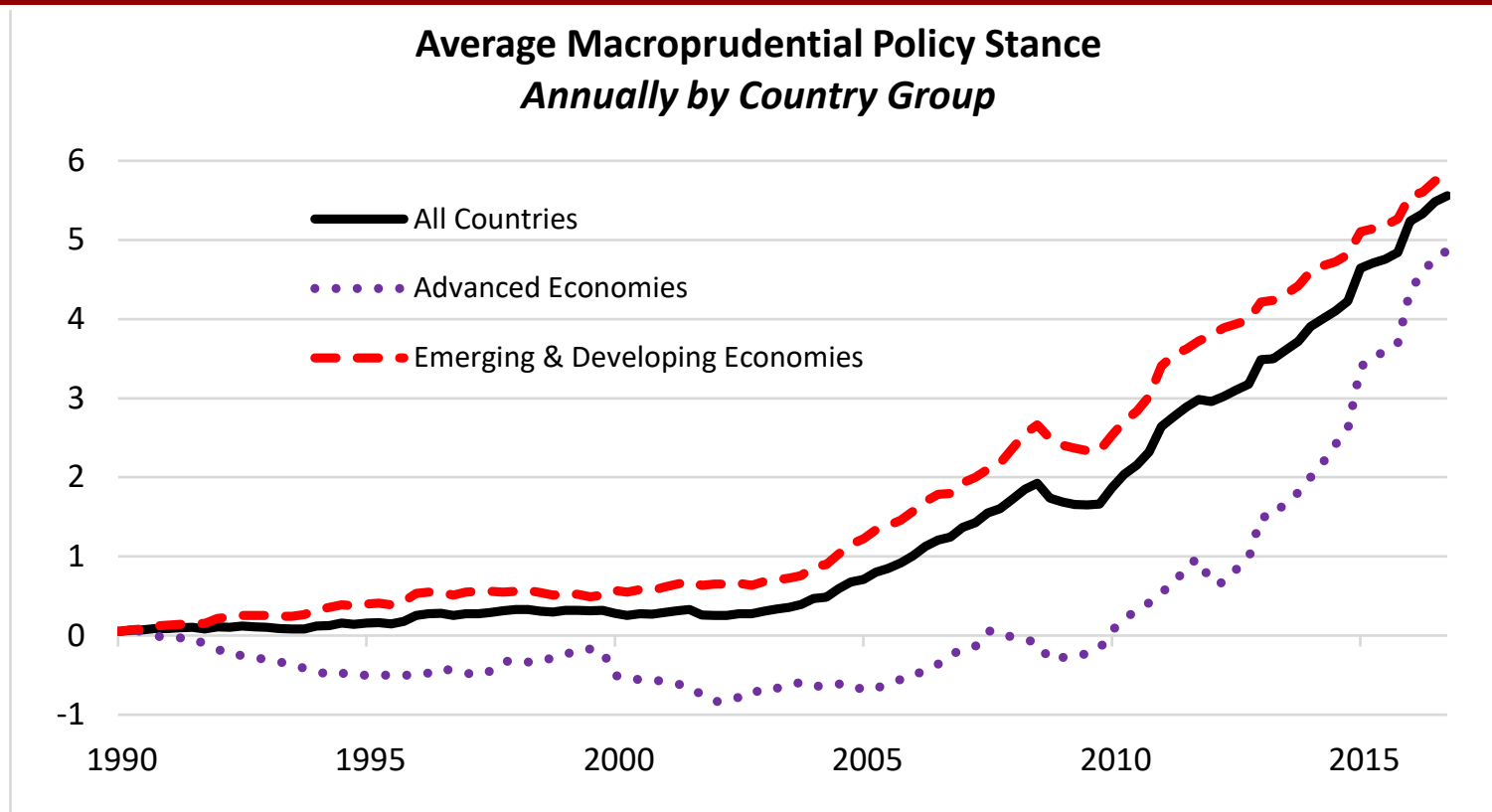
### ➤ **Empirical analysis: noteworthy surveys**

- Claessens (2015), Buch & Goldberg (2016), Cerutti et al. (2017), ECB (2020a) Galati & Moessner (2018), IMF-FSB-BIS (2016)
- **Noteworthy: Araujo et al. (2020), meta-analysis of over 66,000 results from 58 empirical studies**

### ➤ **Overview and citations:** **Forbes (2021)**, *The International Aspects of Macprudential Policy*, AREAR



# Greater Use of MP Tools *Tightening Pre-2020*



**Notes:** Net changes in macroprudential policy, aggregated since 1990. Macroprudential data based on data from Alam et al. (2019). Country classification based on IMF, World Economic Outlook database (2018).

**Source:** Fig 1 in Forbes (2021). “The International Aspects of Macroprudential Policy”, *Annual Review of Economics*



# Growing Evidence: Supportive

- **Macroprudential tools can influence immediate objectives:**
  - Build bank buffers & reduce bank leverage
  - Slow credit growth
  - Effect mortgage market
  - Reduce FX exposures
- **Macroprudential tools may bolster broader resilience and reduce vulnerability**
  - **Stabilize credit growth across cycle;** Nier and Zicchino (2008), Dell’Ariccia et al. (2012), Buchholz (2015), Jiménez et al. (2017)
  - **Greater ability to use monetary policy:** Takáts and Temesvary (2019a), Aizenman et al. (2020), Friedrich et al. (2020), Mano and Sgherri (2020), Bergant et al. (2022)
- **But several challenges in empirical tests...**
  - Limited risk-off episodes (until Covid)
  - Measurement/calibration



# Measurement Challenges

## Dummy variables miss important dimensions

- Different ways to implement each policy
- Magnitude/intensity of policies
- Effects vary based on characteristics of financial system (and other country characteristics)
- ***Bottom line: limited comparability of similar policies across countries & time***

