Financial Market Structure and the Supply of Safe Assets: An Analysis of the Leveraged Loan Market

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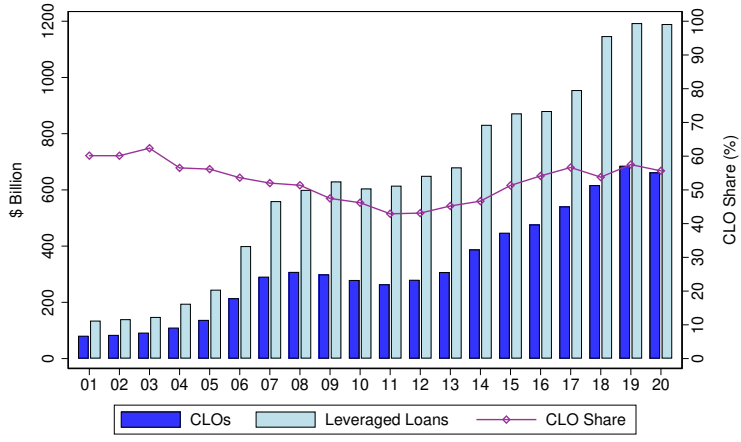
EEA-ESEM

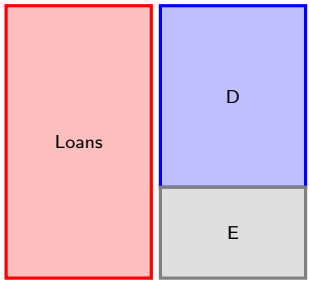
Leveraged Loans and CLOs



- Leveraged loans: speculative-grade corporate loans
- Collateralized loan obligations (CLOs)
  - Create AAA securities backed by dynamic portfolios of leveraged loans
  - Coexist and trade loans with mutual funds and hedge funds

Dynamic Portfolio and Safe Debt Capacity

- Static portfolio: size of safe tranche limited by the quality of risky collateral
  - Loans may deteriorate in bad times (e.g., the Financial Crisis)



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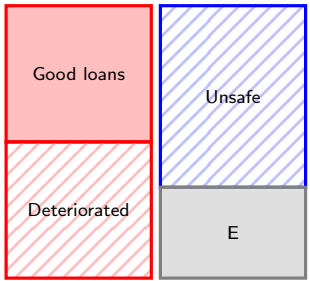

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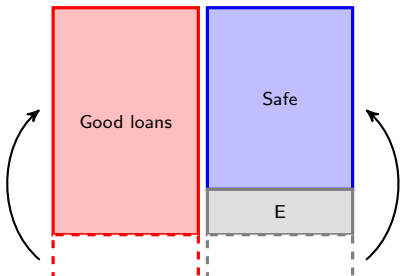

- ◇ Senior tranche is not safe if it is too big
- ◇ Improvement: replace bad loans with good loans
  - ⋆ Portfolio's cash flow uncertainty ↓
- ◇ Ex ante: commitment ⇒ a bigger safe tranche
- ◇ Equity holders enjoy a lower cost of capital

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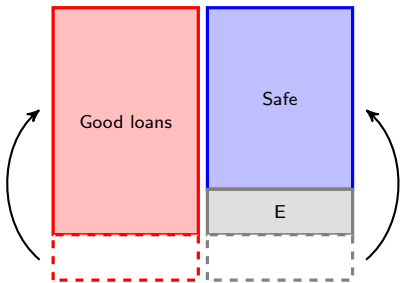

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- In practice, CLOs
  - Have covenants that allow managers to commit
  - Coexist and trade with non-securitized funds, e.g., mutual funds and hedge funds
- Size of AAA tranche depends on secondary market prices

Research Questions

1. **Supply of safe assets?**
   - ◇ Market structure and safe asset production
   - ◇ Supply at the individual level and in aggregate
2. **Is the equilibrium socially efficient?**
   - ◇ Quantities of risky loans and safe assets
   - ◇ Who create safe assets, and who trade as counterparties?
3. **Effects of a controversial regulation?**
   - ◇ Shed light on Credit Risk Retention Rule (2014–2018)

Model

Equilibrium Characterization

Welfare

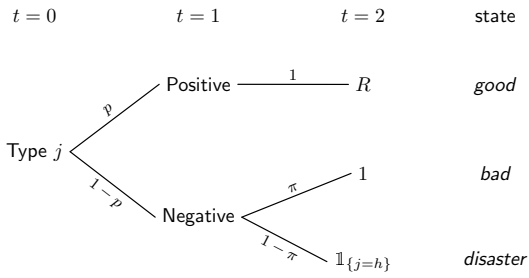
Policy Intervention

Investors and Intermediaries

- $t \in \{0, 1, 2\}$, state $\omega \in \Omega = \{$*good, bad, disaster*$\}$ at $t = 2$
- Investor utility: $U = C_0 + \mathbb{E}_0[C_1 + C_2] + \gamma A$
  - A : safe assets, which pay at $t = 2$ with certainly
  - γ: non-pecuniary benefit from holding safe assets
  - Endowed with perishable goods at $t = 0$, cannot lend to firms
- A continuum of risk-neutral asset managers: $\mathcal{I} = [0, 1]$
  - Each operates an intermediary
    - Flexible capital structure: can issue any equity and debt securities
  - Ex-ante identical except for safe debt issuance cost ξ_i
- Investors take securities prices as given

Investment Technology

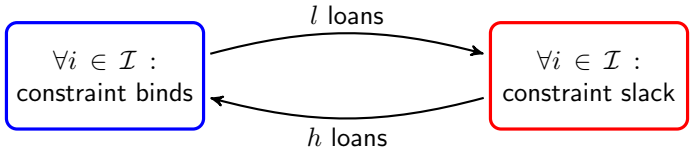
- Intermediary i originates x_i risky loans at a convex cost $c(x_i)$ at $t = 0$
- Two loan quality types $j \in \{h, l\}$



