

NONBANK FINANCIAL INTERMEDIATION AND CAPITAL FLOWS

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THE CONTEXT

- Footprint of **nonbank financial intermediaries** (NBFIs) in the global financial system has increased enormously since the GFC.
([Aramonte, Schrimpf & Shin \[2022\]](#))
- Part of a longer-term structural trend:
 - ▶ Demographic changes
 - ▶ Increased importance of capital markets in providing for retirement
 - ▶ Technological changes
 - ▶ Pursuit of operational efficiencies
- But also due to post-GFC reforms that significantly constrained activities of banks and their affiliated broker-dealers.

PROS AND CONS OF NBFIs

- Pros:
 - ▶ Greater diversity of external financing sources
 - ▶ Provide financing to markets/sectors/borrowers not covered by banks
 - ▶ Can make the overall financial system more resilient to default risk
- Cons:
 - ▶ **Liquidity mismatch:** prime money market and open-ended funds promise **on-demand** convertibility of illiquid investment into cash
(Eren, Schrimpf & Sushko [2020]; Claessens & Lewrick [2021])
 - ▶ **Hidden leverage:** heavy reliance of hedge funds on repo financing; high leverage in the DeFi ecosystem and opaque private markets
(Aramonte, Huang & Schrimpf [2021]; Aramonte & Avalos [2021])
- Implications: NBFIs are **procyclical** as a sector
 - ▶ Vulnerable to fluctuations in leverage and liquidity runs that have system-wide consequences

THIS PAPER

- Traditional analysis of determinants of capital flows focuses on the role of “pull” (i.e., local) and “push” (i.e., global) factors.
- How does variation in foreign bond holdings by NBFIs influence the response of (gross) capital inflows to “push” and “pull” factors?
 - ▶ How does structure of financial markets affect cross-border flows – the role of “pipe” factors ([Carney \[2019\]](#))
- Empirical approach:
 - ▶ Standard country-level panel-data analysis (i.e., moderate N and long T) of “pull” and “push” factors
 - ▶ Effect of the factors on capital inflows is allowed to depend on the foreign bond holdings of NBFIs

KEY TAKEAWAYS

- “Pipe” factors appear to influence capital inflows and interact with the standard determinants of flows:
 - ▶ High foreign bond holdings of NBFIs tend to amplify the impact of changes in global risk aversion (i.e., VIX) on capital inflows
 - ▶ Interaction of foreign bond holdings of NBFIs with “local” factors (i.e., economic growth) seems much weaker
- The interactions vary significantly across periods and the type of flows (i.e., government, corporate, bank).
- Overall, it’s hard to ascertain what is the main message of the paper. Why?

ECONOMETRIC METHODOLOGY

- Baseline specification:

$$\begin{aligned} \left[\frac{\text{Inflows}}{\text{nGDP}} \right]_{i,t} &= \beta_1 \text{VIX}_{t-1} + \beta_2 (\text{VIX}_{t-1} \times \text{NBFI}_{i,t-1}) \\ &\quad + \gamma_1 \Delta \ln \text{rGDP}_{i,t-1} + \gamma_2 (\Delta \ln \text{rGDP}_{i,t-1} \times \text{NBFI}_{i,t-1}) \\ &\quad + \eta_i + \epsilon_{i,t} \end{aligned}$$

- ▶ $\text{NBFI}_{i,t}$ = foreign nonbank investors' share of holdings of sovereign debt of country i in quarter t
 - Or a 0/1-indicator variable indicating a share above a certain percentile
- ▶ AR(1) error process: $\epsilon_{i,t} = \rho_i \epsilon_{i,t-1} + \nu_{it}$
- Estimated by FGLS using the Prais-Winsten transformation.

ECONOMETRIC ISSUES

- Mis-specified dynamics:
 - ▶ With quarterly data, AR(1) error term is unlikely to capture the dynamics of capital flows
 - ▶ **Suggestion:** include sufficient number of lags of the **dependent** variable to soak up the dynamics and use OLS
- Statistical inference (moderate N and large T):
 - ▶ Heteroscedasticity: $E[\epsilon_{i,t}^2] = \sigma_i^2$, for $i = 1, 2, \dots, N$
 - ▶ Serial correlation: $E[\epsilon_{i,t}\epsilon_{i,t-s}] = \theta_s^2$, for $s \neq t$
 - ▶ Cross-sectional dependence: $E[\epsilon_{i,t}\epsilon_{j,t}] = \omega_t^2$, for $i \neq j$
 - ▶ **Suggestion:** Compute Driscoll-Kraay [1998] standard errors
- Problematic to consider:
 - ▶ Subsample periods with \Rightarrow “small” T (Nickell bias)
 - ▶ Subsample of Latin American countries \Rightarrow “small” N

OTHER ISSUES

- Potentially omitted “pull/local” factors:
 - ▶ Exchange rates and exchange rate volatility
 - ▶ Exchange rate regimes (Ilzetski, Reinhart & Rogoff [2019,2021])
 - ▶ Stock returns and equity market volatility
- Alternative “push/global” risk factors:
 - ▶ Excess bond premium (Gilchrist, Wei, Yue & Zakrajšek [2022])
 - ▶ Global financial cycle (Miranda-Agrippino & Rey [2020])
 - ▶ US dollar (Avdjiev, Bruno, Casanova & Shin [2019])
- What are *year* fixed effects?
- Structure of the paper:
 - ▶ Need a better way of presenting the results!
 - ▶ Are the interaction effects economically significant?
 - ▶ Focus the analysis – one paper, one question!