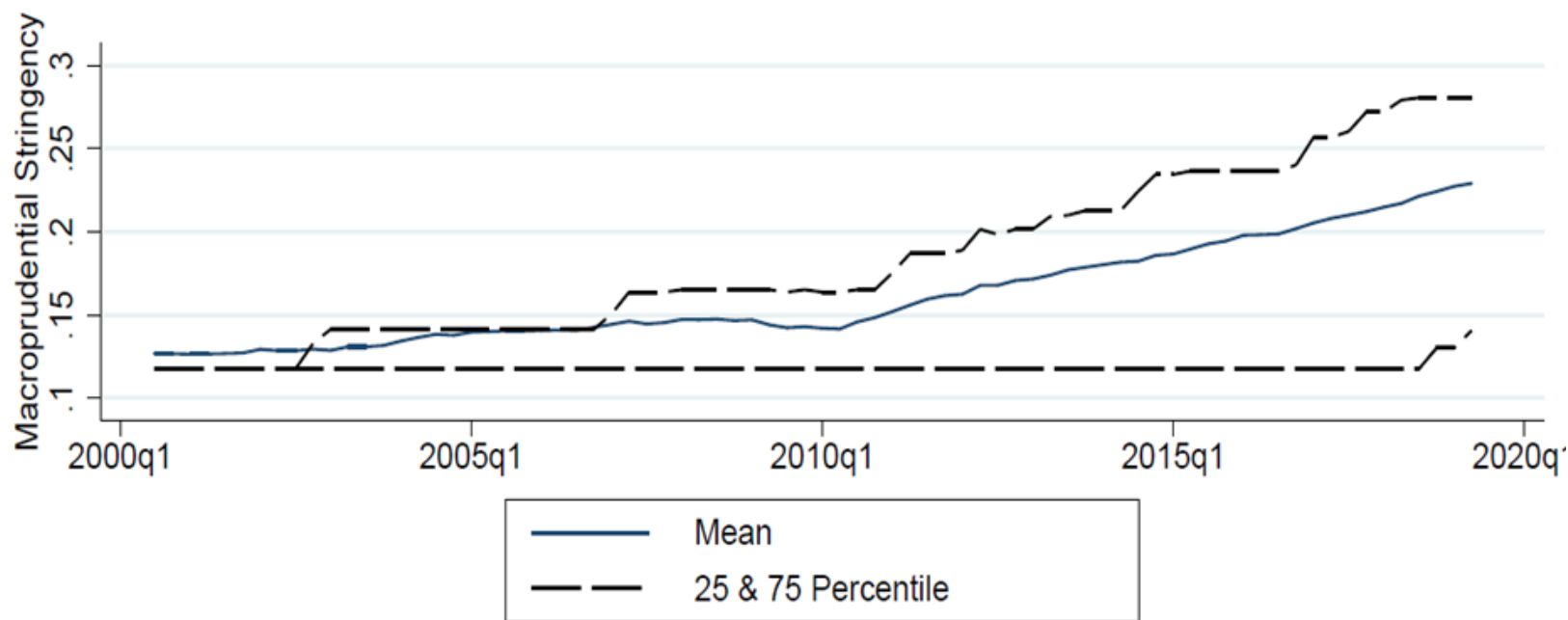
## New index: aggregate 3 components capturing magnitudes & regulations on 3 key risks

- Changes in CCyB ratio (BIS, ESRB)
- Change in LTV ratio (Alam et al.)
- Cumulated changes in FX related policies (calculated based on Alam et al.)
- Normalize each component and average, with higher value=tighter
- *See Bergant and Forbes (2021, 2022), Chari, Dilts-Stedman and Forbes (2022)*



# Macprudential Stance

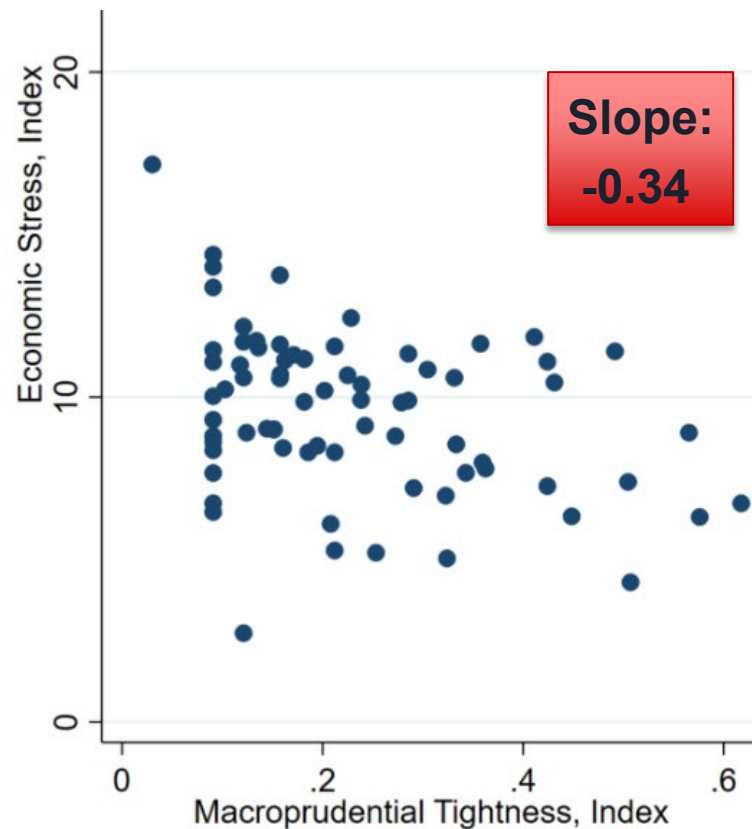
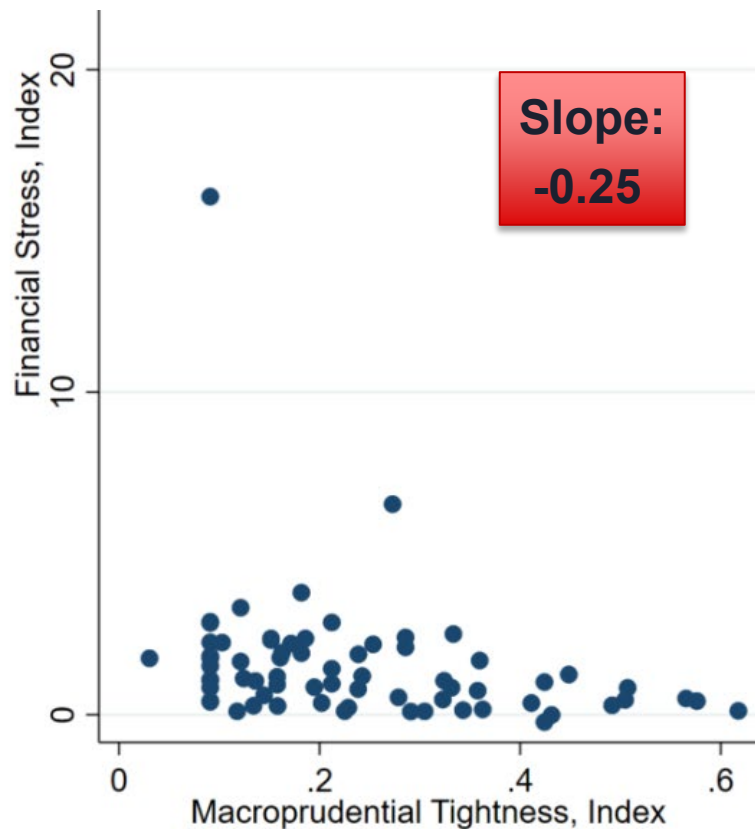
## *New Index: Evolution over Time*



