A Securitization-based Model of Shadow Banking with Surplus Extraction and Credit Risk Transfer

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1. CONTRIBUTION TO THE DEBATE

Theoretical: we develop a model, based on the framework of Gennaioli et al. (2013), that captures aspects related to:
- securitization and credit risk transfer
- search for yield motive and pro-cyclicality of shadow banking

Supporting evidence: we reconstruct the dynamics of the U.S. market for privately issued ABS during 2000-2016 (analyzing a vast bulk of data mostly from FED Flow of Funds) in order to capture the risk-taking behavior that had broadly characterized the pre-crisis period.

Main results:
- ABS are issued to meet the demand for high-yield and safe-perceived investment opportunities
- securitization allows credit risk transfer
- shadow banking is pro-cyclical

2. MODEL SETUP

- Two dates $t = 0, 1$
- A measure $e$ of risk-neutral intermediaries, acting both as originators and SPVs
- A measure $a$ of investors, consisting of pessimistic ($e$) and optimistic ($1 - a$) types
- Aggregate risk related to future macroeconomic conditions (growth, downturn, recession).
- State contingent idiosyncratic risk related to risky investments.

TIMING

$r = 0$: investment decisions and trade of securities
$r = 1$: the state of the world $\omega$ is revealed, output is produced and distributed to agents

INTERMEDIARIES

- raise funds through riskless debt claims ($D$) promising to repay $r \geq 1$
- use their equity $v_{eq}$ and the resources raised to originate:
  - prime loans $\Phi_1 \leq 1$ yielding a sure return $R$
  - sub-prime loans $\Phi_2$ yielding $1 - (1 - \omega)$

- securitize their whole portfolio of sub-prime loans, in order to diversify the idiosyncratic risk

ASSUMPTION: credit risk is fully diversified when ABS are traded among intermediaries (Gennaioli et al. 2013).

INVESTORS: pessimistic and optimistic types

At $t = 0$: invest their wealth $w$ in riskless debt ($D$) or ABS ($\Phi_1$)
At $t = 1$: receive payoffs (state contingent if $\Phi_2 > 0$)

Type | Expected return on ABS | Reserv. prices
---|---|---
$\alpha$ | $\pi_\alpha e$ | Reserv. prices related to their demand for ABS: the optimistic ones are willing to pay higher prices than the pessimistic ones.
$(1-\alpha)$ | $\pi_\alpha (1-e)$

Their sentiment on future macroeconomic conditions affects the reservation prices related to their demand for ABS: the optimistic ones are willing to pay higher prices than the pessimistic ones.

3. RESULTS

TRADE of ABS

- Feasible between intermediaries and optimistic investors:
  - optimistic investors are attracted to the high-yield opportunity of investing in ABS, and thus offer intermediaries a rent extraction incentive
  - intermediaries are attracted to the high-willingness to pay of optimistic investors and want to extract the highest feasible surplus

The following cases may arise:
1. intermediaries trade ABS among themselves (NO rent extraction)
2. intermediaries trade ABS only with optimistic investors (MAX rent extraction)
3. intermediaries trade ABS among themselves with optimistic investors (NO rent extraction)

EQUILIBRIUM at $t = 0$

Scenario 1

$w + v_{eq} \leq 1$

Only prime loans are financed

No securitization

Intermediaries:
- issue and securitize risky loans
- sell ABS to optimistic investors and transfer idiosyncratic risk
- clear the ABS market if needed

Scenario 2

$w + v_{eq} > 1$

Prime loans are exhausted, and risky loans are financed

PAYOFFS at $t = 1$

GAINS | LOSSES
---|---
Investors:
- return on riskless debt claims (certain)
- optimistic ones: capital gain on ABS if the growth state occurs (state contingent)

Intermediaries:
- proceeds from the sale of ABS (certain)
- capital gain on ABS if the growth state occurs (state contingent)

Related to aggregate risk
- suffered by optimistic investors and intermediaries on their portfolio of ABS if “bad” states occur ($d$ or $r$)

Related to idiosyncratic risk
- suffered by those optimistic investors whose underlying risky loans default, whatever the state of the world

4. CONCLUSIONS

Backtesting the search for yield motive: optimistic investors are eager to invest in the high-yield investment opportunities (ABS) manufactured by the shadow banking system, while intermediaries use ABS to extract the largest possible surplus from investors and offload credit risk.

Back the risk transfer motive: idiosyncratic risk is transferred to optimistic investors who suffer the related losses.

Shadow banking is pro-cyclical: it affects the economy positively in “good” times, while negatively in “bad” times.