



Private Sector Debt and the Global Recovery

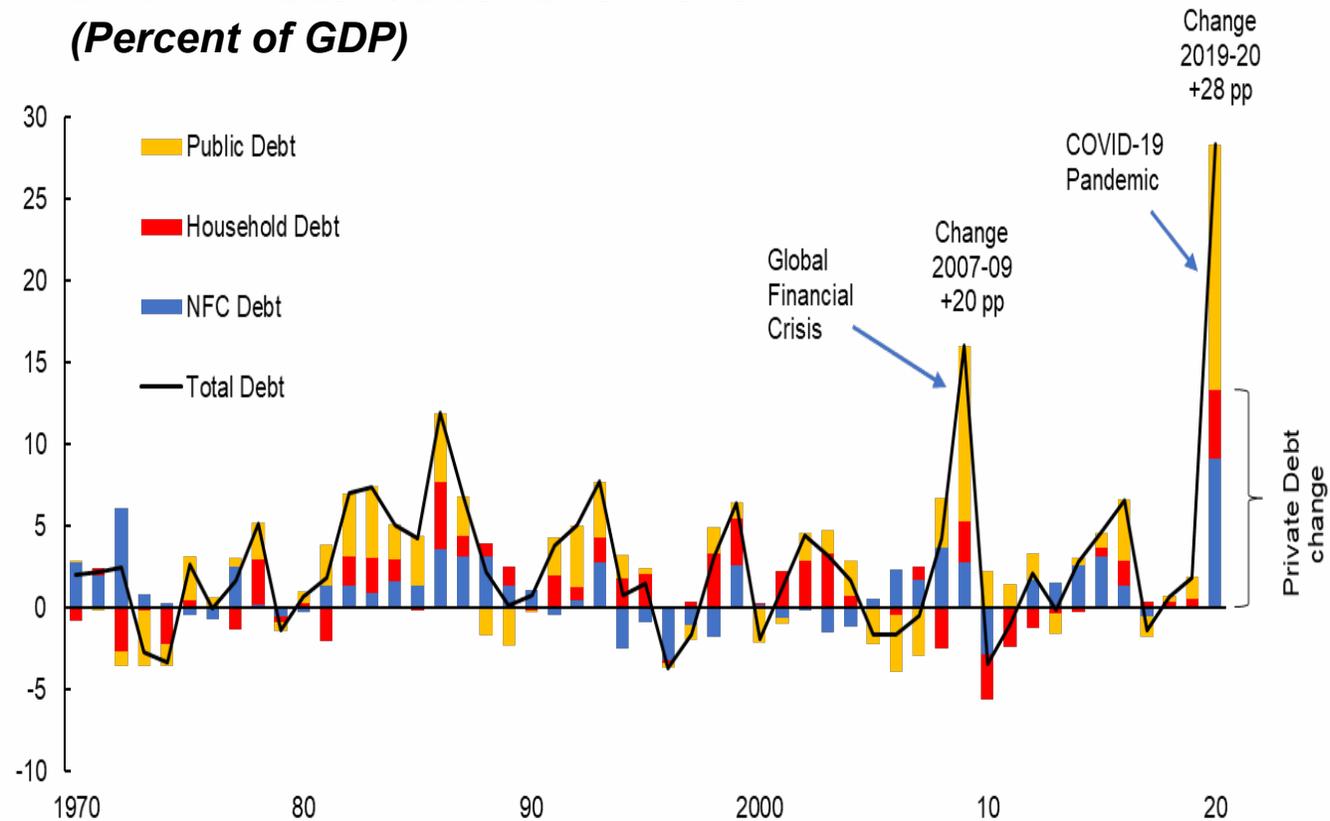
APRIL 2022 WEO CHAPTER 2

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Needed support policies during the crisis led to unprecedented increase in public and private debt

Global Debt Stock: Annual Changes in Public and Private Debt 1970-2020 (Percent of GDP)



Source: Global Debt Database, 2021.

Questions:

1. Have private debt increased heterogeneously across country, sectors and agents?
2. Will higher debt impact on the recovery? If yes, how?
3. What are the implications for policy?

Roadmap

1. Document the *distribution* of private debt buildup across households and firms

- Focus on low-income households and vulnerable firms

2. Estimate impact of leverage buildup on future growth: macrodata

- GDP, HH consumption and firms' investment
- Regional differences

3. Unpack the mechanisms: microdata

- Importance of low-income households and vulnerable firms
- Importance of public debt burden
- Importance of insolvency regime

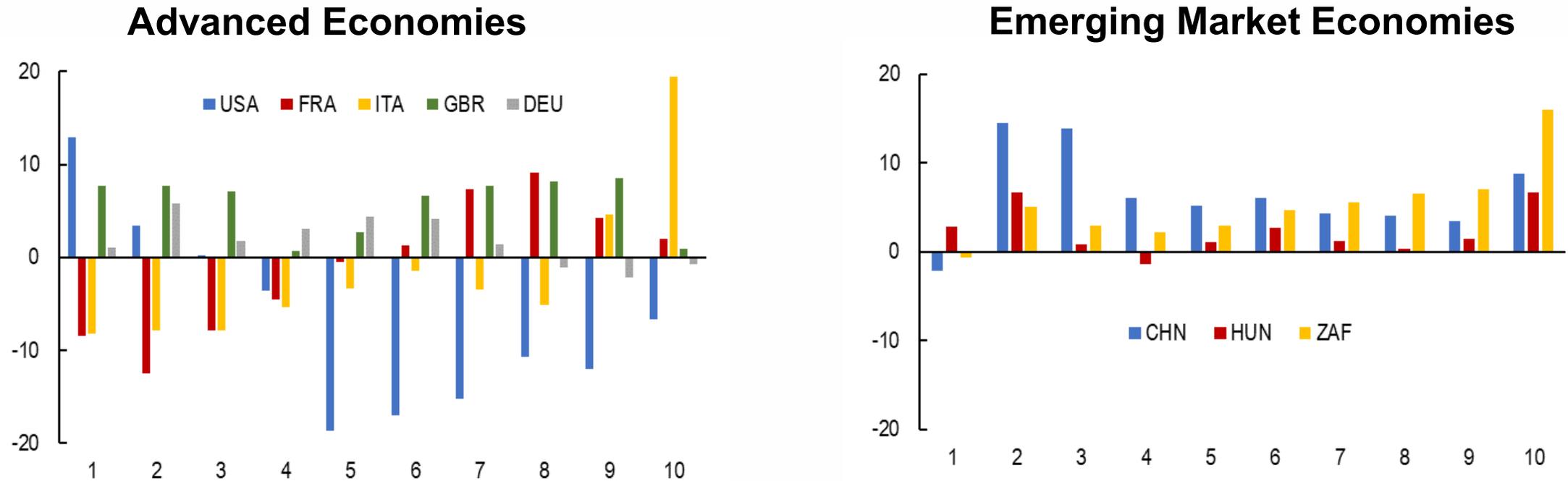
4. Assess transmission of countercyclical policies

- Effect of fiscal and monetary normalization post-pandemic

1. Private Leverage Distribution in the Pandemic

Households: wide heterogeneity in distribution of debt buildup during the pandemic

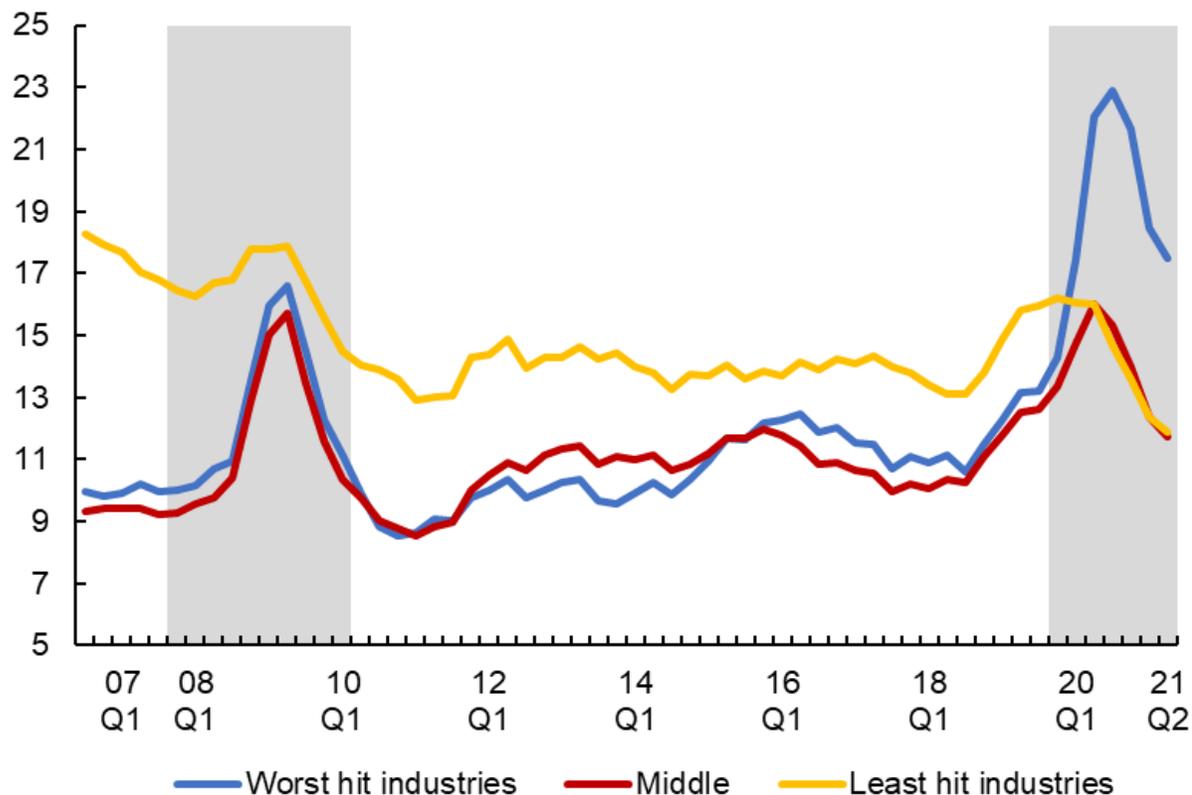
Change in Debt-to-Income Ratio by Income Decile in 2020
(Percent of income)