**Source:** Bergant and Forbes (2022)



# Covid Stress and *ex ante* MP Stance

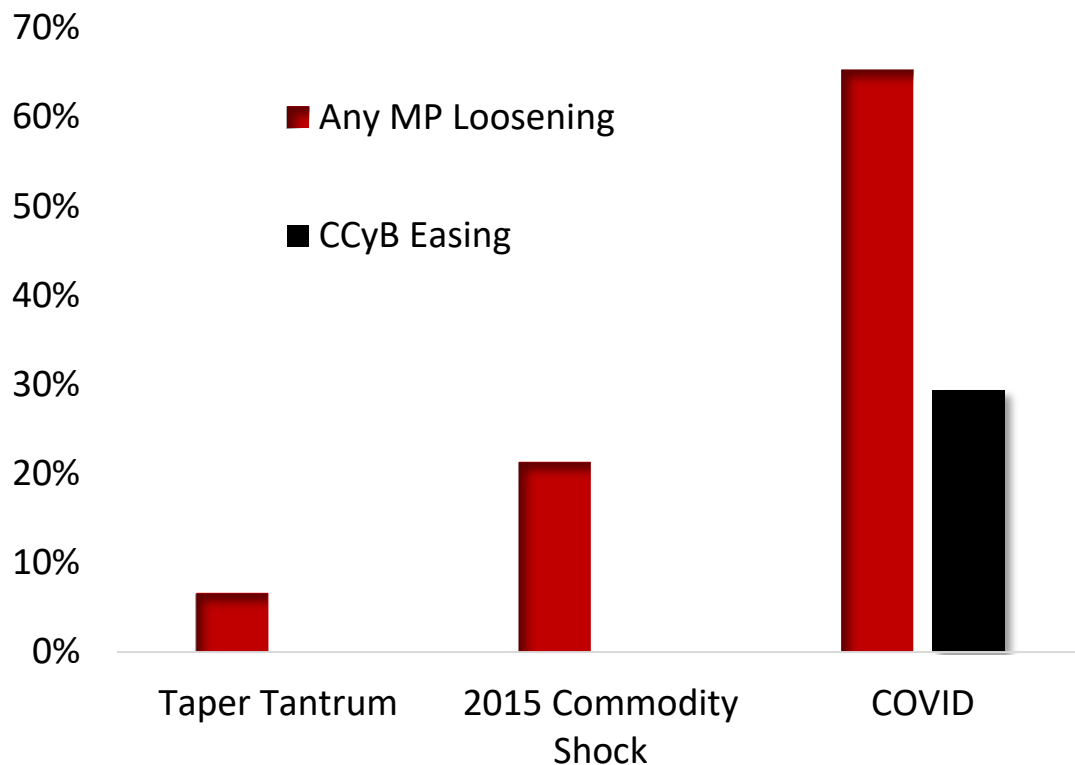


**Notes:** The *Financial Stress* index is an equally weighted combination of changes and percent changes from end-2019 to the “peak stress” in the first half of 2020 for sovereign CDS spreads (5-year, US\$) from Bloomberg, and if this is not available, from the EMBI+ bond index. The *Economic Stress* index is the change in each country’s forecast 2020 real GDP growth between January and June, according to the IMF’s World Economic Outlook updates. See Bergant and Forbes (2022) for more information,



# Macroprudential Easing : *More Widely Used during Shocks*

## Share of Countries Easing



**What  
affected  
country use  
of MP tools  
during  
Covid?**

**Source:** Bergant and Forbes (2022)





# MP Easing During Covid

## *Determined by ex ante Space*

	Loosen MP Regulation (dummy)				Loosen CCyB (pp change)			
Policy space	6.899*** (1.989)	5.677*** (1.921)	6.256*** (2.050)	10.08* (5.780)	0.677*** (0.0959)	0.674*** (0.0939)	0.654*** (0.0984)	0.775*** (0.0887)
Policy space				-5.591 (6.353)				-0.390*** (0.145)
* EM dumn								
<b><i>Stress Variables</i></b>								
Financial		-0.0953 (0.0605)	-0.112 (0.0761)	-0.135 (0.0847)		-0.00213 (0.00170)	0.00204 (0.00361)	-0.00157 (0.00241)
Economic		-0.0184 (0.0676)	-0.0632 (0.0705)	-0.0781 (0.0764)		-0.00327 (0.0136)	-0.0118 (0.0152)	-0.00901 (0.0123)
Health		-0.0292 (0.0615)	-0.00541 (0.0619)	-0.00627 (0.0631)		0.0262* (0.0156)	0.0255* (0.0141)	0.0194 (0.0122)
<b><i>Other Country Characteristics</i></b>			Y	Y			Y	Y
# Obs.	73	69	68	68	70	65	64	64
Adj. R2	0.213	0.230	0.279	0.292	0.798	0.804	0.812	0.867

