Financial Intermediation and Financial Market Resilience

Central Counterparty Default Waterfalls and Systemic Losses - Paddrik
Financial Networks over the Business Cycle - Kopytov
Credit Default Swaps and Corporate Bond Trading - Czech

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Overview

- Financial intermediation links lenders; e.g., households, with borrowers; e.g., firms, through financial intermediaries; e.g. in the corporate bond market
- It also links buyers and sellers; e.g., in the CDS market
- Intermediaries hold risky inventory to satisfy future demand or due to temporary imbalances
- Intermediaries also hold capital to withstand losses to their positions
- Intermediaries share risk by trading with each other (diversification), or by attracting complementary investments (hedging)
- Intermediaries may end up defaulting under a big enough shock
- Simultaneous default of many intermediaries can be detrimental – it could disrupt financing of risky (but profitable) projects
- Avoiding default through credit restrictions before default also has costs – it restricts financing
- Activities-based regulation – what can we learn?

Three papers

- Financial Networks over the Business Cycle - Kopytov
  - Theoretical model that studies the behavior of intermediaries over the business cycle
- Credit Default Swaps and Corporate Bond Trading – Czech
  - Empirical model that shows spillovers between CDS and corporate bond markets through intermediaries that hold both assets
- Central Counterparty Default Waterfalls and Systemic Losses – Paddrik
  - Empirical model that considers the tradeoffs between resilience and distribution of losses across market participants for a very specific intermediary – a Central Counterparty (CCP)

Financial Networks over the Business Cycle

- Theoretical model that studies the behavior of intermediaries over the business cycle
- Shows that intermediaries hold progressively similar portfolios as productivity declines
- Forms a network based on similar holdings (as well as cross-holdings)
- One shock, to a relatively narrow sector, that would normally bring down a small number of intermediaries (one in the model) now brings down the entire system (due to similarity in holdings)
- Analogs with the 2008 financial crisis: increasing dependence in holdings (for example through MBS holdings); also analogs with earlier crises (LTCM 1998 – leverage cycles and similarity in holdings)

Financial Networks over the Business Cycle, cont.

- Calibration: 1.7 systemic crises per 100 years
- Welfare analysis: taxation of savings during a downturn -> fewer assets available to finance risky projects -> less overall risk in the system
- Discussion on financial innovation: innovation reduces intermediation costs, leading to increased risk-sharing and more similar portfolios
- Question: endogeneity of financial innovation? More common during periods of lower productivity?
- Framework to study policy:
  - Skin-in-the-game to guarantee limited diversification (activities based)? vs. tax on savings?
  - Increased, state-dependent, collateral requirements?
- Activities-based regulation
  - Develop measures of diversification across portfolios of financial intermediaries
  - Capturing increased similarities in portfolios – stress tests

CDS and Corporate Bond Trading

- CDS trading: an alternative to corporate bond exposure
- Capital structure arbitrage: links trading in bonds, CDS, and equity
- CDS are more liquid than bonds – differences in margin treatments
- CDS market is dominated by a handful of dealers; all market participants are large (hedge funds, insurance companies, banks, pension funds, large firms)
- CDS market became transparent – to regulators – after 2008 (2010) – DTCC datasets
- Corporate bonds trade less frequently, market has many more financial intermediaries and investors
- Examples of activities-based regulation:
  - mandate to centrally clear standardized swaps (CDS indices but not single name CDS)
  - Differential collateral/margin requirements for centrally cleared CDS vs. bilateral CDS

CDS and Corporate Bond Trading, cont.

Results:

- CDS trading is positively correlated with the volume of trading for underlying corporate bonds
- Increasing the cost of trading in CDS is accompanied with decreased positions in CDS and smaller inventories of corporate bonds
- CDS can smooth trading and liquidity around rating downgrades from investment grade to non-investment grade
- Bond liquidity and volume of CDS trading are positively correlated
- Losses in the CDS portfolio are positively correlated with sales in the corporate bond portfolio: liquid bonds are sold before illiquid bonds
- Losses in the CDS portfolio lead to decreased returns on specific bonds held by firms experiencing the losses relative to other bonds by the same issuer.

CDS and Corporate Bond Trading, cont.

My interpretation:

Results are consistent with the CDS and corporate bond markets being used for the same purpose:

- Firms seek a certain risk profile
- The use all instruments available to achieve this risk profile
- This involves both CDS and corporate bonds
- Increasing the cost of trading (or holding inventory) in either CDS or corporate bonds leads to rebalancing of portfolios as well as to smaller portfolios
- Losses have similar rebalancing effects
- Interesting result on “fire sales” – reversible loss of about 1% over 3 months
- There are probably other spillovers as well – increased sales in other instruments (treasuries, equities)

CDS and Corporate Bond Trading, cont.

Comments

- Paper does not consider welfare analysis: liquidity is one possible goal – reduction of overall risk is another. It is unclear whether increasing trading costs is overall costly or beneficial
- Somewhat technical comments:
  - fraction of uncleared CDS – endogenous?
  - Regression (6): use CDS spread instead of bond rating? Age and time-to-maturity collinear?
- Activities based regulation takeaway: related markets should be monitored/regulated jointly

CCP Default Waterfalls and Systemic Losses

- Shifting financial market participants towards centrally clearing bilateral contracts has been among the biggest changes since the financial crisis
- CCP risk management influences both the resilience of CCPs and the structure of markets
- Paper considers allocations of resources across waterfall layers, used by CCPs across the world – shows significant variation
- Evaluates the different waterfall designs based on losses to clearing members
- Uses real data and the existing CDS network structure
- Carries out the CCAR scenario and evaluates the potential propagation of losses across clearing members, clients, and the CCP
- Shows that for the CDS market, the existing waterfall allocation for the US CCP minimizes losses to clearing members

CCP Default Waterfalls and Systemic Losses, cont.

My comments

- Stress testing across market participants, similar to what is done in this paper is an important way to measure resilience, both of the CCP, and the system
- Minor quibbles:
  - Network would likely change for different waterfall designs
  - CCAR scenario is an annual scenario – unclear how extreme or plausible it is at a daily level
  - When CCPs compete, the allocation of resources across waterfall layers may determine the market share of each CCP.
  - Differences of waterfall design across CCPs may be justified if they clear different products or have different business models; e.g., mostly clearing transactions between members vs. mostly clearing transactions between members and clients
- But overall this paper provides a useful framework to study the adequacy and incentives associated with different waterfall designs
- Activity-based regulation: Allocation of resources across CCP waterfall layers is a direct example of activity-based regulation – margins, guarantee fund size, skin-in-the-game, assessments and end-of-waterfall rules determine the structure of markets where transactions are mandated to be cleared

Putting everything together

- Importance of financial intermediaries – they facilitate trade, funding, and risk-sharing
- Activity-based regulation vs. entity-based regulation:
  - Monitoring and regulating individual entities risks missing out on market-wide risks, for example due to similar exposures (and dependence in losses), or to a network of liabilities across firms
  - Activity-based regulation is also complicated – it requires an overview of entire markets, understanding similarities in exposures across firms, and understanding interactions between markets
- The papers in this session are a step towards understanding and measuring financial market resilience and the tradeoffs involved – they can be used to evaluate the costs and benefits of potential activity-based regulations