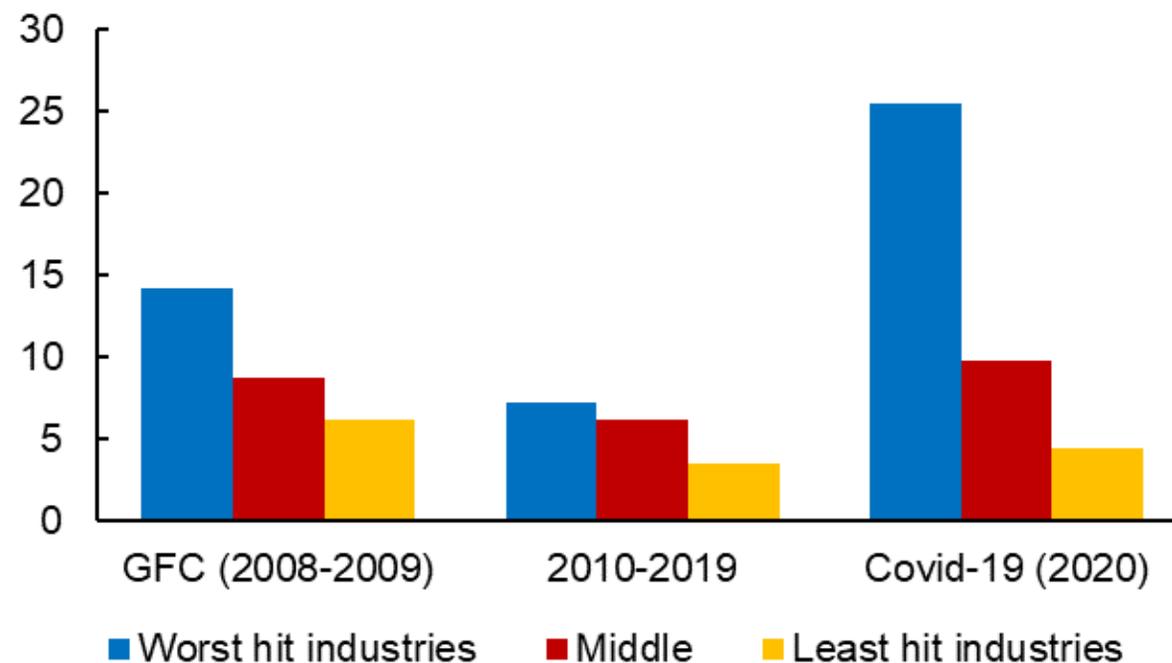
Source: IMF staff calculations – see online annex Chapter 2, April 2022 WEO for details

NFCs: increased leverage concentrated among vulnerable firms

Share of Vulnerable Firms (Percent)



Share of Debt in Vulnerable Firms by Sector (Percent)

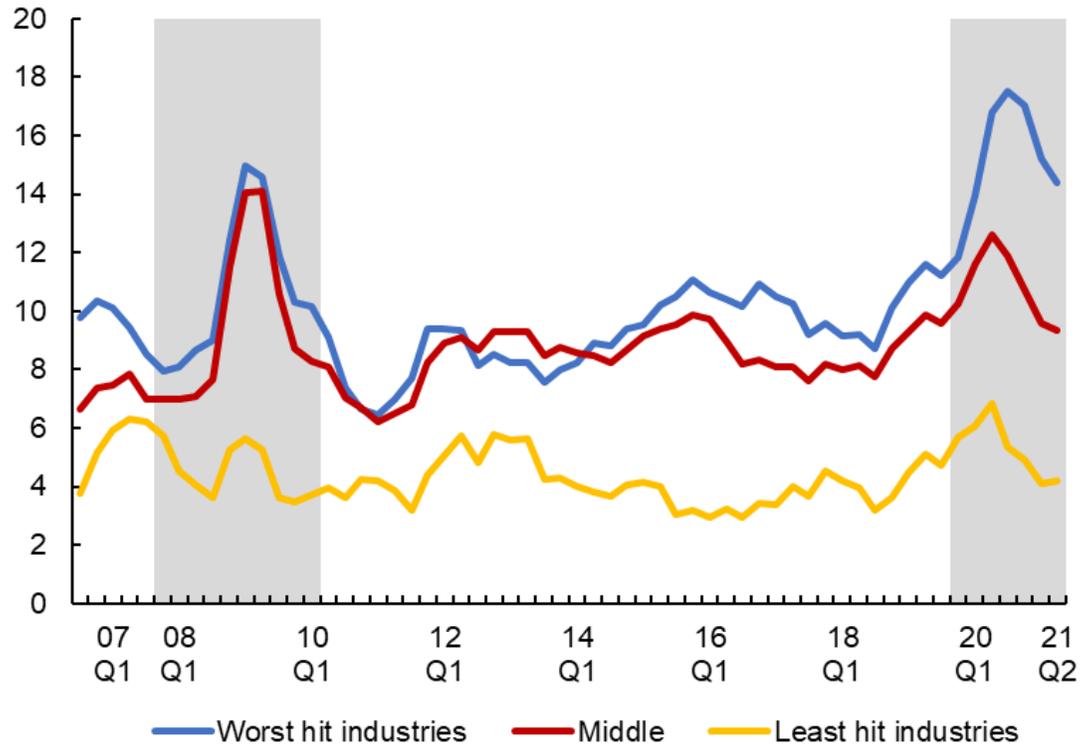


Sources: Standard & Poor's Capital IQ; and IMF staff calculations.

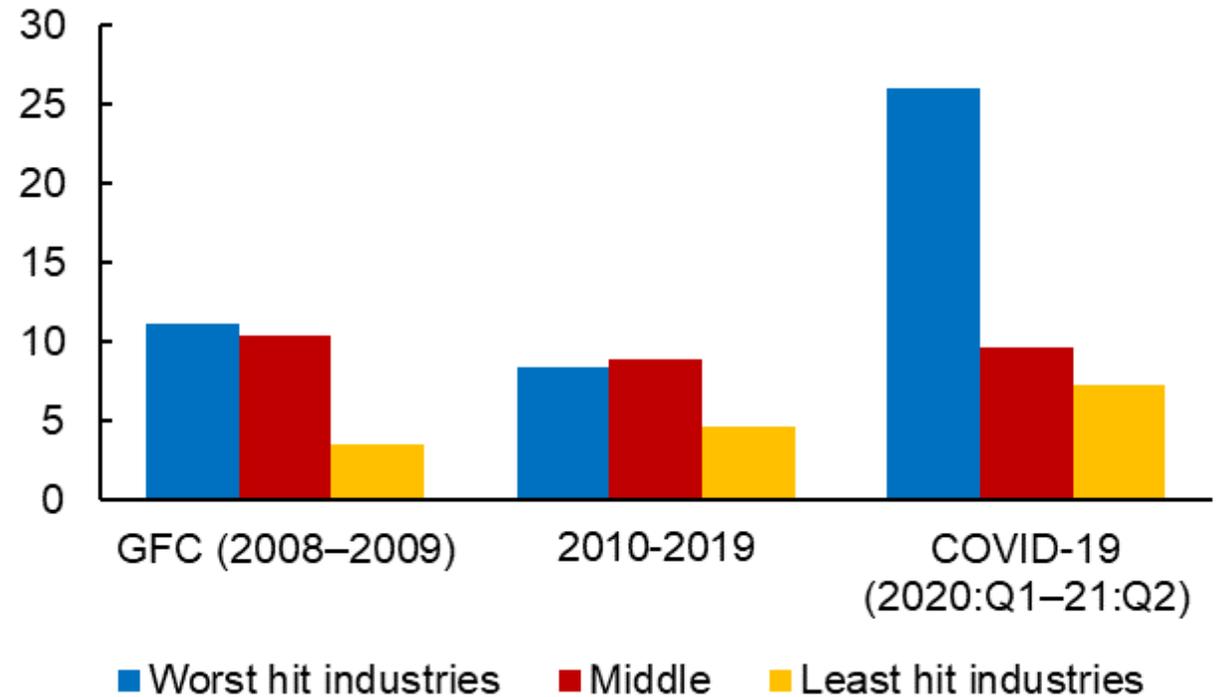
Note: Sample consists of 71 economies. Vulnerable firms are defined as: top tercile of leverage, bottom tercile of the ROA and $ICR < 1$. $ICR =$ interest coverage ratio.

NFCs debt buildup in EMDEs:

**Share of Vulnerable Firms
(Percent)**



**Share of Debt in Vulnerable Firms by Sector
(Percent)**



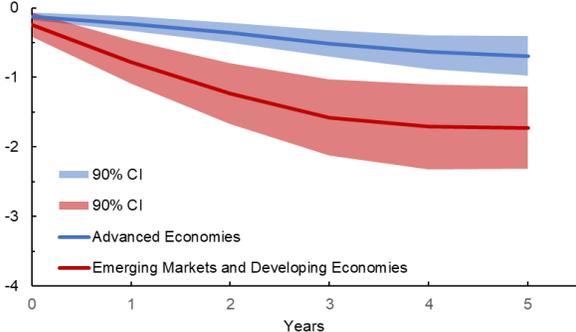
Sources: Standard & Poor's Capital IQ; and IMF staff calculations.

