Non-bank financial intermediaries and financial stability

Andreas Schrimpf
Bank for International Settlements & CEPR
(joint work with Sirio Aramonte and Hyun Shin)

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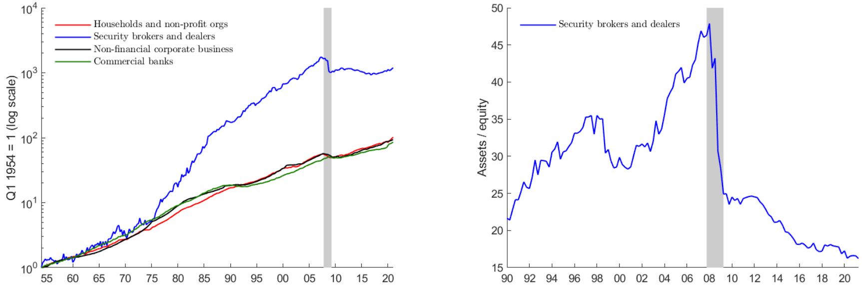
Outline

1. Structural shifts in financial intermediation post-GFC
   - Accelerated rise in non-bank financial intermediation (NBFI)
2. Liquidity risk & systemic risk propagation
   - Stress-propagation through spikes in margins & leverage
3. Policy implications
   - Reducing occurrence of liquidity demand/supply imbalances

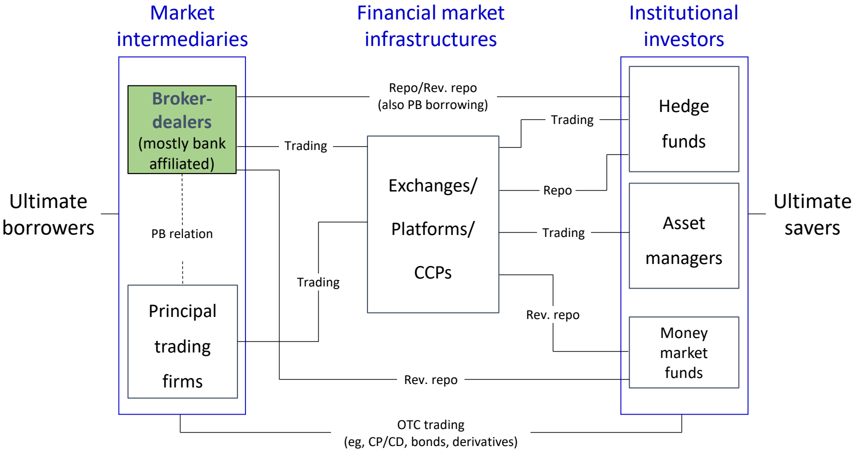
Broker-dealer balance sheets have smaller heft in the financial system post-GFC



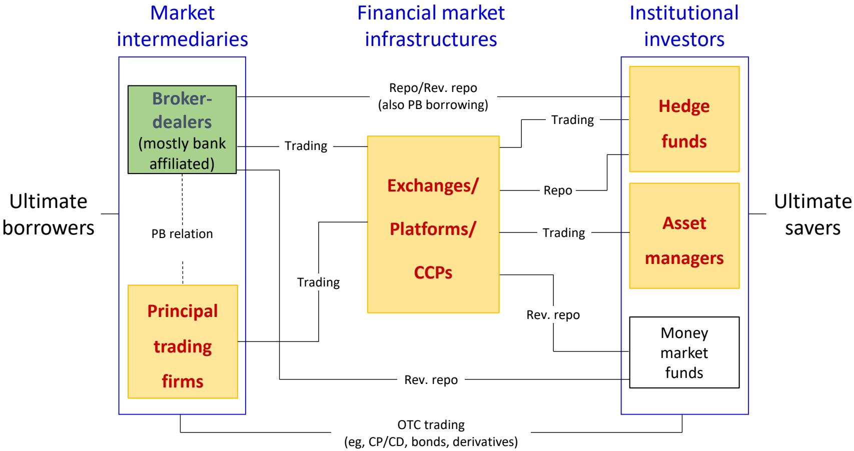
(a) Total assets (b) Leverage

- Does not mean market-based intermediation is in retreat
  ⇒ rather it migrated elsewhere ...

Financial market flows



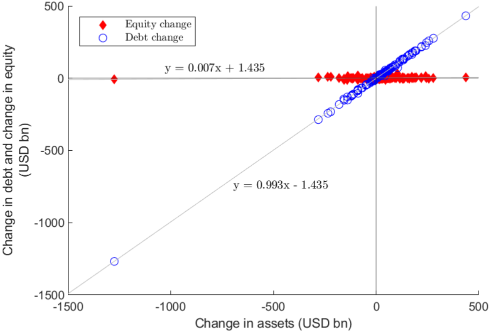
Financial market flows



Ecosystem that supports intermediation in fixed income markets has markedly evolved post-GFC

- Traditional intermediaries (typically part of banking groups) have ceded ground to **new players** (hedge funds, PTFs) & **market** infrastructures (CCPs, exchanges, other platforms)
  - **Supply in liquidity** no longer solely the domain of broker-dealers (but involves NBFIs such as PTFs, hedge funds) $\Rightarrow$ more **'opportunistic'** liquidity provision
  - **Spikes of liquidity demand** stemming from NBFI sector due to liquidity mismatches & leverage (eg open-ended bond funds, hedge funds etc)
- Increased scope for liquidity imbalances
- Management of liquidity risk takes greater prominence from a financial stability perspective ...

