Lending standards and output growth

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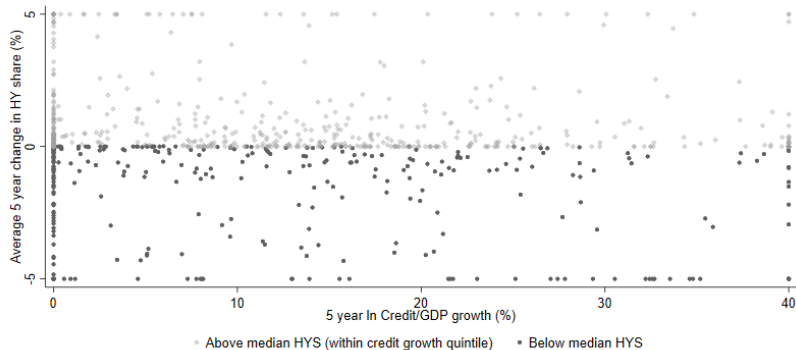Link to paper

What drives macro-financial vulnerabilities?

- Minsky-Kindleberger narrative: lending standards repeatedly erode in good times, subsequently unexpectedly tighten
- Bernanke-Gertler, Kiyotaki-Moore: leverage amplifies shocks
- How do these views connect?

Combination of worsening standards and leverage is key

- This paper: construct high-yield (HY) share as cross-country measure of standards
- Combination of eroding lending standards and leverage is followed by poor subsequent macroeconomic outcomes
- Minsky-Kindleberger dynamics interact with leverage
  - Poor subsequent macro performance when standards worsen with rising leverage is unexpected
  - Systematic forecast errors are hard to square with full rationality

Coverage across continents and decades

Sample includes 38 countries, with coverage for some starting in early 1980s

Countries in sample by decade coverage begins

1980s-
1990s-
2000s-
Not Covered

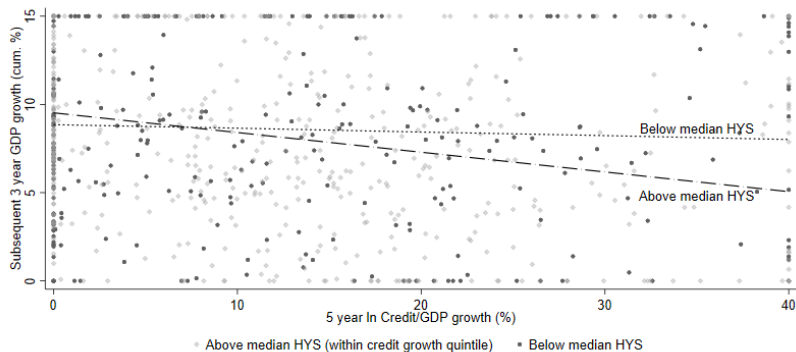# Room for combination of HY share and leverage to matter

Change in HY share and Credit/GDP growth

Notes: Vertical axis shows average change in HY share per year.

Interaction between HY share and leverage seems relevant

Subsequent cumulative 3 year GDP growth, Credit/GDP growth and HY share

Empirical approach

Do eroding standards matter more when leverage has risen?

- Regression structure (real GDP: $y_{i,t}$)

$$\Delta \ln y_{it+h,t} = \alpha_i + \beta \, \Delta \ln Credit/GDP_{it,t-5} + \gamma \, \Delta \overline{HY}_{it,t-5}$$
$$+ \delta \, \Delta \ln Credit/GDP_{it,t-5} \times \Delta \overline{HY}_{it,t-5} + \epsilon_{i,t+h}$$

  - Control for two lags of real GDP growth
  - Pooled-time series with country fixed effects (Driscoll-Kraay SEs)
  - Winsorize HY share, credit growth within country
- Interaction with squared credit growth to capture non-linearities