Note: Sample consists of 37 emerging markets and developing economies. Vulnerable firms are defined as: top tercile of leverage, bottom tercile of the ROA and $ICR < 1$. ICR = interest coverage ratio.

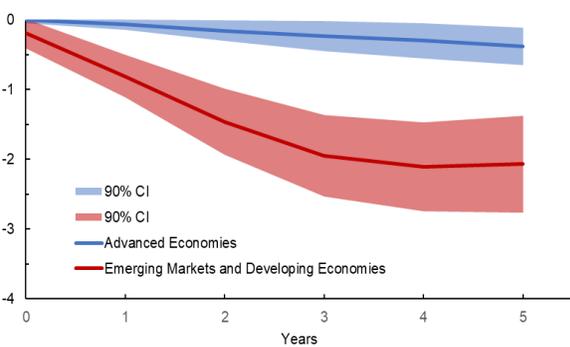
2. Consequences: drag on growth

Debt overhang dampens future growth, particularly in EMDEs

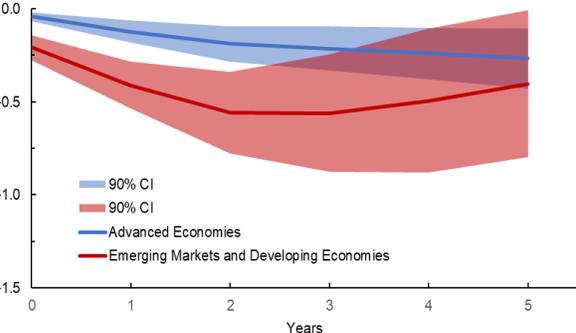
Response of Gross Domestic Product to Household Excess credit



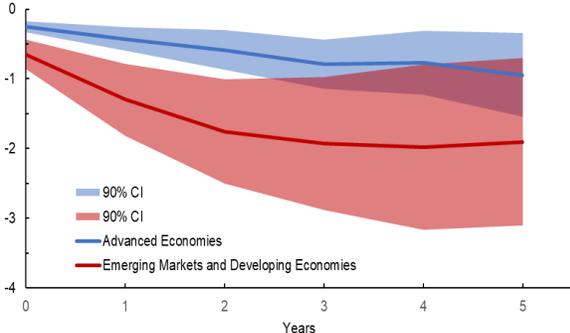
Response of Consumption to Household Excess credit



Response of Gross Domestic Product to NFC Excess credit



Response of Investment to NFC Excess credit



Local projection (Jorda, 2005) IRFs relying on rich horizon-specific time and country fixed effects

- Operationalize **excess credit** by applying a trend-cycle filter (James D. Hamilton, 2018 REStat), scaled by GDP
- 3-year trailing average of debt overhang as impulse
- 27 AEs and 16 EMDEs; 1969-2020

Household debt overhang has larger impact, especially in EMDEs

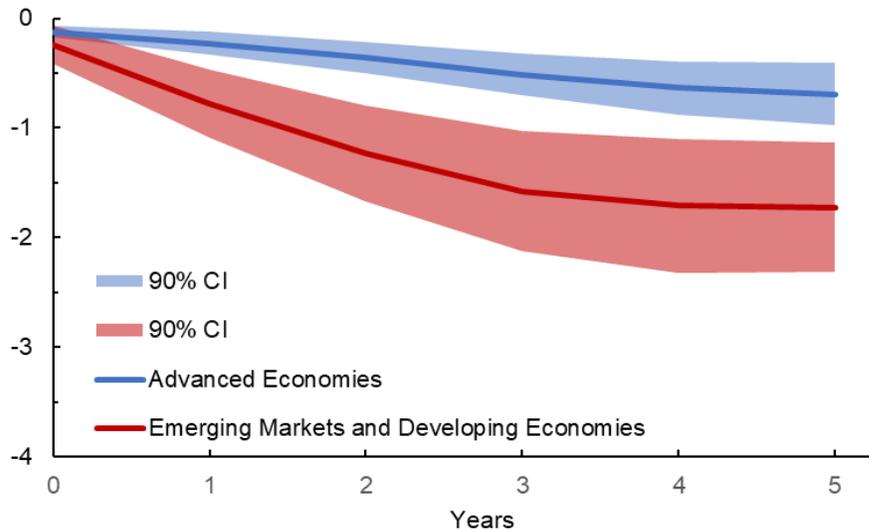
- After 3 years in response to a 1 ppt change in HH debt:
 - AE: 0.5 ppt / EMDE: 1.6 ppt lower GDP
- After 3 years in response to a 1 ppt change in NFC debt:
 - AE: 0.2 ppt / EMDE: 0.6 ppt lower GDP

Note: cumulative percentage change
Sources: Bank for International Settlements; and IMF staff calculations.

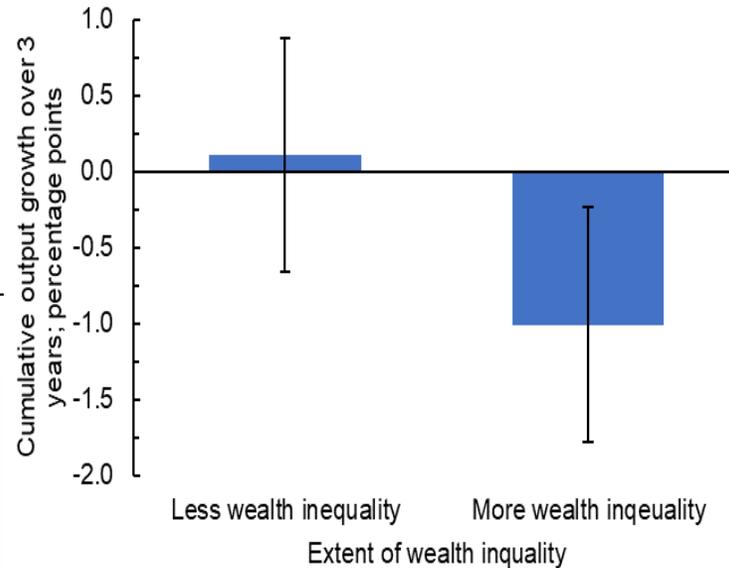
3. Unpacking the mechanism

Households: rapid leverage may impede future growth ...

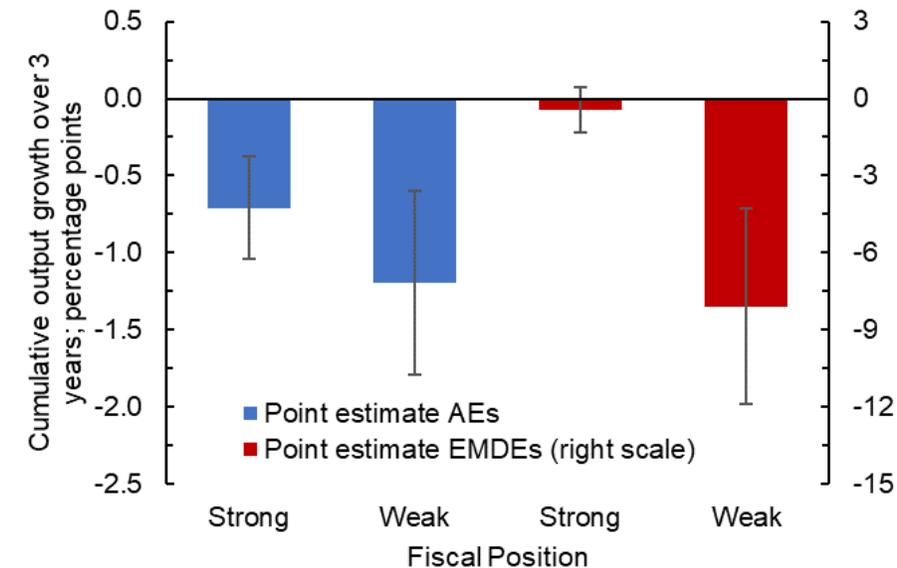
Stronger growth effect in EMDEs



... where wealth inequality is large ...



... and fiscal space is limited.

