

Understanding the Role of Debt in the Financial System

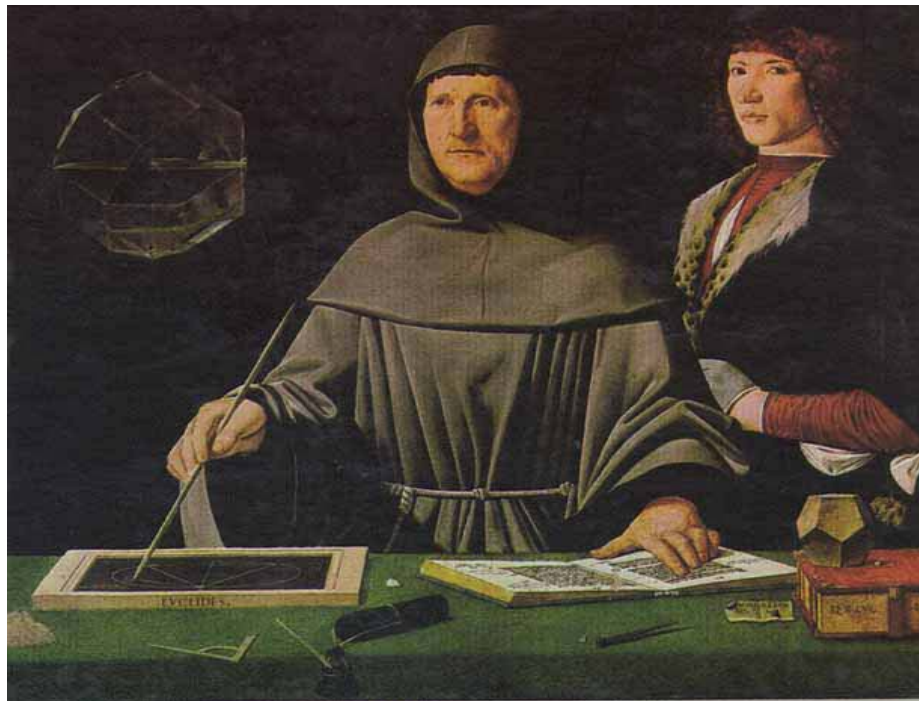
Bengt Holmström

**Comments by
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The Theme: Debt is Special, but Dangerous

Paracelsus: Dosis venenum facit



Holmström: Usus venenum facit

Debt – Equity: Observations

Debt:

opaque
collateralized
funding purpose
bilateral
large average trades
...

Outside equity:

transparent
unsecured
risk-sharing purpose
anonymous
small average trades
...

Key difference: Debt is information insensitive, most of the time.
When it becomes information sensitive, finance becomes fragile.

Debt – Equity: A further difference

Debt:

Funds provided for a limited,
fixed period of time

Consequence:

Equity: requires only a (variable) period return to investors

Debt: requires a (less variable) period return to investors **and**
the repayment of the principal at maturity

Structural difference: period returns are an order of magnitude
smaller than the principal.

Coupon vs. Principal

Reminder:
$$\sum_{t=1}^{\infty} \left(\frac{1}{1+r} \right)^t = \frac{1}{r}$$

Example: With $r = 5\%$, principal = 20 x coupon

Two thought experiments:

Experiment 1: An infinite debt security (consol):
repays a fixed amount of cash each period, no repayment of principal

Experiment 2: A finite equity security:
repays x% of EBIT plus principal after 1 period

Which security creates more fragility?

Fragility of Short-Term Debt: Another look

Basic observation from the Great Financial Crisis:
Collateralized short-term debt as an instrument to fund longer-term investments in the shadow banking sector

- Repo markets
 - MMFs
 - ABS conduits
- precipitous loss of funding in key moments of the crisis.

Wanted: a generalized theory of intermediation that features

- collateralized lending
- fragility due to roll-over risk of short-term debt
- liquid and profitable FIs in normal times
- possibility of precipitous funding loss in crisis times

