

# Discussion of “Financial Intermediaries and the Macroeconomy: Evidence from a High-Frequency Identification”

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# Summary

- This paper studies how surprises on financial intermediary's network affect non-financial firms at high frequency, similar to the monetary policy literature.
- Main findings:
  - ▶ Intermediary network shocks significantly affect firms, reducing firm value and increasing credit risk premium.
  - ▶ Channel: Bank network shock is the dominant effect, rather than Information about firms.
- Key advantages over the literature:
  - ▶ Better identification at high frequency: less concern on correlated macro news.
  - ▶ Informative on aggregate effects, rather than only the cross section.
- An elegant, important, and informative exercise! Useful for any macroeconomic model with financial frictions.

# Key findings: Intermediary Network Shocks and Firm Valuation

- Data description:
  - ▶ Tick-level stock price on 18 financial intermediaries in S&P 500 index.
  - ▶ Earnings announcement: in total 870 covering the period 1998 to 2014.
  - ▶ Announcement surprise: stock return  $\pm$  20 minutes.
  - ▶ Volatility of intermediary stock prices increase much more than non-financial firms during announcement events.
- Key finding: 1% decrease in total intermediary equity reduces 0.2%~0.4% of total nonfinancial firm value in S&P 500.
  - ▶ Robustness: at daily frequency; impact on smaller firms; using GIV instrument.
  - ▶ Placebo test: no impact on firm value before the shock; non-financial equity shocks do not transmit.

# Comment 1: State-Dependence Informed by Theory

Two types of theories on financial intermediaries:

- Leverage-constrained: total asset  $\leq \phi_t \cdot$  equity. See Gertler and Kiyotaki (2010), Adrian, Etula, and Muir (2014), etc.
  - ▶ Higher leverage  $\phi_t$ : equity shocks have larger impact on asset holding and thus risk premium.
- Pre-cautionary risk taking: asset holding  $\sim$  Sharpe ratio  $\cdot$  equity. See He and Krishnamurthy (2013), Brunnermier and Sannikov (2014).
  - ▶ In general, Sharpe ratio is higher when banks take a higher leverage.
  - ▶ Again, higher leverage implies larger impact of equity shocks.
- The paper currently examines an indicator of “undercapitalized”, but leverage is likely more informative.

## Comment 2: Causality of Intermediary Shocks

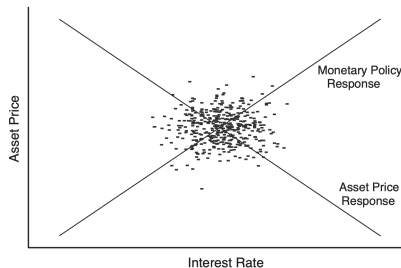
- Distinguish: (1) bank shock  $\rightarrow$  firm; (2) shock to firm revealed by banks.
  - ▶ Strategy of this paper: sign restrictions. (1) and (2) have opposite predictions on lending rate.
- The paper considers information about borrower's productivity, and the pricing of newly formed credit via supply and demand.
  - ▶ Bad shocks to firms  $\rightarrow$  less credit demand of new credit  $\rightarrow$  lower borrowing rate
- In the data the measure is on existing credit pricing and the main channel is price of risk.
  - ▶ Bad shocks to firms  $\rightarrow$  higher default risk on existing debt  $\rightarrow$  higher borrowing rate
  - ▶ Sign restriction unlikely to work in this scenario.

## Comment 2: Causality of Intermediary Shocks

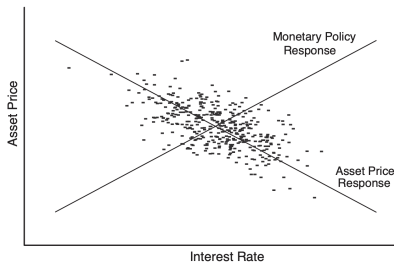
- Model guidance from Krishnamurthy and Li (2020): incorporating time-varying belief into intermediary-based macro models.
- Two types of shocks: productivity shocks (directly affect firms) + financial shocks (directly affect banks). Financial shocks will trigger belief updating.
- Differentiating the two shocks:
  - ▶ Both will reduce bank capital, reduce firm value, and increase risk premium.
  - ▶ However, financial shocks have a bigger impact on risk premium and bank wealth.
  - ▶ A heteroscedasticity-based identification is more useful in this setting.

## Comment 3: Heteroscedasticity-Based Identification

- Idea: financial shocks are prominent in financial-firm earning announcements. Non-financial shocks are equally prominent otherwise.
- Example: asset price and monetary policy (Rigobon and Sack 2004).



(a) General Relationship



(b) On Policy Dates

- Assumption: on event dates, monetary policy shocks dominate. Asset price shocks have similar volatilities across all dates.

## Comment 3: Heteroscedasticity-Based Identification

- In Rigobon and Sack (2004): event dates are FOMC dates, while non-event dates are days immediately before policy dates (to minimize discrepancies).
- This paper defines non-event dates as times which nonfinancial firms in the S&P 500 release earnings.
- This violates the identification assumption that volatility of non-financial firm equity shocks are the same in the whole sample.
  - ▶ Non-financial firm equity shocks are definitely more prominent in non-financial firm earning releases.
- Better to define non-event dates as general periods outside financial firm earning releases, following Rigobon and Sack (2004).



# Summary

- Solid empirical analysis that provides quantification of an important channel!
- Very useful moments for many macrofinance models.
- Main comments:
  - ▶ A closer-to-theory test on nonlinearity of the network channel.
  - ▶ Causality of intermediary shocks better identified via a heteroscedasticity-based approach rather than a sign-restriction.