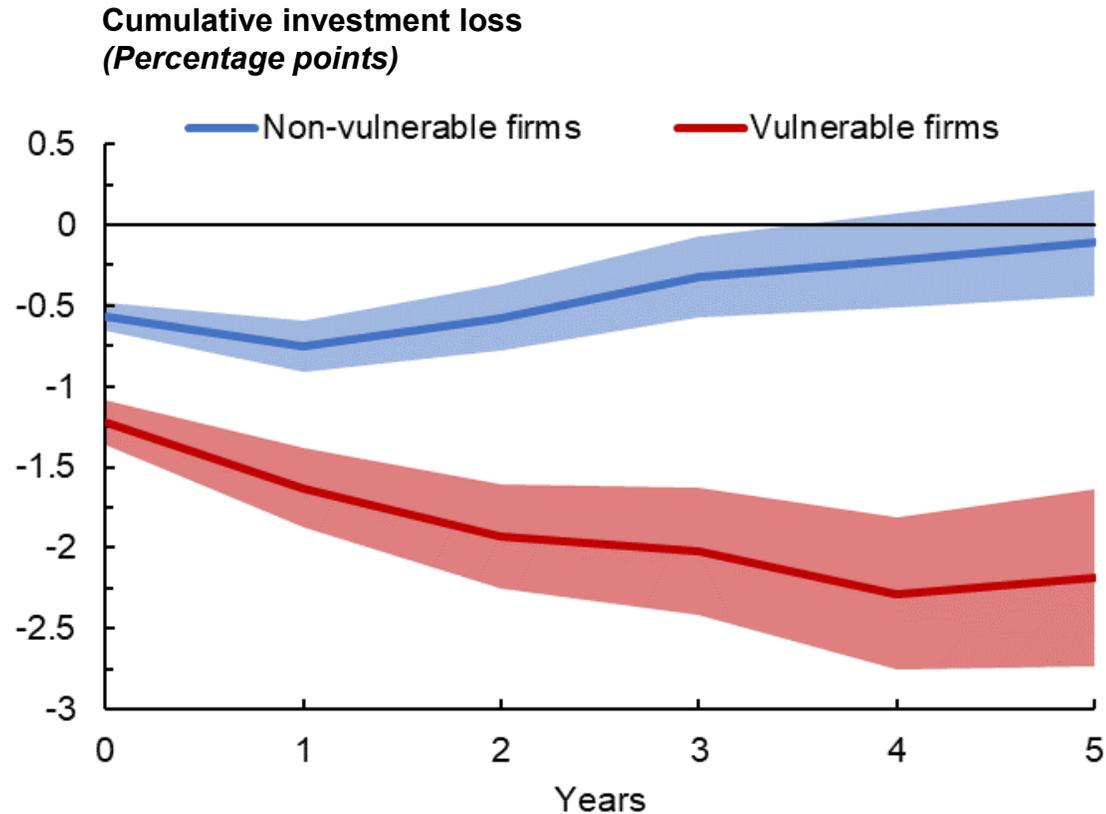


GDP Response to 1 pp Excess Household Credit (Cumulative percentage points)

Source: IMF; BIS; IMF staff calculations.

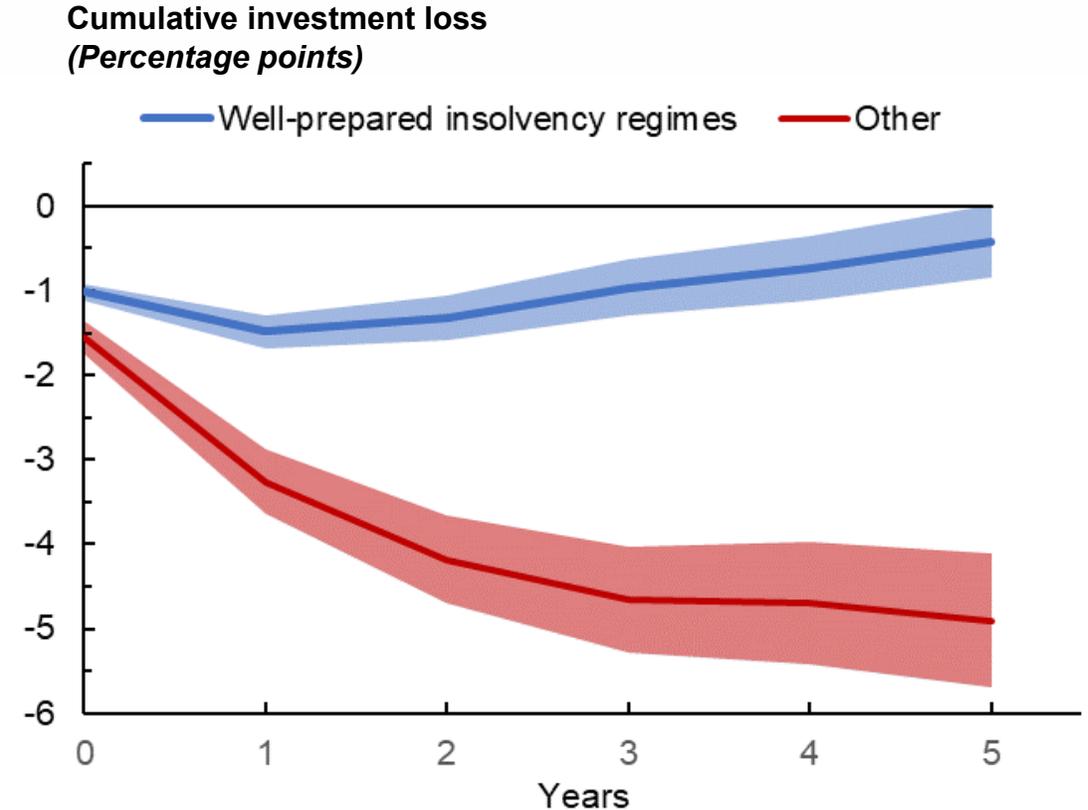
NFCs: Debt overhang has persistent effect on capital formation ...

... for vulnerable firms ...



Sources: Bureau van Dijk Orbis; and IMF staff calculations.
Note: Cumulative effect of a 1 standard deviation increase in leverage on capital stock. Vulnerable firms are defined as: top tercile of leverage, bottom tercile of the ROA and ICR < 1. ICR = interest coverage ratio.

... and where insolvency regimes are relatively inefficient.

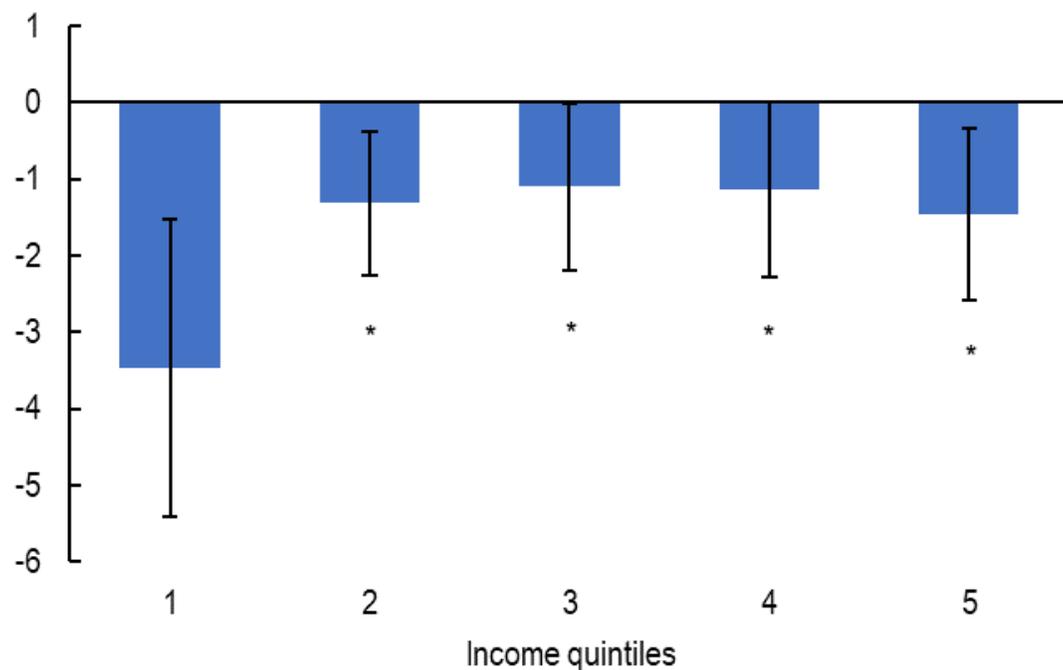


Sources: Bureau van Dijk Orbis; IMF, Crisis Preparedness Index; and IMF staff calculations.
Note: Cumulative effect of a 1 standard deviation increase in leverage on capital stock. Well-prepared insolvency regimes are defined as countries at the top quartile of the SPR-LEG indicator of crisis preparedness 2020 (insolvency regimes).

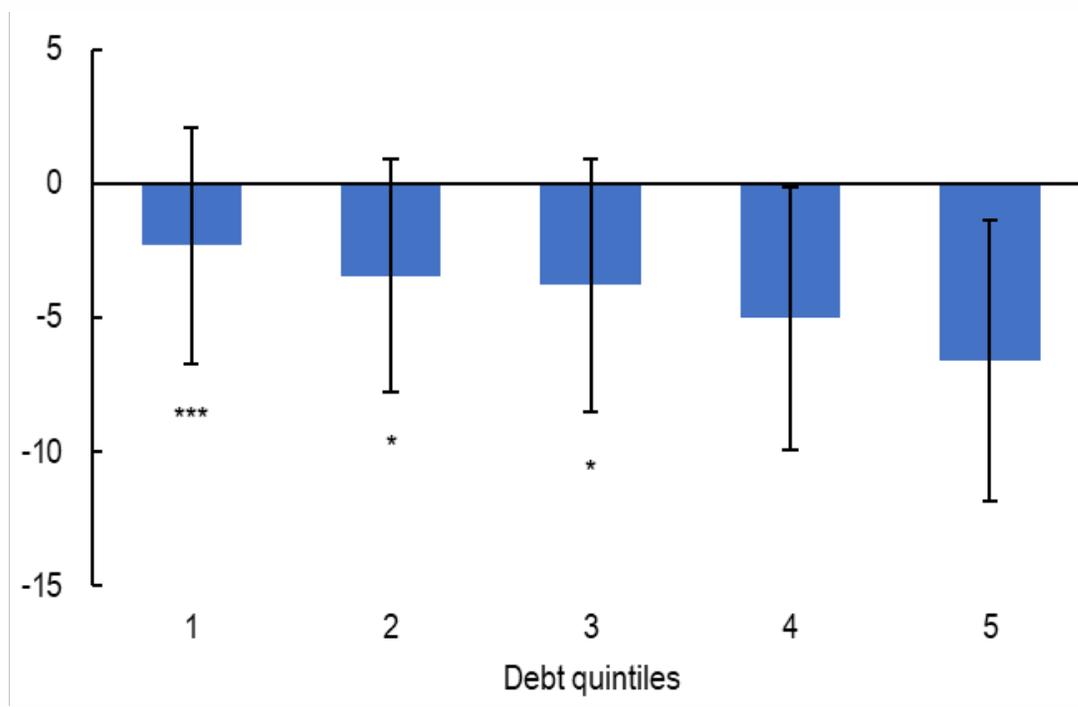
4. Distributional effects of countercyclical policy

Countercyclical policies have larger effect on financially-constrained households and firms

Response of **Consumption** by Income Quintile to **Fiscal Consolidation Shock** (1 percent of GDP)



Response of **Investment** by Leverage Quintile to **Monetary Shock** (100 basis point)



Sources: Allen, Kolerus, and Xu (2022); Bureau van Dijk Orbis; and IMF staff calculations.
Note: Sample consists of 13 economies for consumption and 24 countries for investment.

