Discussion on

A Theory of Liquidity and Regulation of Financial Intermediation

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March 2008

This paper

- Three questions:
  - Can markets provide the correct amount of liquidity?
  - What is the precise nature of market failure if such exists?
  - Can a regulator design a simple policy to improve on competitive outcome?
- Diamond-Dybvig setup:
  - early and late consumers
  - two informational frictions:
    - unobservable types
    - unobservable trades
- Main result:
  - competitive equilibrium is suboptimal
  - simple welfare-enhancing intervention
    - force intermediaries to increase short-term investment
- My view: simple, interesting analysis

The main idea

- Take a Diamond-Dybvig setup:
  - three periods, $t \in \{0, 1, 2\}$
  - continuum of individuals with preferences

$$\text{ex-ante } (t=1) \quad U = \pi \cdot u(c_1) + (1-\pi) \cdot \rho \cdot u(c_2)$$

$$\text{ex-post} \quad U = \begin{cases} u(c_1) & \text{for early consumers} \\ u(c_2) & \text{for late consumers} \end{cases}$$

- Individual endowment: 1 at $t = 0$
- Problem of the individual: how much to invest in
  - ST, short-term storage (yields 1 per unit invested at $t = 1$)
  - LT, long-term investment (yields R per unit invested at $t = 2$)
- Three possibilities:
  - autarchy
  - only bond markets
  - banks and bond markets

Autarchy and Bond Markets

- No trade among individuals
  - Clearly suboptimal, because
    - Individuals invest some in LT and some in ST
    - Early consumers consume less than 1, and
    - Late consumers lose consume less than R
- What if there is a bond market at $t = 1$?
  - This makes everyone better-off
  - A fraction π of consumers invests 1 in ST and a fraction $(1 - \pi)$ in LT
  - At $t = 1$,
    - $\pi \cdot (1 - \pi)$ consumers have LT investment but want to consume at $t = 1$: issue bonds
    - $\pi \cdot (1 - \pi)$ consumers have ST investment but want to consume at $t = 1$: purchase bonds
    - Only possible interest rate between $t = 1$ and $t = 2$ is R (i.e., price of bonds is $\frac{1}{R}$)
  - All early consumers get 1 and all late consumers get R
  - Can interest rate be lower (higher) than R?
    - NO, everyone would invest in LT (ST) technology

Financial Intermediaries

- Bonds improve over autarchy
- Still, no ex-ante optimality if

$$u'(c) > \rho \cdot R \cdot u'(R \cdot c)$$

- In this case, I want to transfer consumption from late to early contingency
  - Denote optimal consumption profile with $\{c_1^*, c_2^*\}$
- Cannot do that with non-contingent bond
- A financial intermediary can do that, suppose:
  - Individuals give 1 to bank at $t = 0$
  - Bank invests $\begin{cases} \pi \cdot c_1^* > \pi & \text{in ST} \\ (1-\pi) \cdot \frac{c_2^*}{R} < (1-\pi) & \text{in LT} \end{cases}$
  - Constrained optimality is achieved through "contingent" contract
- Is it a problem if contingency cannot be observed?
  - Not if contract is IC, so that

$$c_2^* \geq c_1^*$$

  - No incentive for late consumers to lie

The Problem

- What changes if now there is a bond market at $t = 1$?
  - Obviously, can only matter if trades are unobservable
  - Optimal contracts no longer IC
  - As before, interest rate between $t = 1$ and $t = 2$ must be R
    - Otherwise, either all banks invest in ST or in LT
  - But with this interest rate, IC constraint becomes

$$c_2 \geq R \cdot c_1$$

- Hence, equilibrium contract will entail $\begin{cases} c_1^* = 1 \\ c_2^* = R \end{cases}$

Same as bond market!

The Solution (contribution)

- What is the problem?
  - Interest rate between $t = 1$ and $t = 2$
  - If optimal contract is to be IC, we need interest r such that

$$\frac{c_2^*}{c_1^*} = r < R$$

  - At this interest rates, banks will want to
    - Invest all in LT
    - Borrow at rate r at $t = 1$
  - Don't let them!!!
    - By forcing banks to invest at least $\pi \cdot c_1^*$ in ST
    - Constrained optimality is achieved
- The authors then generalize this result to
  - more general preferences
  - aggregate shocks

General Comments

- Simple and natural result
  - Addresses a well-known problem in the literature
  - Solves it in an elegant and intuitive manner
  - Has policy implications
- Having said that, I would have liked more discussion:
  - Conceptually, what is the message of the paper?
    - Relation to the literature (the authors list all possibly related papers)
  - In practice, explore some implications
    - Coordination of liquidity requirements across countries

Specific Comment

- The result hinges on the fact that
  - bank's investment at $t = 0$ is observable
  - side trades are not
- If regulator forces bank to invest an amount X in ST: no problem
- Is this realistic?
  - If regulator forces bank to invest a share x of deposits in ST: potential problem
- Suppose the bank can engage in unobservable trades at time zero
  - In particular, trades of securities with individuals which:
    - entitles individuals to a choice of an allocation at $t = 0$ or at $t = 1$
  - Then, the regulation might not work
    - Banks might have an incentive to carry only unobservable trades with consumers
    - They invest only in the LT and borrow at the market rate r at $t = 1$
  - What is the underlying assumption that prevents this?

Final Comments

- We have yet to fully grasp the conceptual/practical implications of contracting with
  - asymmetric information
  - hidden side trades
- In the adverse selection literature, this is especially the case
  - Exclusivity is a pervasive assumption
- Martin (2008) analyzes a model of adverse selection in the credit market
  - Introduction of side trades (even unobservable) are welfare-enhancing
  - They allow entrepreneurs to raise collateral: better screening in loan contracts