**Source:** Bergant and Forbes (2022)



# Coordinated with Other Tools?

- **Limited coordination of policy tools during Covid**
  - Use of macroprudential policy unrelated to use of (or space available) for other tools
  - Use of other policy responses generally unrelated to use of (or space available) for macroprudential easing (or other tools)
  - ***Contradicts models & recent discussion of optimal policy coordination***
    - Integrated policy framework
- **Room for improvement?**



# Summary:

## *Initial Evidence Promising...But*

- **Macroprudential tools used actively in direction that intended**
  - Tightened during recovery in 2010's
  - Aggressive loosening during Covid-19
- **Use correlated with expected effects:**
  - Countries experienced less financial & economic stress during Covid if they:
    - Tightened more before Covid
    - Eased more aggressively during Covid
    - *Caveat: correlations, omitted variables*
- **Key constraint for MP tools in response to Covid? Policy space**
  - **Implication: To have more space to use in response to next shock, need to tighten MP regulations more aggressively *ex ante*?**
    - Supported by simulations (Hanson and Kashyap, 2011)
- **What about the leakages and spillovers?????**



# *III. Macroprudential Policies: Generating New Fragilities?*



# *Unintended Consequences of Tighter Macroprudential Policies*

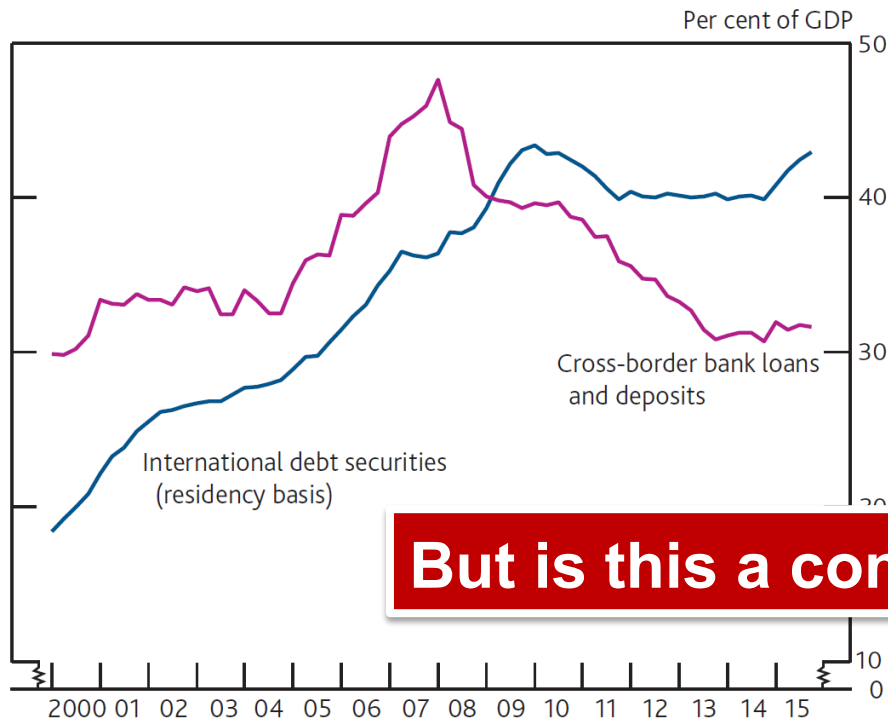
- **Tighter macroprudential (and prudential) policy shifts intermediation outside domestic banking system**
  - To foreign banks and other forms of financial intermediation
  - Evidence: Aiyar et al (2014); Buch & Goldberg (2016); Forbes, Reinhardt & Wiedadak (2017); Ahnert et al (2018); Agénor & da Silva (2018); Forbes (2021)
- **Contributed to changes in natural of international capital flows**
  - Decline in cross-border bank flows & increased share of debt capital flows
  - Evidence: CGFS, Shin (2013), Cerutti & Claessens (2014), Avdjiev et al. (2019)