Key insights: Aggregate debt does not tell the whole story

➤ *Have private debt increased heterogeneously across country, sectors and agents?*

The pandemic had very **unequal** effects across households and firms:

- Debt increases for low-income households varied significantly across countries
- Firms' leverage grew substantially more in vulnerable firms, in the worst-hit sectors

➤ *Will higher debt impact on the recovery?*

- Historical correlations: GDP cumulative loss over 3 years -1.3% in EMDEs and -0.9% in AEs
- Household debt buildup has larger GDP impact than NFCs, especially in EMDEs

As monetary and fiscal policies are normalized, drag on growth will be larger where:

- Debt increase has been concentrated among financially constrained households and firms in hard hit sectors
- Private leverage buildup happened against backdrop of limited fiscal space
- Insolvency regime is inefficient

Policy implications

Cyclical: on a “country-by-country” basis

- Where recovery is **well underway** and **balance sheets are in good shape**, fiscal support can be reduced faster to assist central banks in their efforts to rein in inflationary pressures.
- Elsewhere, **exit** from accommodative policies should be **more gradual but assuring fiscal sustainability**.
 - ▶ Because fiscal space is limited, **support** should be **temporary**, and **targeted** to financially constrained households and **viable** firms.
 - ▶ Because targeting is difficult, **revenue mobilization** should be enhanced.

Structural:

- Enhance **real-time measurement** of households’ and firms’ **balance sheets** for better **targeting**.
- **Improve insolvency regimes** to allow rapid reallocation of resources to most productive use through restructuring or liquidation.
- **Address debt bias in taxation** to avoid excessive debt buildup in the future.



World Economic Outlook APRIL 2022

THANK YOU!

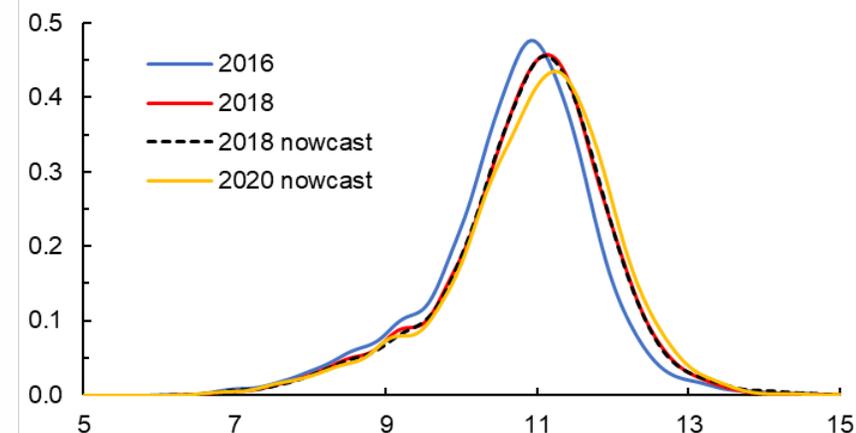
Some background

- **Large macro-finance literature** taking off with the GFC and aftermath: leverage makes recession deeper and longer
 - ▶ Eggertsson and Krugman (QJE, 2012); Jorda et al. (JMCB, 2013)
- **More recently**, the focus has moved to the impact of “excess leverage” on the business cycle ...
 - ▶ Macro: Mian et al. (QJE, 2017); Jorda et al. (ReFStud, 2020)
 - ▶ Micro drivers (corporate debt overhang firms): Kalemli-Ozcan et al. (ECB, 2019); Albuquerque (BoE, 2021)
- **Contributions of the chapter:**
 - ▶ Expand macro and micro-empirical analysis to emerging markets
 - ▶ Lessons for policy: Impact of countercyclical policy on financially stretched households and firms

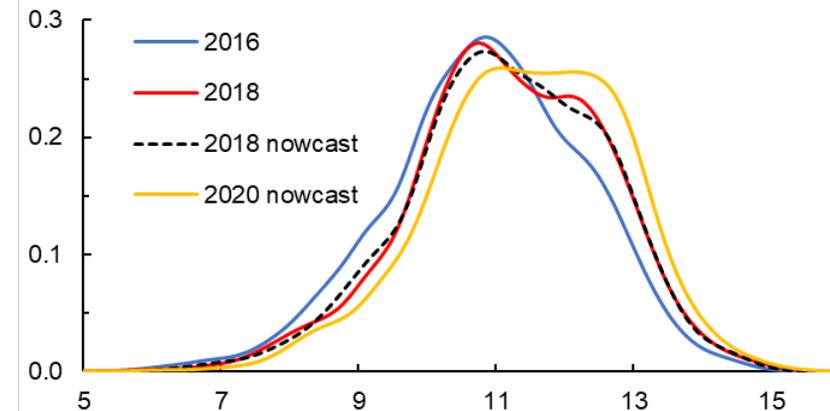
Nowcasting the distribution of household debt

- Requires household wealth survey data
 - Only available for a few countries
 - Conducted infrequently, so long publication lags
- Use information on macro and financial statistics at the regional and sectoral levels to predict individual households' income and debt changes
 - E.g., sectoral GVA, regional unemployment, average housing price, etc.
 - Available through 2020
- We follow the approach of DiNardo, Fortin and Lemieux (ECMA 1996) to nowcast the joint distribution of household income and debt
 - Reweighting and regression adjustment to match changes in the joint pdf
 - Match to aggregate income growth and household debt in 2020
- Nowcasting done for China, South Africa, Hungary, France, Italy, Germany and the UK
 - CEX microdata for the US in 2020

China: Household Income Distribution (Log scale)



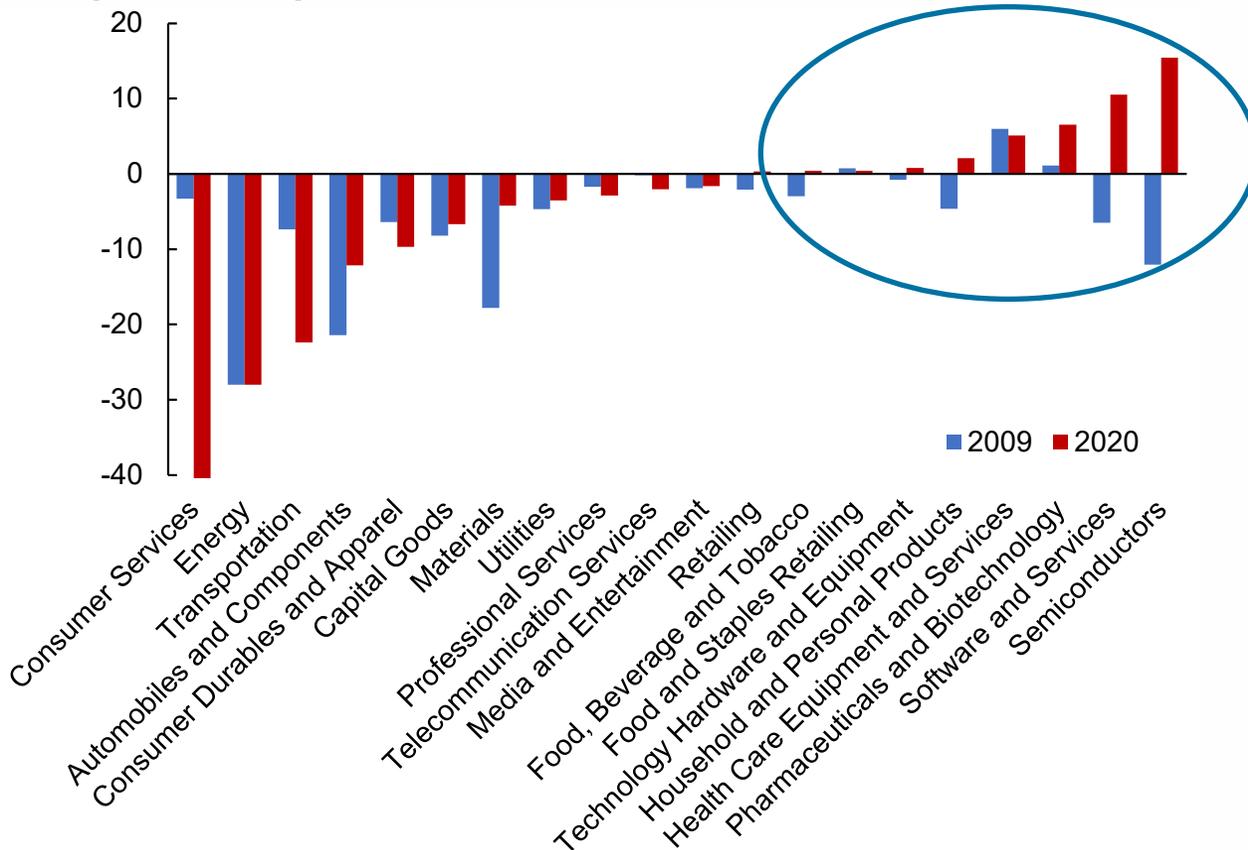
China: Household Debt Distribution (Log scale)