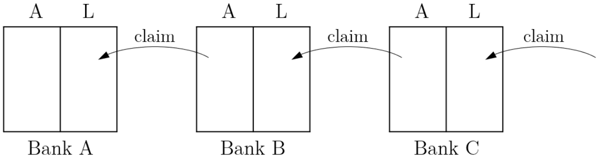
Market intermediaries' provision of liquidity in financial markets typically rests on leverage ...



Notes: Adopted from Adrian / Shin (2014): "Procyclical leverage and value-at-risk".

- US broker-dealer sector: change in assets matched dollar for dollar by change in debt, not equity.
- Compression in margins allows for greater leverage and risk intermediation through b/s expansion...

“Domino model” of cascading defaults gives an incomplete picture of systemic risk



- Bank A has borrowed from Bank B, while Bank B has borrowed from Bank C, etc
  - A shock to Bank A’s assets that leads to its default will also hit Bank B and cascade through the system ...
- But in ‘new normal’ where NBFI dominates, defaults need not figure in the propagation mechanism ...

Accounting framework for "debt capacity"

- Margins limit the use of debt financing
  - Fluctuations in margin entail fluctuations in debt capacity
- Market participant chooses portfolio $y = (y_1, \cdots, y_N)$ s.t.:

$$m(y_1) + \cdots + m(y_N) \leq \kappa$$

where $m(y_i)$ is the margin on asset i and κ is *economic capital* (bounded by equity e)

- Economic capital κ entails risk budgeting decision
  - Akin to a consumer choice problem over goods with expenditures $m(y_i)$ and budget κ

Proposition 1

- Debt capacity of an investor is recursively defined
- Debt capacity is increasing in the debt capacity of others; or "leverage enables greater leverage"
  - Conversely, diminished debt capacity spills over to others and can propagate stress, with or without default

Implications:

- Deleveraging due to spike in margins ...

  ... reduces debt capacity in the system ...

  ... hampers intermediaries' ability to support market liquidity ...

  ... can turn liquidity suppliers in normal times to consumers ...

  ... spills over to other participants, potentially feeding a spiral

Proposition 2

- When margins go up, investors' portfolios shift from high margin assets to low margin assets
- Deleveraging and "dash for cash"
  $\Rightarrow$ Two sides of the same coin, rather than two distinct channels of systemic risk propagation...

Implications of structural changes for liquidity

1. Risk increasingly warehoused outside the banking system
   - Expect greater vehemence of **liquidity demand spikes**
   - Liquidity provision more opportunistic and **fragile**

2. Post-GFC reforms and structural changes: credit crises less likely, but **liquidity crises more likely**
   - NBFIs (asset managers, hedge funds, PTFs, CCPs) closer to the epicentre
   - Bolstering bank resilience so that they can be a solution in such periods of distress rather than a cause (as in the GFC) ...

Mitigating liquidity demand/supply imbalances

1. Ex-ante policies to reduce incidence of liquidity demand spikes originating from NBFIs (due to liq mismatches and leverage)
   - Promote adequate levels of **self-insurance**
2. Address excess **pro-cyclicality** in margins that affects system-wide debt capacity and liquidity
3. Need for **flexible** nodes
   - Well-capitalized banks
   - **Usable buffers**
   - Well-functioning market infrastructures

– Appendix –

Overview of main NBFIs and related financial stability risks

Broad categories	Intermediaries	Key characteristics from a financial-stability perspective	Main systemic risks
Institutional investors and asset managers	Insurance companies	Premia collected from insured parties are invested in various assets, often long-lived and illiquid	Some leverage, some liquidity transformation
	Pension funds	Contributions by participants are invested in a mix of public-market and private-market assets	Some credit-risk transformation
	Sovereign wealth funds	Vehicles managed by state-affiliated entities, often focused on long-term illiquid assets	Possibly leverage
	Hedge funds*	Investors' capital is augmented with leverage and deployed through strategies that may involve arbitrage	Leverage, some liquidity transformation (limited by redemption notices)
	Exchange-traded funds*	Shares trade in secondary markets and are generally redeemed in-kind only by selected intermediaries	Some liquidity transformation (limited by the redemption mechanism)
	Mutual funds*†	Shares can be redeemed daily even if underlying assets are illiquid (if open-ended, incl. money-market funds)	Liquidity transformation (if open ended), possibly leverage
	Securitisations†	They invest in various assets, possibly risky, and issue notes with different seniority, including AAA-rated	Credit-risk transformation
Market intermediaries	Broker-dealers*	They use relationships or own inventory to facilitate client trades. They often enable leverage for their clients	Leverage, liquidity transformation
	Principal trading firms*	High-frequency buyers and sellers in electronic markets, holding minimal end-of-day inventories	Pro-cyclicality in liquidity provision, intra-day leverage
Financial market infrastructures	Exchanges & electronic trading platforms*	Marketplaces for trading securities and/or financial contracts like derivatives	Technical disruptions (eg, due to operational or cyber risks) could affect broader financial markets
	Central counterparties*	They act as counterparties to holders of certain financial contracts, netting and managing counterparty risk	Pro-cyclicality in market-wide leverage due to changes in initial margins, technical disruptions

(*) asterisks indicate intermediaries that can affect imbalances in the demand and supply of financial market liquidity more directly, and that we focus on in this paper
(†) entities engaged in elevated liquidity or credit-risk tranformation, such as most money-market funds or certain securitisations, are often considered shadow banks (eg, Adrian (2017))

Central banks' "dealer of last resort" role in tail events

- Need to have **operational toolkit** in place to address root of the problem in markets
- But ex-post intervention not a panacea
  - Difficult to calibrate & align with desired m.p. stance
  - Comes with side-effects that could harm market functioning
- Issue with expansion of backstop arrangements:
  - Affects ex-ante system-wide leverage and risk-taking
  - Needs to be flanked with regulation $\Rightarrow$ **"quid pro quo"**