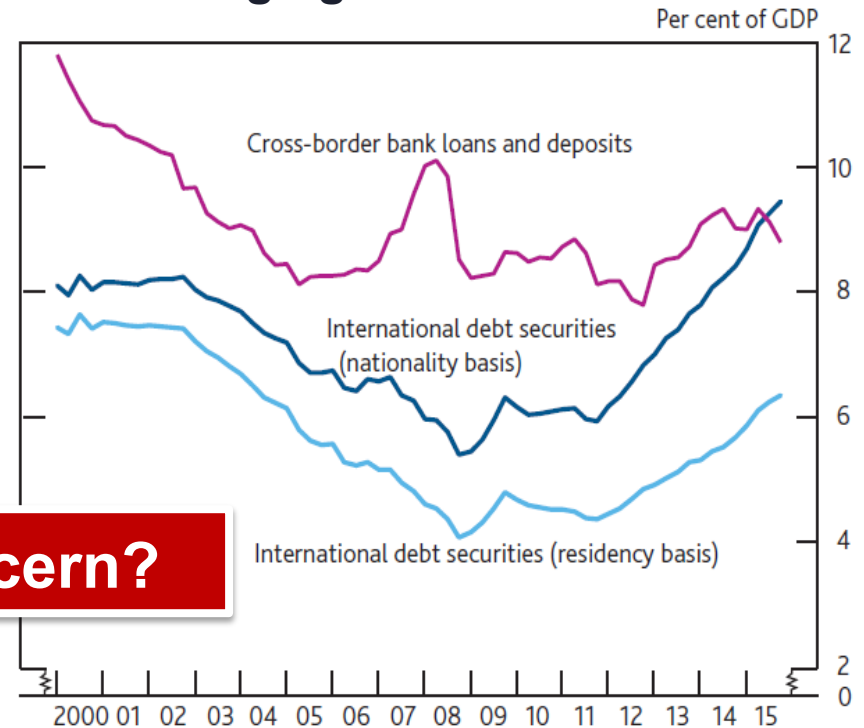
# Changing Cross-Border Debt Flows

## Cross Border debt liabilities (% of GDP)

### Advanced Economies



### Emerging Market Economies



**But is this a concern?**

Source: Hoggarth et al (2016) based on BIS data



# Is This a Concern?

- **Magnitudes of “risk shifting”:** meaningful, but modest (Ahnert et al. 2021)
  - **Direct effect of FX regulations:** significant, large reduction in bank cross-border FX borrowing
    - ↓0.5% - 0.66% of GDP over next year
    - ~ 50% reduction in FX loans to banks in Brazil & Indonesia
  - **Leakage from FX regulations:** significant, moderate increase in corporate FX debt issuance
    - ↑0.05% - 0.06% of GDP over next year
    - ~ 15%-20% increase in FX corporate debt issuance in Brazil & Indonesia
  - **Net effect: Aggregate FX borrowing falls** after tighter FX regulations on banks
    - But 10% of aggregate FX exposure shifts from banks to the corporate sector
- **Benefits of shifting risks outside banking system**
  - More resilient banking system
  - Risks more diversified across different types of institutions
  - Risks held by smaller/less systemic institutions
- **Concerns?**
  - Do NBFIs understand the risks they are taking on?
  - If NBFIs behave in similar ways—risks from correlated behavior/fire sales?
  - NBFIs less well regulated & understood, not monitored as closely
- **Need empirical analysis!!**



# New Evidence from Covid

- **Key for analysis: State-contingent**
  - Impact of policy can differ between “normal” periods and “extreme” events
  - Particularly important for macroprudential tools aimed at reducing amplification effects
  - Builds on research emphasizing analysis across distribution of outcomes
    - Growth at Risk literature: Adrian, Boyarchenko, and Giannone (2019)
    - For macroprudential policy: Chari et al (2020), Eguren-Martin et al (2020), Gelos et (2019)
- **The challenge: few major “risk off” events post-2008 until Covid**
- **New evidence: Did the macroprudential stance affect the sensitivity of portfolio flows to Covid?**
  - “Spillovers at the Extremes: The Macroprudential Stance and Vulnerability to the Global Financial Cycle” by Chari, Dilts-Stedman, and Forbes, *JIE* (2022)





# Methodology

- **Relationship of portfolio investment flows (*PI*) to the macroprudential stance (*MP*), risk, their interaction, and push and pull variables**

- **Two stage estimation:**

$$MP_{it} = \alpha_i + \beta_1 Crisis_{i,t-1} + \beta_2 Credit_{i,t-1} + \beta_3 Growth_{i,t-1} + \beta_4 Controls_{i,t-1} + \varepsilon_{i,t}$$

Yields: Policy Shock::  $\widetilde{MP}_{it} = MP_{it} - \overline{MP}_{it}$

$$K_{it} = \alpha_i + \beta_1 \widetilde{MP}_{i,t-1} + \beta_2 RISK_t + \beta_3 (\widetilde{MP}_{i,t-1} * RISK_t) + \gamma PUSH_t + \delta PULL_{i,t} + \delta_t + \varepsilon_{i,t}$$

- **Focus on  $\beta$ 's**

- Unconditional effects (no interaction)
- Conditional effects (with interaction)
- Marginal effects from one-unit increase in *MP* & *RISK* at different points in the risk distribution

- **Use EPFR data on portfolio flows,**

- Weekly data for over 14,000 equity funds and 7,000 bond funds



# Unconditional Effects

## Portfolio Bond Flows, the MP Stance and Risk

### *Bond Flows and the Macprudential Stance across the Global Financial Cycle*

<i>MP Stance Measures</i>	Broad Intensity Index (1)	Narrow Intensity Index (2)	Country-Relative Dummy (3)	Time-Relative Dummy (4)
<i>Unconditional Regressions</i>				
<i>MP Stance</i>	0.00152 (0.00538)	0.00231 (0.00436)	-0.00935 (0.00965)	-0.00681 (0.0101)
<i>Risk</i>	-0.0916*** (0.00423)	-0.0916*** (0.00424)	-0.0981*** (0.00398)	-0.0976*** (0.00398)

### **Negative, significant & large correlation with risk**

- RORO ↑ by 1 unit → weekly bond flows 0.09%-0.10%↓
- Impacts: Bond flows = -\$2.3bn to -\$2.4bn

### **Insignificant, small correlation with MP stance**



# Conditional Effects

## Portfolio Bond Flows, the MP Stance and Risk

### *Bond Flows, the Macroprudential Stance and Risk*

<i>MP Stance Measures</i>	Broad Intensity Index (1)	Narrow Intensity Index (2)	Country-Relative Dummy (3)	Time-Relative Dummy (4)
<i>MP Stance</i>	0.00151 (0.00540)	0.00221 (0.00438)	-0.00837 (0.00972)	-0.00672 (0.0100)
<i>Risk</i>	-0.0920*** (0.00426)	-0.0920*** (0.00428)	-0.0979*** (0.00390)	-0.0976*** (0.00400)
<i>Interaction of MP stance and risk</i>	-0.0182*** (0.00444)	-0.0125*** (0.00341)	-0.0220*** (0.00702)	-0.00420 (0.00820)

#### **Magnitudes suggest a meaningful impact;**

- ex ante tighter MP stance + RORO  $\uparrow$  by 1 unit  $\rightarrow$   $\downarrow$  bond flows \$151-\$543 mn (0.01% - 0.02%)  $\rightarrow$  AUM at the start of 2020.

**Moderate compared to the unconditional impact of a one-unit increase in risk (corresponding to over -\$2 billion).**

**BUT these are effects at the means of risk distribution**



# Marginal Effects of Different MP Stance

<i>MP Stance Measures</i>	Broad Intensity Index	Narrow Intensity Index
<i>Risk @ 0.5%</i>	0.0493*** (0.00864)	0.0348*** (0.00652)
<i>Risk @ 1%</i>	0.0393*** (0.0105)	0.0280*** (0.00814)
<i>Risk @ 5%</i>	0.0256*** (0.00788)	0.0187*** (0.00620)
<i>Risk @ 10%</i>	0.0176*** (0.00661)	0.0132** (0.00528)
<i>Risk @ 25%</i>	0.00947* (0.00567)	0.00765* (0.00461)
<i>Risk @ median</i>	0.00326 (0.00540)	0.00340 (0.00444)
<i>Risk @ 75%</i>	-0.00512 (0.00572)	-0.00232 (0.00469)
<i>Risk @ 90%</i>	-0.0173** (0.00735)	-0.0106* (0.00590)
<i>Risk @ 95%</i>	-0.0258*** (0.00893)	-0.0164** (0.00707)
<i>Risk @ 99%</i>	-0.0620*** (0.0168)	-0.0412*** (0.0130)
<i>Risk @ 99.5%</i>	-0.0842** (0.0394)	-0.0563** (0.0269)
<b><i>(Extreme risk-off)</i></b>		