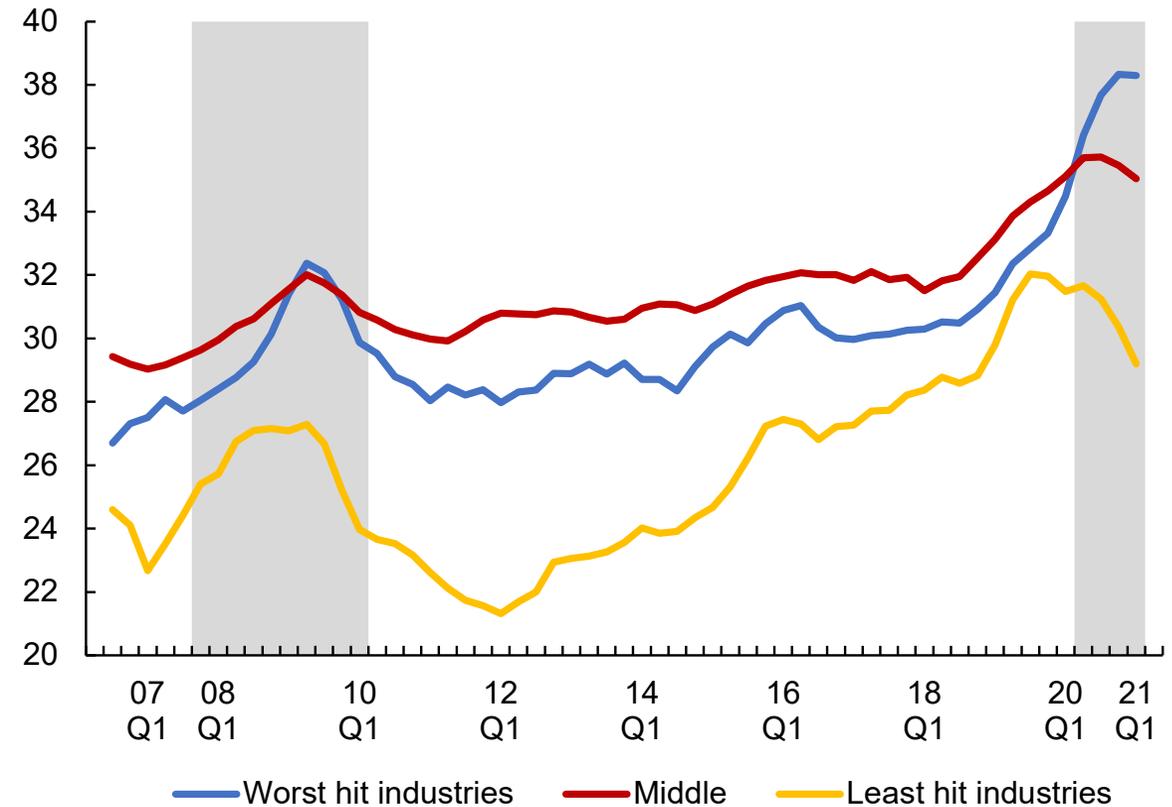
Sources: IMF staff calculations.

NFCs : clear dichotomy winners and losers

Sector-Level Operating Revenue Growth, Asset Weighted (Percent)



Debt-to-Assets Ratio, Weighted Median (Percent)



Sources: Capital IQ; and IMF staff calculations.

Note: Sample consists of 70 economies. Right panel shows a 3-quarter moving average.

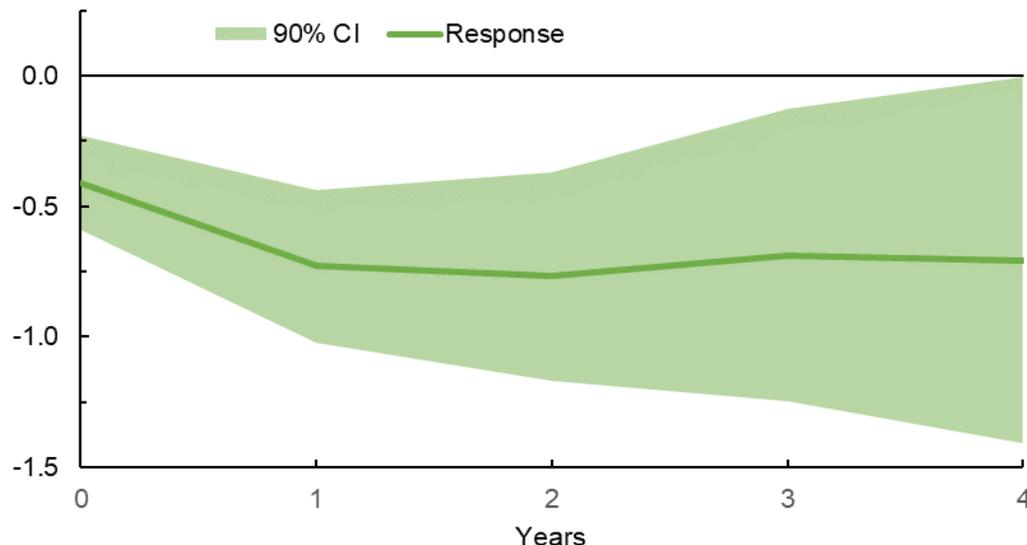
Effects of fiscal and monetary tightening

- Local projection estimation of the relationship between **policy shocks** and economic activity

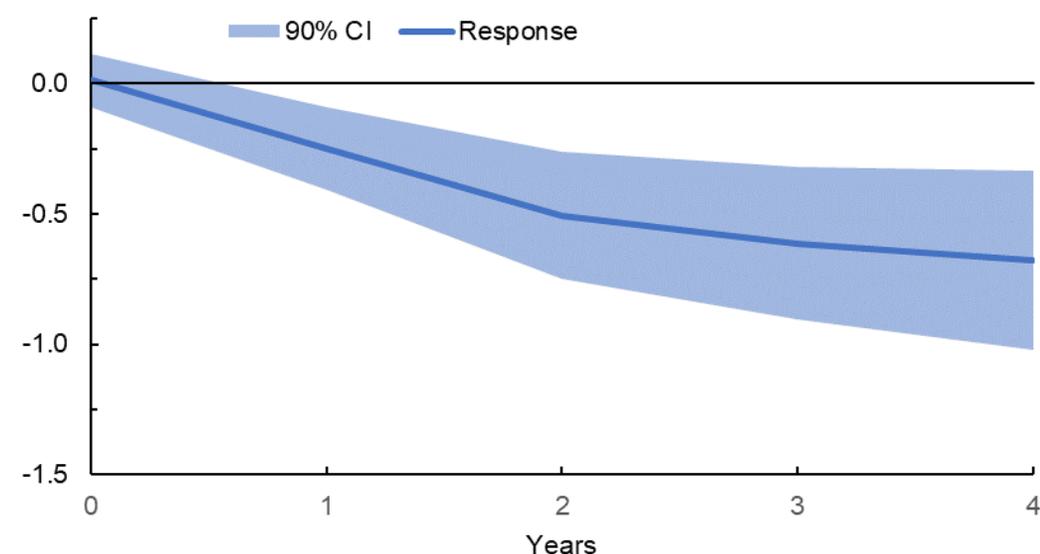
$$y_{i,t+h} - y_{i,t-1} = \mu_i^h + X_{i,t}\gamma^h + s_{i,t}\beta^h + v_t + \varepsilon_{i,t+h} \quad , \quad s \in \{fiscal, monetary\}$$

- Fiscal shocks from Guajardo, Leigh, and Pescatori (2014), narrative approach to identify exogenous changes in government spending or taxation
- Monetary policy shocks constructed from forecast errors as in Furceri, Loungani, and Zdzienicka (2018)

**Response of Output to Fiscal Shock Benchmark Sample
(Percent change)**



**Response of Output to Monetary Shock Benchmark Sample
(Percent change)**



Sources: Guajardo, Leigh, and Pescatori (2014); Consensus Forecasts; and IMF staff calculations.
Note: Shaded areas represent 90 percent confidence intervals. Sample consists of 31 economies.