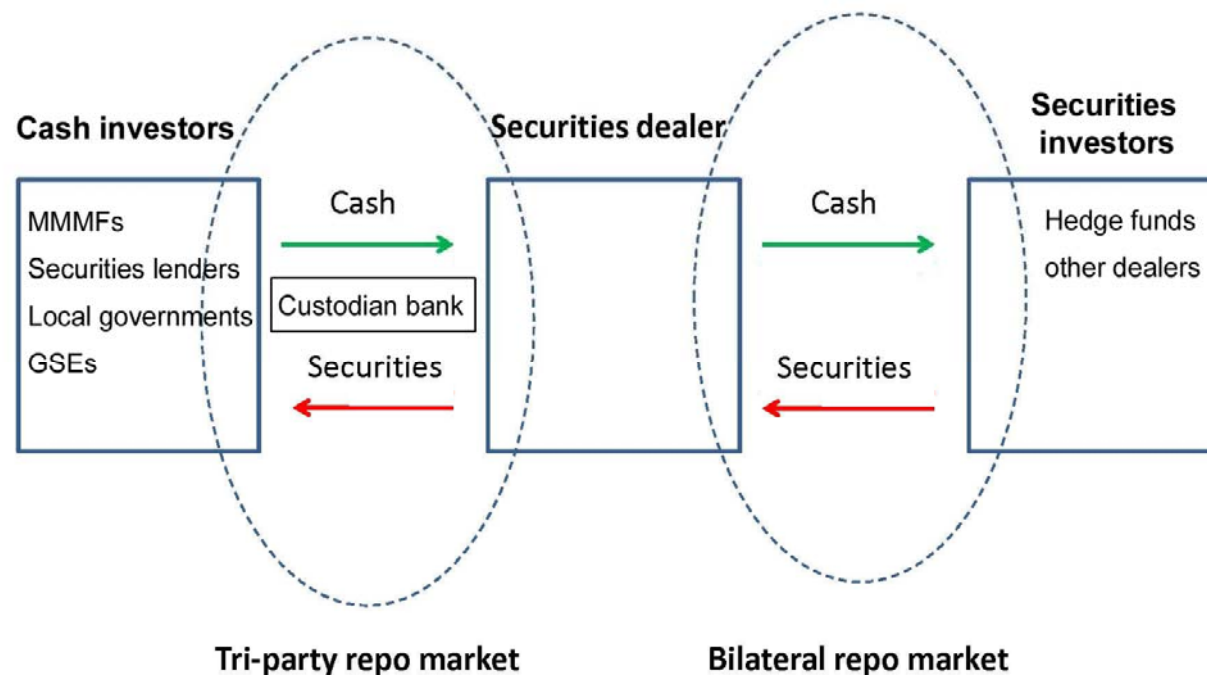
Martin, Skeie, von Thadden: “Repo Runs”
Review of Financial Studies 27 (2014)

Theory of fragility of short-term secured funding markets based on maturity transformation.

- Infinite-horizon market environment
- One good that can be stored, consumed or invested
- 2 classes of agents:
 - “dealers” (broker-dealers, investment banks, ...): long-lived, have heterogeneous long-term investment opportunities, no funds
 - “investors” have funds, no investment opportunities of their own, are subject to liquidity shocks

MSvT: Interpretation

In terms of repo lending, this is a snapshot of the general rehypothecation chain:



Other interpretations in terms of short-term funding are possible

MSvT: Equilibrium

In equilibrium,

- Investors lend short-term to dealers against sufficient collateral
Reason: collateral necessary for repayment incentives because dealer activity non-verifiable
- Dealers invest long-term
- Dealers make positive profits (→ positive equity value)
Reason: If dealer profits were too low, no incentives to borrow and rather invest internal funds → market for loanable funds would not clear
- Dealer profits and borrowing heterogeneous
→ Differential ability to withstand liquidity shocks

Fragility

In equilibrium, maturity mismatch of dealer balance sheets
(→ shadow banking)

Run: The collective decision of investors not to continue lending
and/or not to provide new funds.

Triggered by sunspot or new public information about collateral
quality (which is not equilibrium relevant).

Questions:

1. Under what conditions will a dealer survive a run?
2. When is a run self-enforcing for the investors?

Answers

1. Dealer resilience: A dealer can withstand a run by using his equilibrium liquidity if

- he is sufficiently large or profitable
- his short-term borrowing is sufficiently small

2. When is a collective run individually rational for investors?

This depends on the microstructure of the repo market:

- bilateral repo market
- tri-party repo market with “unwind procedure”
- tri-party repo market without “unwind”

Findings:

- The unwind has destabilized the tri-party market
- The bilateral market is more resilient than the tri-party market

Critique

Question: A model of multiple equilibria, driven by sunspots – what is the predictive content?

- Model makes sharp predictions about who is prone to sunspot runs and why
- Model can differentiate the impact of market microstructure on the determinants of runs
- Model can be used to evaluate contractual and regulatory responses to fragility.
- Model can distinguish between dealer illiquidity and market illiquidity (→MSvT, JET 149, 2014)

The Role of Debt in the Financial System?

This approach, like Holmström, emphasizes that

- debt provides stable funding for beneficial financial activity in “normal times”
- debt can become dangerous if new public information arises and/or macro perceptions change

It does not emphasize the dangers of the slippery 45°-line and of private information acquisition in the build-up of crises, but rather the danger looming in the stock of short-term debt when expectations change and characterizes when such a shift becomes critical

(dosis venenum facit).