**Extreme Risk-on**

**Extreme Risk-off**

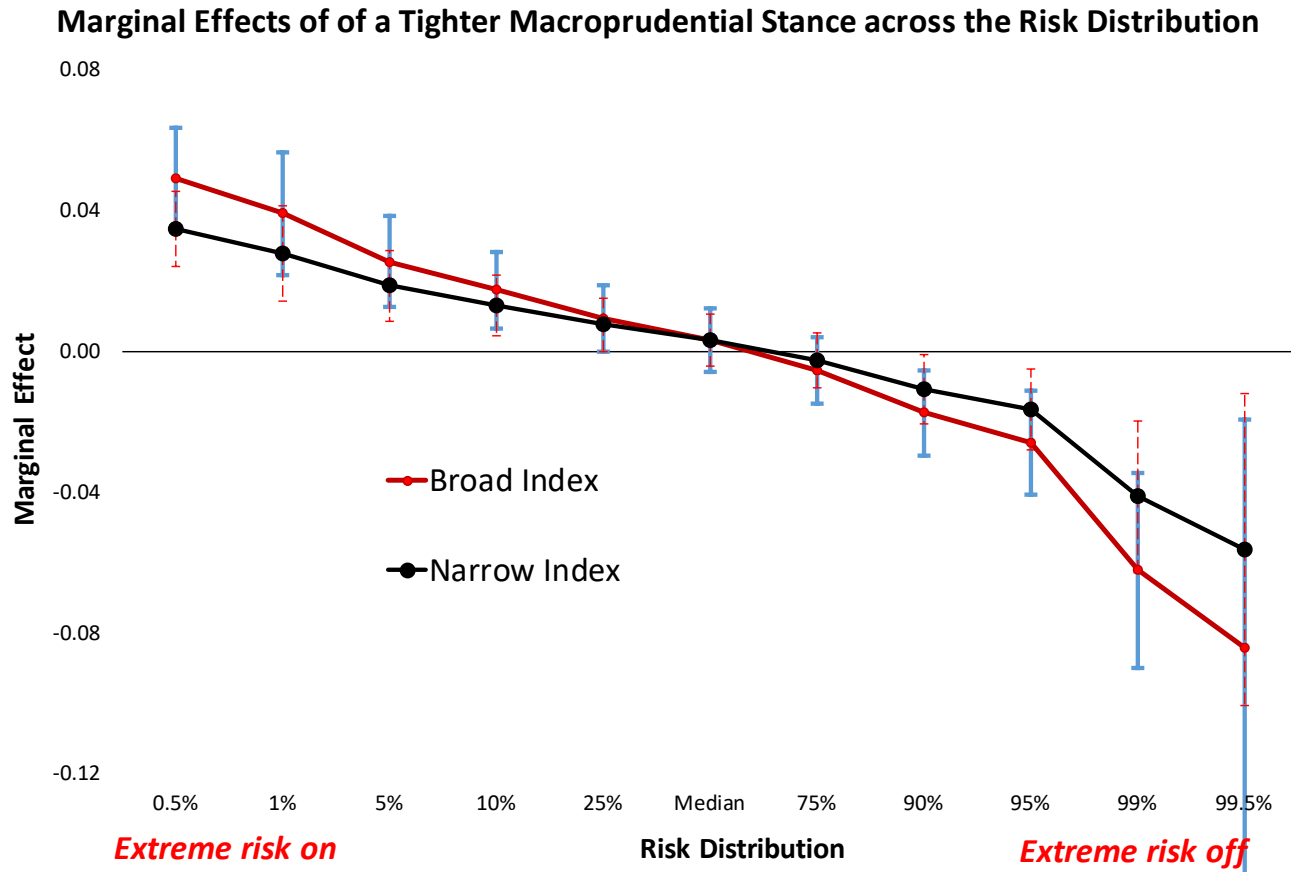
$$\frac{\partial k}{\partial \widetilde{MP}} \Big|_{MP=1, q=0.5 \dots 99.5} = \beta_2 + \beta_3 RISK^{(q)}$$

**Large effects at extremes**

**Tighter MP stance can amplify the impact of large risk-off shocks on bond outflows by 45%-67%**



# Amplification Effects of MP Stance Across the Risk Distribution



Source: Chari, Dilts-Stedman and Forbes, *Journal of International Economics* (2022)



# Summary:

## *Spillover Risks Meaningful*

- **Tighter macroprudential regulation causes shifts in financial intermediation that can increase fragility in segments of financial system**
  - Evidence from portfolio investors; meaningful increase in vulnerability to risk shocks
  - Ongoing work agenda focusing on risks in NBFIs
- **Question: How do you weigh these risks against the more resilient banks & other benefits of stronger MP regulation?**
  - Lessons from Covid in March 2020? UK in Oct 2022?
- **Could increased risks in NBFIs undermine the more resilient banking system?**