Monetary tightening and macroprudential policy

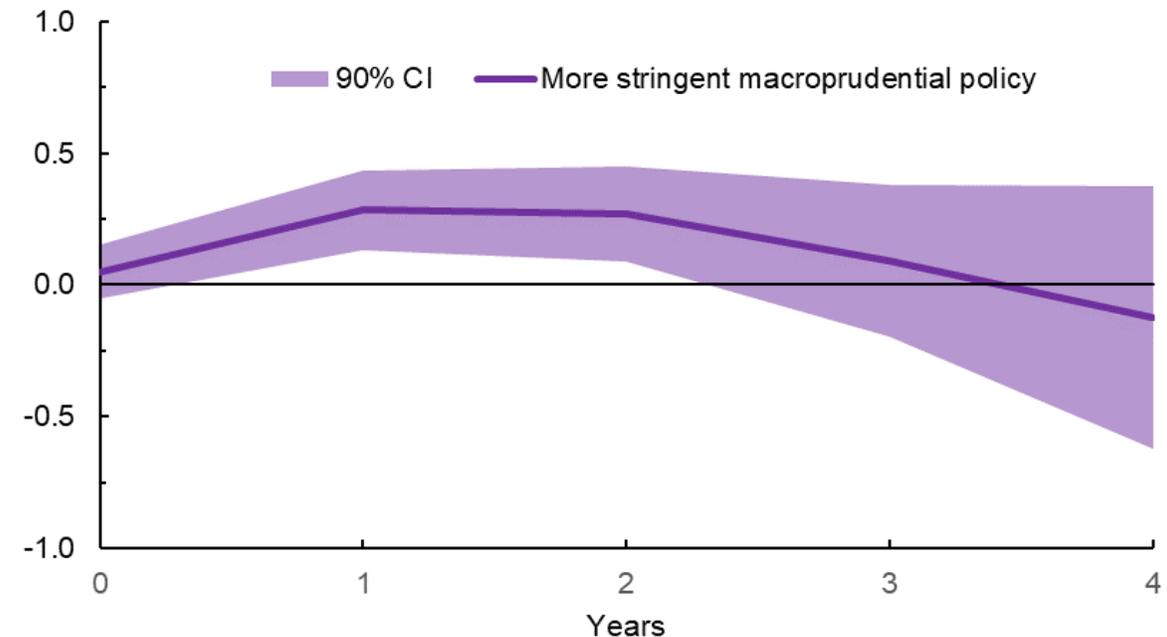
- Can macroprudential policy setting dampen the effects of monetary tightening?
- Data on macroprudential measures from IMF's iMaPP – index of 17 measures

$$\begin{aligned} & y_{i,t+h} - y_{i,t-1} \\ &= \mu_i^h + X_{i,t} \gamma^h + s_{i,t} \beta^h + s_{i,t} MPr u_{i,t} \delta^h + v_t \\ &+ \varepsilon_{i,t+h} \end{aligned}$$

where $MPr u_{i,t}$ is the level of macroprudential regulation

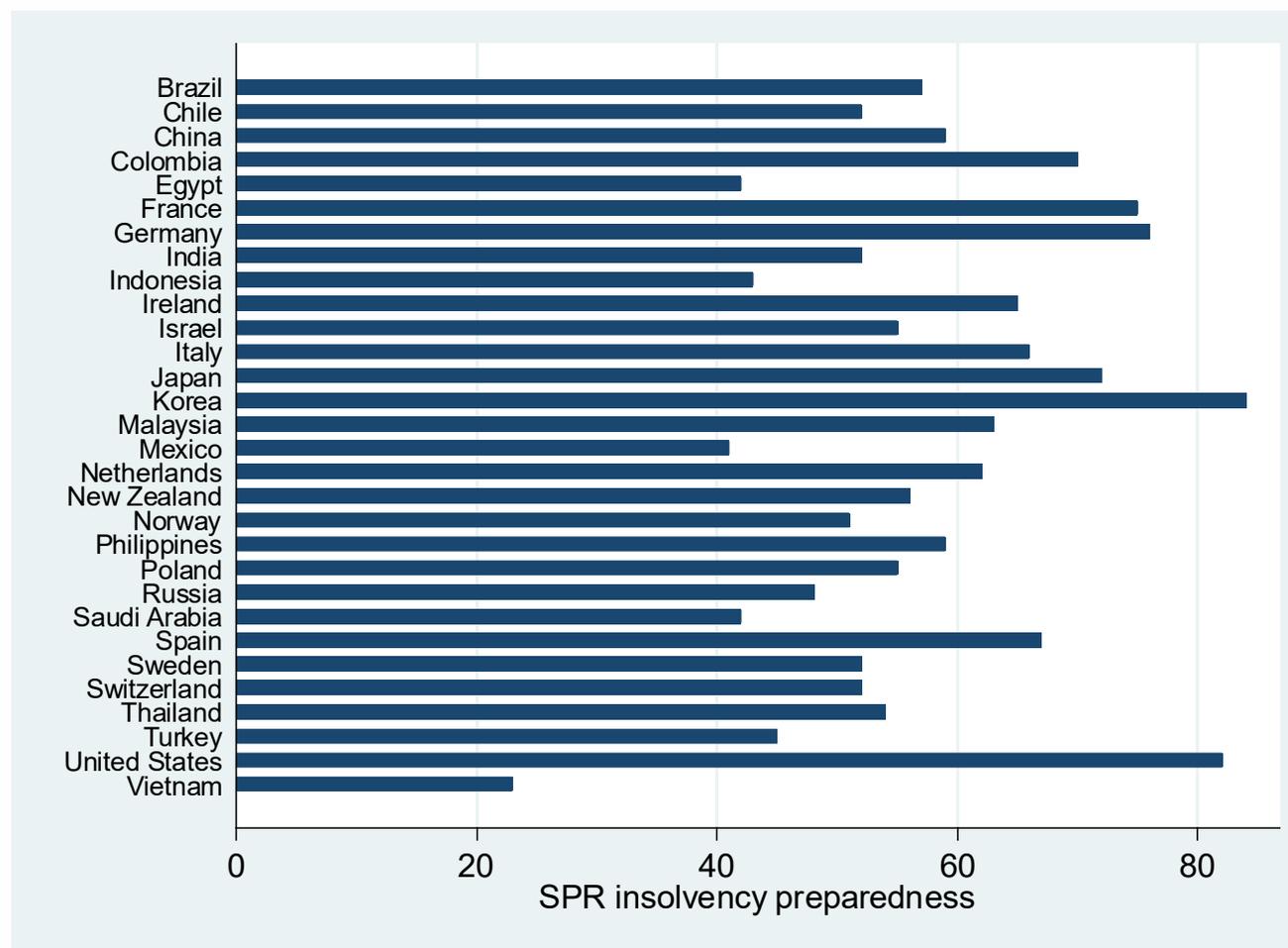
- When macroprudential policy is more stringent, part of the contractionary effect of monetary tightening is offset

Response of Output to Monetary Shock Interaction with Macroprudential Stringency (Percent change)



Sources: Consensus Forecasts, IMF iMaPP, IMF staff calculations.
Note: Shaded areas represent 90 percent confidence intervals.
Sample consists of 32 economies.