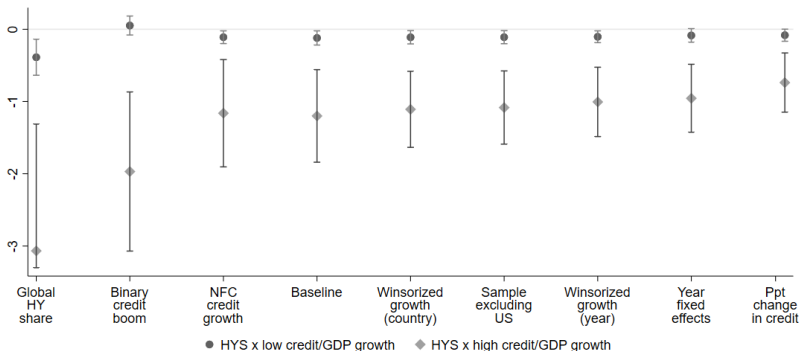# Combination of worsening standards and leverage is key

Subsequent cumulative 3 year GDP growth (ppt)
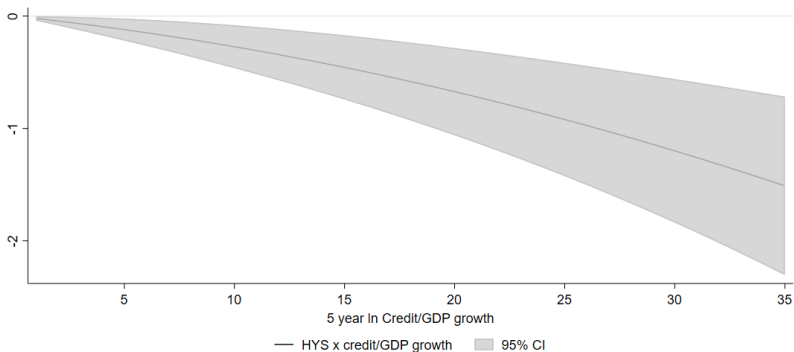
Notes: Figure shows magnitude of linear and quadratic interaction terms for 1 s.d. move in HYS.

Results are robust across specifications

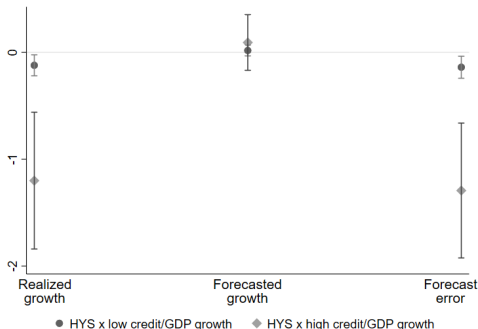## Subsequent cumulative 3 year GDP growth (ppt)

Notes: Figure shows magnitude of linear and quadratic interaction terms for 1 s.d. move in HYS across specifications. Low credit/GDP growth is 5 year ln credit/GDP growth of 5 percent; high credit/GDP growth is 5 year ln credit/GDP growth of 30 percent (threshold for binary credit boom is based on 75th percentile of backward looking global distribution).

Macro interaction between expectations and leverage

Systematic forecast errors are hard to square with full rationality

Expected and unexpected subsequent cumulative 3 year real GDP growth (ppt)

Notes: Figure shows magnitude of linear and quadratic interaction terms for 1 s.d. move in HYS. Low credit/GDP growth is 5 year ln credit/GDP growth of 5 percent; high credit/GDP growth is 5 year ln credit/GDP growth of 30 percent. Regressions use historical medium-term growth forecasts from the IMF.

Minsky-Kindleberger dynamics interact with leverage

- Eroding credit standards bring risk of reversal in risk appetite, costly when combined with economy-wide leverage
- Combination of lending standards and leverage tied to systematic forecast errors: hard to square with full rationality
- Implications for policy
  - Eroding standards may help separate good credit booms from bad booms in real time
  - Behavioral dynamics relevant at macro level when combined with aggregate leverage