# *IV. Macroprudential Policies: A Closer Look at the Financial Fragilities*



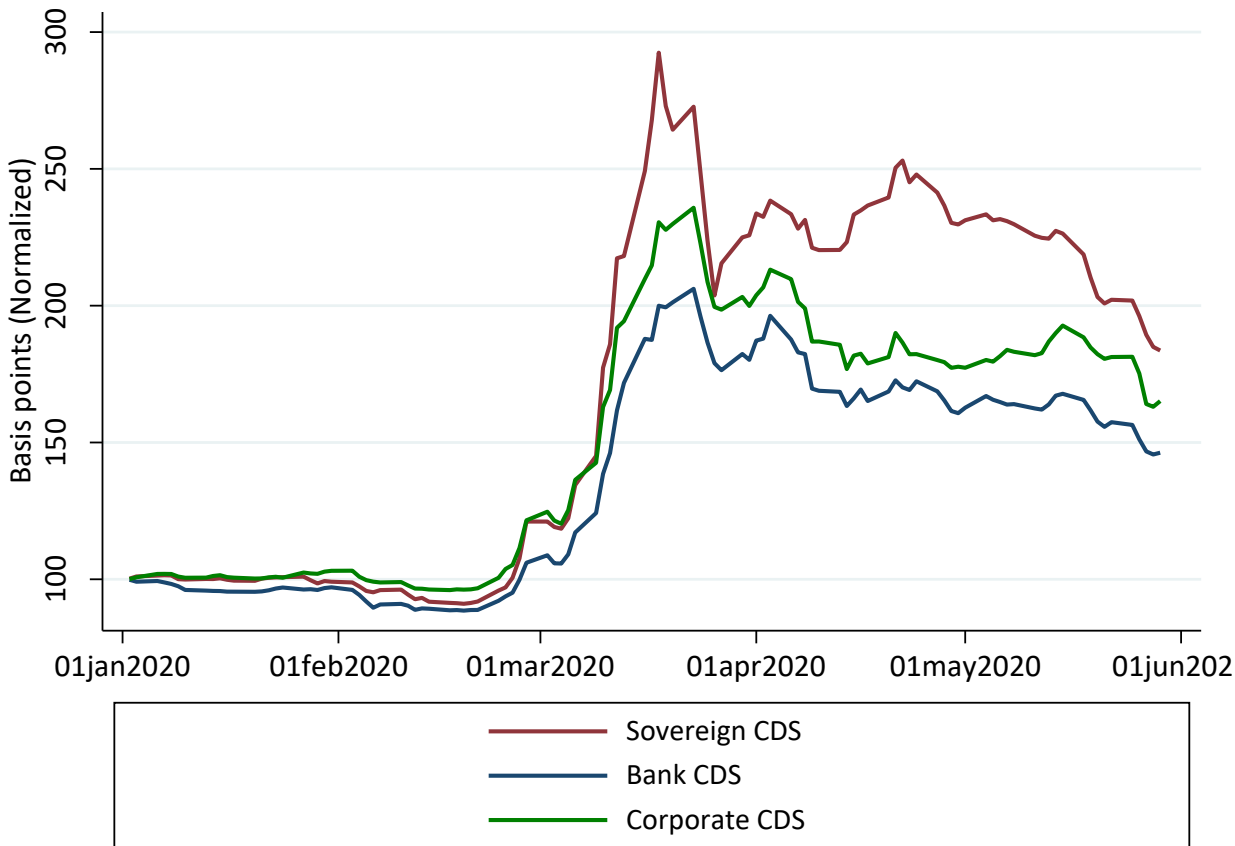
# Financial Fragilities During Covid

- ***New Research: Stress Relief?: Financial Structures and Resilience to the Covid Shock (2022), with Christian Friedrich and Dennis Reinhart***
  - *\*\*the discussion below is my own interpretation and does not represent the view of any institutions with which they are affiliated*
- **Key question: Has the way banks and corporates fund themselves **amplified** or **mitigated** the impact of the Covid-19 risk-off shock on *financial stress*?**
- **Stress measured using data on Credit Default Swaps (CDS) from Refinitiv**
  - Lengthy cleaning process
  - Around 2500 individual CDS in sample after cleaning in 2020
  - Aggregate CDS data to the country-sector level
  - Criteria: US\$ denomination, 5-year maturity (or nearest alternative)
- **3 sectors of interest: Sovereigns, banks, corporates**