SPR-LEG crisis preparedness

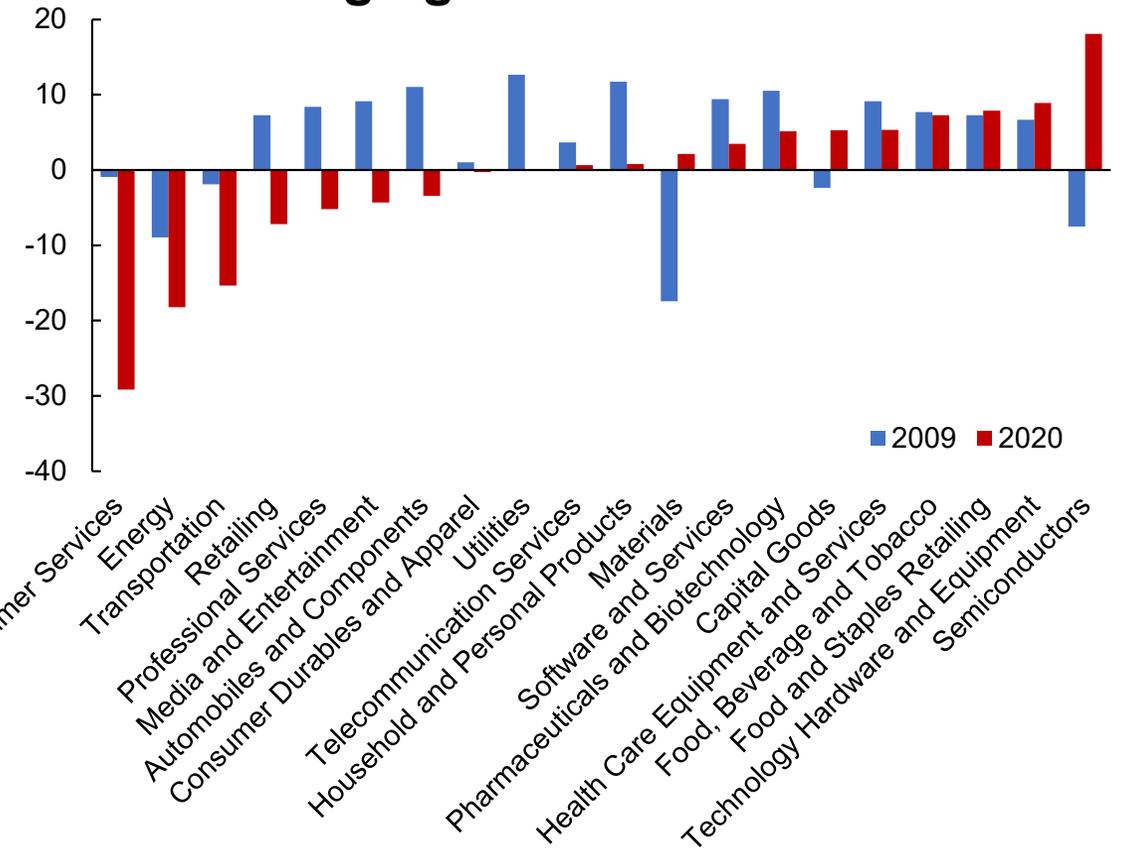
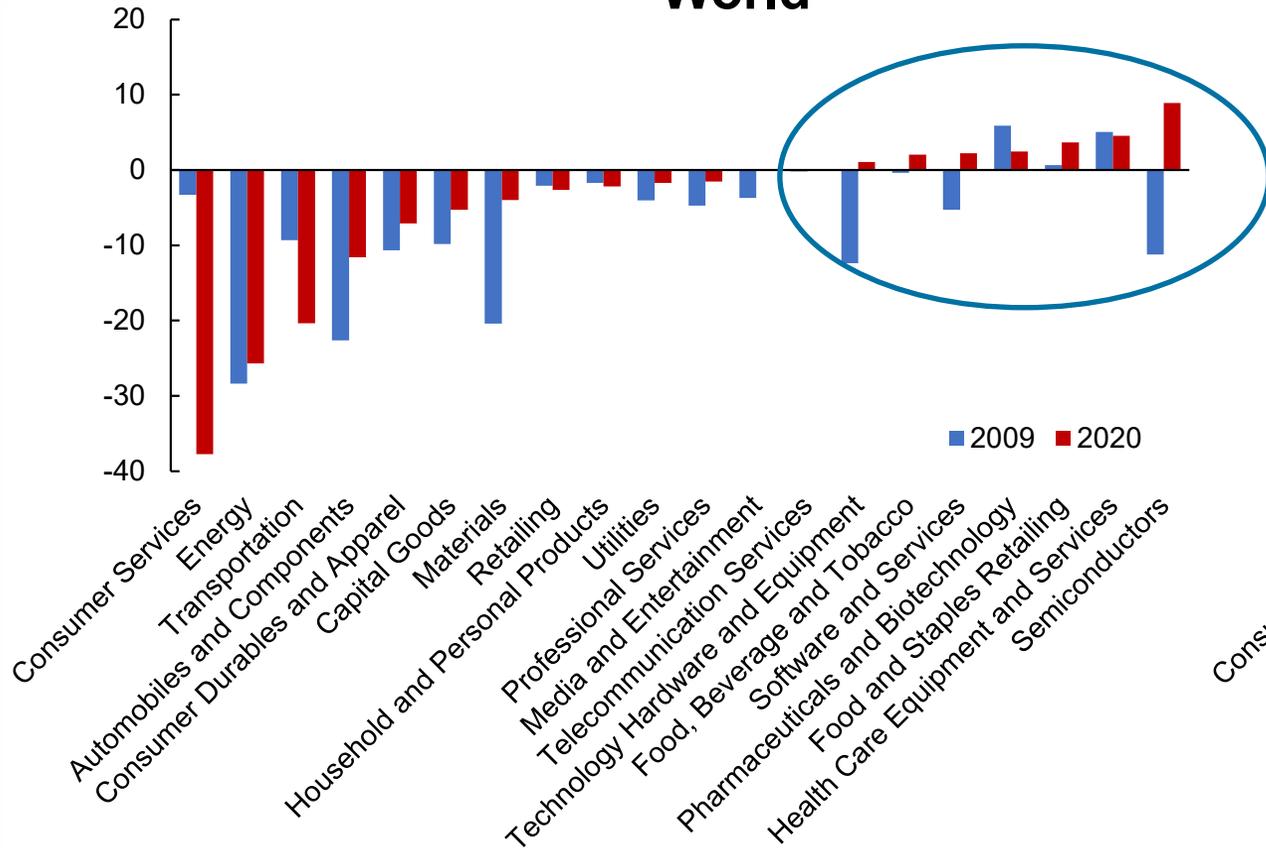


NFC sector: clear dichotomy winners and losers

Sector-Level Operating Revenue Growth, Asset Weighted
(Percent)

World

Emerging Market Economies



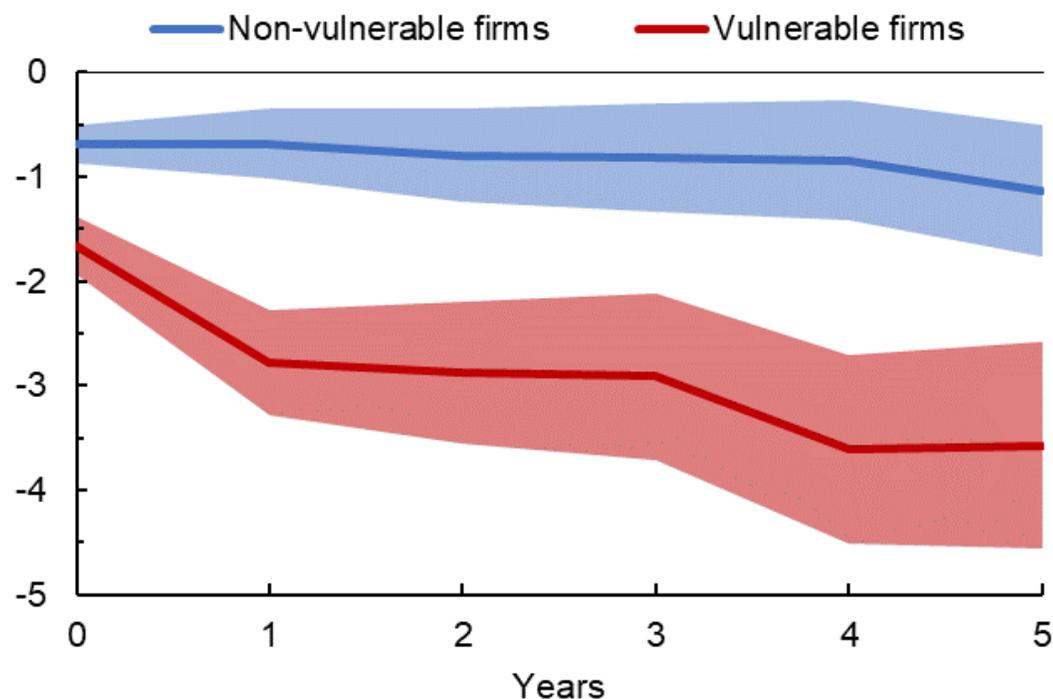
Sources: Capital IQ; and IMF staff calculations.

Note: Sample consists of 75 economies, 38 of which are emerging market economies.

NFCs: debt overhang has persistent effect on capital formation ...

Emerging Markets and developing Economies

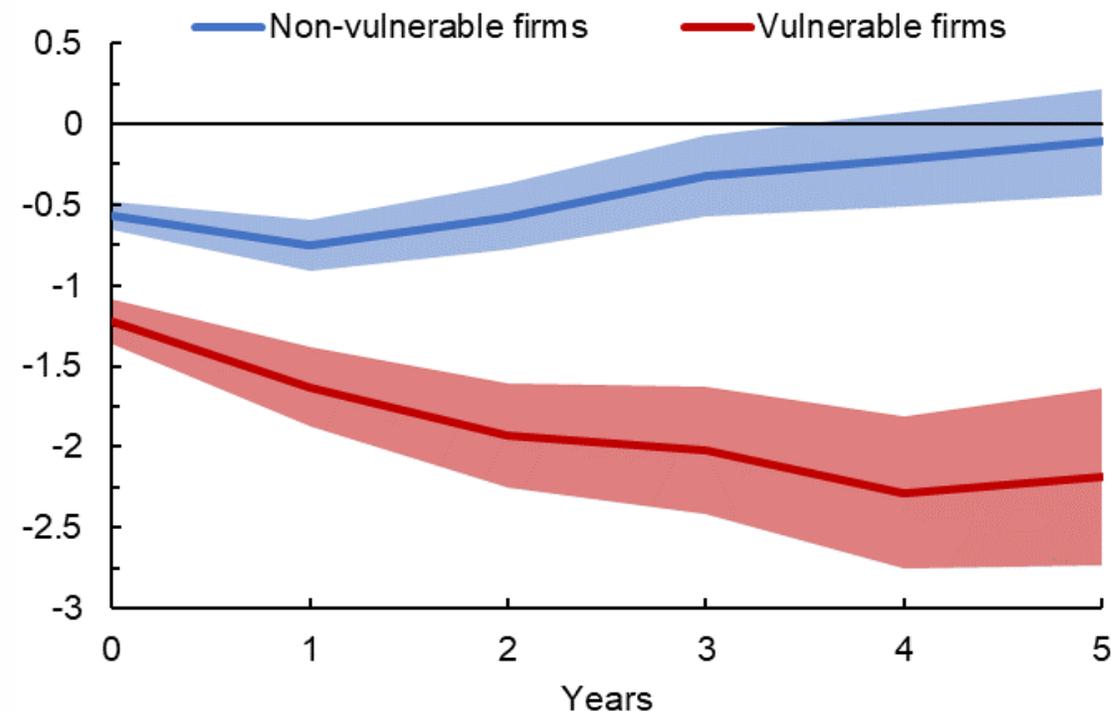
Excess Household Credit to Gross Domestic Product
(Cumulative investment loss)



Sources: Bureau van Dijk Orbis; and IMF staff calculations.
Note: Cumulative effect of a 1 standard deviation increase in leverage on capital stock. Vulnerable firms are defined as: top tercile of leverage, bottom tercile of the ROA and ICR < 1. ICR = interest coverage ratio.

Advanced Economies

Excess Household Credit to Gross Domestic Product
(Cumulative investment loss)



Sources: Bureau van Dijk Orbis; and IMF staff calculations.
Note: Cumulative effect of a 1 standard deviation increase in leverage on capital stock. Vulnerable firms are defined as: top tercile of leverage, bottom tercile of the ROA and ICR < 1. ICR = interest coverage ratio.

Inequality and Public Debt Sustainability