- Loan quality: $\tilde{x}_{i,l}$ become type l, iid drawn from $[0, \bar{x}_l]$
  - Key concern: which loans deteriorate is unknown at $t = 0$
- Manager can credibly promise $a_i \leq \min$ {portfolio payoff} by trading at $t = 1$
  - Endogenous prices q_l, q_h affect collateral constraints

Secondary Market Trades at $t = 1$

- Negative news: binding constraints trigger trades to increase $\min$ {payoff}



Lemma 1

$\frac{q_l}{q_h} <$ *ratio of fundamentals.*

- Trades generate price pressure on $\frac{q_l}{q_h}$
- Pecuniary externality: issuing safe debt
  - Makes selling l and buying h **costly**, and the opposite **profitable**
  - Tightens others' collateral constraints: safe debt capacity decreases

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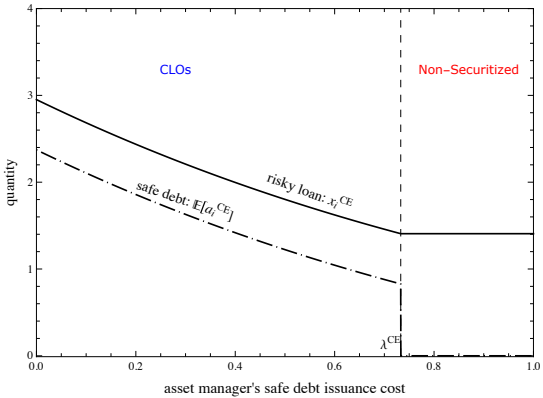
Market Structure in Equilibrium

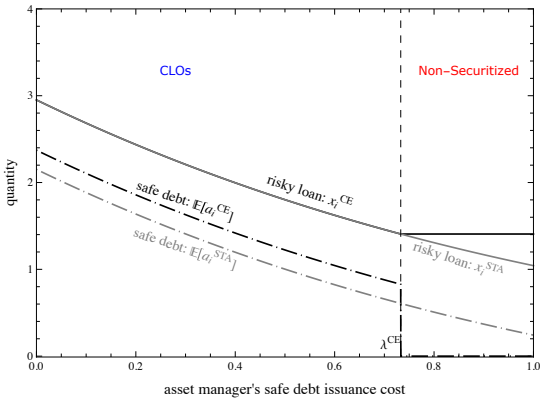
Proposition 1 (Competitive Equilibrium)

There is a unique equilibrium with cutoff $\lambda^{CE} \in (0,1)$ such that: $i < \lambda^{CE}$ issues maximal safe debt, and $i > \lambda^{CE}$ issues only equity.



Corollary 1.1 (Supply of Safe Assets)

The market structure produces a greater supply of safe assets than static securitization: $A^{CE} > A^{STA}$.



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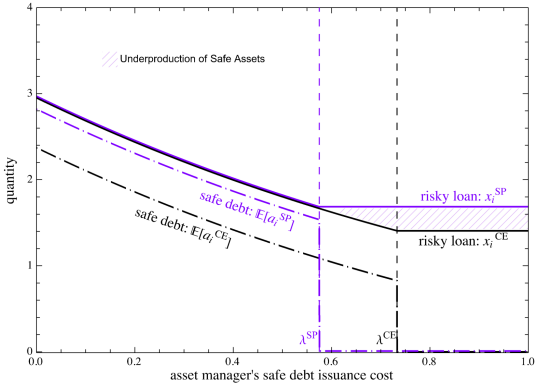
Compare with Social Planner's Allocation

Proposition 2 (Constrained Inefficiency)

There market has excessive entry into operating CLOs ($\lambda^{CE} > \lambda^{SP}$), underinvestment by non-securitized lenders, and an underproduction of safe assets ($A^{CE} < A^{SP}$).



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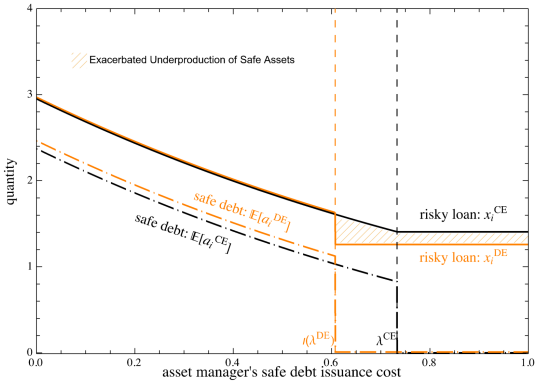
A Controversial Regulation

- Credit Risk Retention Rule (2014)
  - Requires asset managers to contribute 5% of capital to the CLOs they operate
- Resistance from asset managers
  - Main complaint: imposes a large cost on CLO managers
- Practitioners won a lawsuit against the Fed and SEC
  - And they won in 2018: CLO managers got exempted from the rule
  - Still under debate over whether the policy should be re-imposed in the US market

Unintended Consequence of Policy Intervention

Proposition 3 (Equilibrium under an Entry Cost Policy)

Imposing an entry cost on issuing safe debt **exacerbates** *the underproduction of safe assets.*



Takeaways

- Dynamic collateral management increases intermediary safe debt capacity
- Market structure: two groups of intermediaries coexist
  - Safe debt financed ("CLOs") and equity financed ("mutual funds")
  - Can increase the supply of safe assets
- However, the market suffers from an inefficiency
  - Pecuniary externality: nobody internalizes influence on loan prices
  - Simple policy intervention can make things even worse
- Policymakers should carefully consider equilibrium effects