# CDS During the Covid Shock



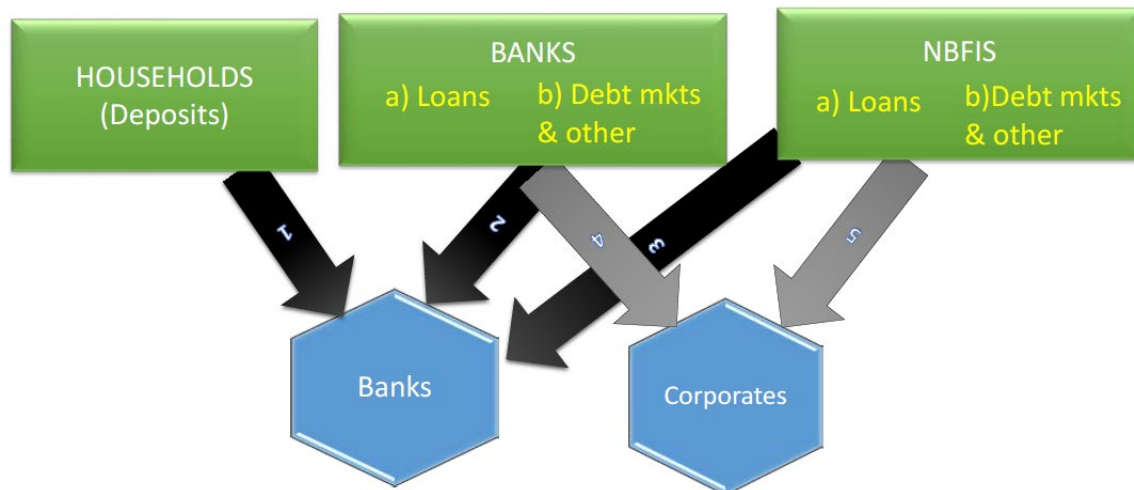
**Banks  
the  
safest  
sector?**

**Source:** Forbes, Friedrich and Reinhardt (2022)

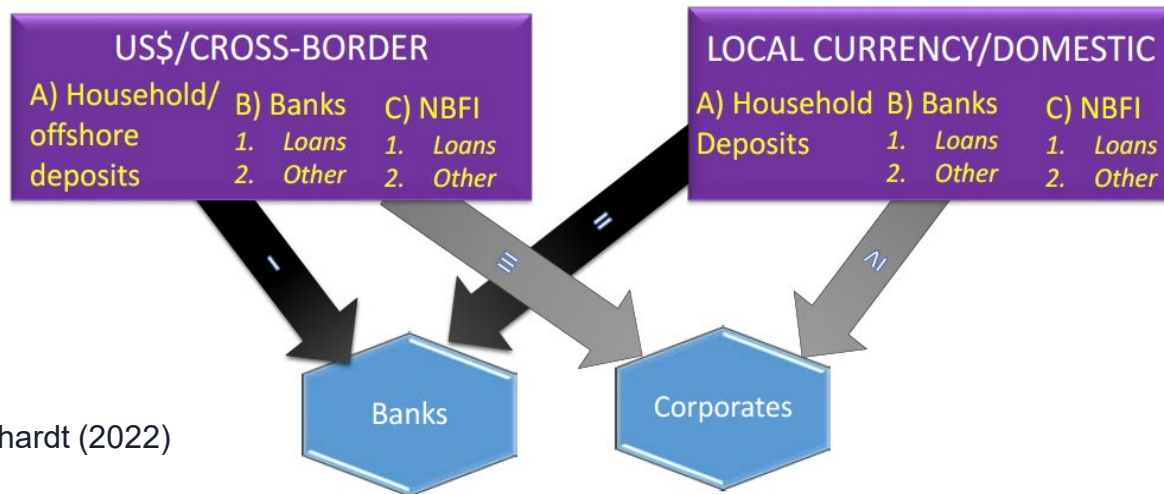


# Did Funding Structures Affect Fragility?

**Forms of  
Financial  
Intermediation**



**Forms of  
Financial  
Internationalization**



Source: Forbes, Friedrich and Reinhardt (2022)



# Empirical Strategy

## *Financial Structures and Covid Fragility*

- **Tests financial “structures” correlated with greater stress by sector/country during *Covid Shock***
  - “Intermediation”
    - Source of funding (NBFIs, banks, deposits)
    - Instrument of funding (loans/debt markets)
  - “Internationalization”
    - Currency of funding (local currency, FX)
    - Counterparty of funding (domestic/international)
  
- **Two empirical strategies**
  - *Country-sector approach*: how the structure variables correlate to stress in that sector (during the *Covid Shock*) relative to those of the other sectors in the same country
  - *Country-sector-time approach*: how the structure variables correlate to greater financial stress in that sector on a daily basis (with the VIX as a measure of the severity of the Covid shocks)



# Summary of Results

## Financial Structures and Covid Fragility

	<u>Country-sector</u> Effect on %-changes in CDS spreads		<u>Country-sector-time</u> Daily regressions Effect on the link between daily-changes in VIX and CDS spreads	
<b>Funding:</b>	<b>Banks</b>	<b>Corporates</b>	<b>Banks</b>	<b>Corporates</b>
<i>from households</i>	- ***	N/A	- ***	N/A
<i>from banks</i>	-	-	-	-
<i>from NBFIs</i>	+ **	+	+ ***	+
<i>loan share</i>	- *	-	-	-
<i>in US\$ liabilities</i>	+ ***	+ *** (not robust)	+ ***	-/0
<i>in cross-border liabilities</i>	-	-	+	+

**Source:** Forbes, Friedrich and Reinhart (2022)



# Implications for MP Policy

## Ex ante

### ➤ **Key Results:**

- Banking systems more fragile if:
  - more funding from NBFIs
  - more funding in US dollars
  - less funding from household deposits
- Corporates show similar patterns, but less robust
- Cross-border funding exposures did not increase fragility
  - even when controlling for FX exposures
  - currency of exposure matters more than the residency of the counterparty

### ➤ **Implications for macroprudential policy *ex ante*:**

- Most important: focus on exposure to NBFIs & FX funding
  - Especially for banks
- Less important: exposure to cross-border funding (i.e., capital controls)



# Implications for Policy

## After the Shock Hits

- **Tests which policy responses mitigated financial stress during *Covid Shock***
  - **Targeted policies**
    - focusing on vulnerabilities related to NBFIs, FX funding, market-based funding
  - **Bank-focused policies**
    - broad prudential easing, macroprudential buffers
  - **Economy-wide policies**
    - lower interest rates, asset purchases, liquidity policies, fiscal stimulus
- **Data: Kirti et al. 2022 (IMF)**
  - Rich high frequency dataset of post-Covid policies
  - Over 5,000 policy announcements; 28 granular policy categories; 74 countries



# Key Results

- **Policies that significantly mitigated the identified vulnerabilities:**
  - Easing NBFIs policies and market-based measures
    - mitigated the stress related to NBFIs funding (for both banks and corporates)
  - US\$ swap lines mitigated the stress related to US\$ borrowing (for banks)
- **Policies that did not significantly reduce the identified vulnerabilities**
  - General easing of prudential regulations, easing CCyB
- **Results robust to controlling for a range of “economy-wide policies”**
  - Interest rates, asset purchases, fiscal stimulus, liquidity support
- ***PROMISING IMPLICATIONS: Can highly targeted interventions mitigate specific forms of financial stress?***
  - *Especially around NBFIs and FX funding*



# *V. Insights and Priorities for the Future*





# Summary

- **Covid Shock: first test of post-2008 macroprudential regime**
- **Macroprudential tools used as intended, *ex ante* and in response to Covid Shock**
  - Tightened *ex ante*, evidence reduced credit growth & provided greater resilience by some metrics
  - Eased as part of Covid response, **albeit constrained by “space”**
- **Tighter macroprudential policy pre-Covid contributed to shifts in financial intermediation**
  - Change in forms of international capital flows
  - Increased sensitivity of portfolio flows to risk-off shocks
- **Banks: even if more resilient, not immune**
  - Banks more reliant on NBFIs and US\$ funding—less resilient to Covid
  - But targeted interventions may be able to address specific vulnerabilities



# Lessons and Questions

- **Importance of tightening MP tools in advance to create space to respond to future shocks**
  - Room for better coordination with other policies
- **But in conjunction with expansion of regulatory perimeter to NBFIs**
  - Wake-up call: March 2020 and Oct 2022
- **Likely impossible to address all new fragilities *ex ante***
  - But if core of financial system sound, may be able to address specific fragilities with more targeted interventions
- **Key Questions:**
  - During next shock, could more targeted policy responses substitute for, broader regulatory easing and monetary stimulus?
  - Could more targeted policies be used to address specific areas of financial stress without affecting efforts to achieve other macroeconomic or wider financial stability objectives?
- **Increasingly important if financial intermediation continues to shift outside the banking system**

