Incomplete Contracts Commitment Mechanism

Macroeconomics of Financial Markets

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Week 3
Main ideas

- **Main paper:** Aghion and Bolton, REStud, 92

- Incomplete contracts call for unexpected situations that need decision to be taken.

- Under misalignment of interests between E and L, a contingent control allocation is optimal.

- Standard debt contract is exactly this,
  - Default. Control goes to L.
  - NO default: Control remains for E.
Model

- E needs $K$ to start a project. L is deep pockets.
- E has all bargaining power. Both are risk neutral.

Potential misalignment of interests

$$U_E(r, a) = r + l(a, \theta)$$

$$U_L(r, a) = r$$

- Everybody observes $\theta$, but cannot describe it ex-ante.
- There is an informative signal $s$ that can be included in the contract.
- All monetary returns are observable.
Model

- Assume
  - \( r \in \{0, 1\} \)
  - \( \Theta = \{\theta_b, \theta_g\} \)
  - \( A = \{a_g, a_b\} \) such that \( a_g = a^*(\theta_g) \) and \( a_b = a^*(\theta_b) \)
  - \( s = \{0, 1\} \) such that \( Pr(s = 1|\theta_g) > 1/2 \) and \( Pr(s = 1|\theta_b) < 1/2 \)

- Payoffs
  \[ y^i_j = Pr(r = 1|\theta = \theta_i, a = a_j) \]
Contracts

Contracts specify

- A compensation for the manager.
- A control allocation rule

Since $\theta$ is observable ex-post, there may be renegotiation.
Full control by the entrepreneur

- Ex-post efficient (after renegotiation).
- If interests are aligned, this is always feasible.
- If interests are not aligned, the project will be efficient if compensating the manager such that he decides the optimal action.
- However, this payment may violate the investor’s participation constraint.
Full control by the investor

- Ex-post efficient (after renegotiation).
- If interests are aligned, this is always feasible.
- If interests are not aligned, the project will be efficient if compensating the investor such that he decides the optimal action.
- However, this payment may violate the entrepreneur’s limited liability.
Contingent control

- When the entrepreneur’s control is not feasible and the investor’s control does not achieve the first best, an intermediate situation with control contingent on $s$ may dominate unilateral control allocations.

- **Standard debt contract**

- Control allocation may be irrelevant if actions are observable and debt covenants can be made contingent on signals.
Banks as Commitment Mechanisms

- The existence of banks is explained by their fragility
- Main assumption: Banks are somewhat opaque institutions.
Banks as Commitment Mechanisms

- Calomiris and Kahn (91) argue that demand deposits include the right to withdraw at anytime at par along with a sequential service constraint in order to control the risk taking activities of bankers.

- Information-producing depositors will recover more than other depositors, because of sequential constraints.

- **Fragility is a positive attribute of banks!!!**
Banks as Commitment Mechanisms

- Flannery (94): Since depositors cannot control the bank portfolio, but they can estimate a bank's riskiness at any point in time. To control bankers, short-term debt is used because changes in bank risk will be reflected in financing costs.

- Empirically, bank debt prices do reflect bank risk.
Banks as Commitment Mechanisms

- Diamond and Rajan (01)
- If the relationship lender threatens to withdraw from the project, depositors will run the bank and the lender will receive no rents.
Main ideas

- Banks are valuable both on the asset side (liquidity to firms) and on the liability side (liquidity to depositors).
- Fragile capital structure allows banks to create liquidity, explaining why bank loans are illiquid.
Simple version of the model

- 3 Dates (0, 1 and 2).
- Players:
  - Entrepreneurs (E) that require $1 at date 0 for a project.
  - Investors with $1 available at date 0 (RL).
  - Investors with $1 available at date 1 (L).
- The project pays $1.5 at date 2 only if E work on it.
- If RL liquidate, they get at most $0.9 at date 1 or $1.1 at date 2.
- If L liquidate, they get at most $0.8 at date 1 or 2.
- RL need money at date 1 and wants to borrow from L.
Limited Commitment

- Loans can be renegotiated. (E all the bargaining power).
- Lenders are afraid to lend
  - E can threaten to quit at dates 1 and 2, unless renegotiation.
  - RL can threaten to not using his better knowledge to liquidate the project, unless renegotiation.
Illiquidity

- **The asset is illiquid:** E, the best user of the assets cannot commit to employing his specialized human capital on behalf of others.

- At date 0, E cannot commit to work on the project and hence to pay more than 1.1 to RL.

- **The loan is also illiquid:** RL, the best user of the loan cannot commit to employing his specialized human capital on behalf of L.

- At date 1, RL cannot commit to use his knowledge and hence to pay more than 0.8 to L.
In anticipation of liquidity needs at date 1, **RL will not lend.**

(They just get at most 0.8 if selling the loan and 0.9 if liquidating the asset at date 1).

- The only chance for a loan is a payment with higher return than storage (**illiquidity premium**)

- Even if illiquidity does not prevent lending, it makes it more expensive.
Fragile banks as a solution

- Everything would be fine if RL could borrow its full value ($1.1) when needing liquidity.
- This is possible only if RL would be able to commit in using their specific skills on behalf of L.
- **Commitment Device:** A fragile structure, subject to a collective action problem, such as a bank.
How does this work?

- At date 1 RL set up a bank by issuing many small demand deposits at face value $1.1.
- Sequential withdraw, as in Diamond and Dybvig.
- If all the depositors run to demand their claims at date 1, the bank lose ownership and the market value is $0.8.
- Any attempt to renegotiate at date 2 will trigger a bank run and a loss of ownership of the loan, driving the banker’s rents to zero.
How does this work?

- The run disciplines the bank, since her skills just make transfers, do not create value.
- The bank gets a benefit from skills just because it owns the loan.
- The run has the potential to disintermediate the bank, transferring ownership to depositors.
By issuing demand deposits at date 1, RL can raise 1.1 at 1 by credibly committing to pay back 1.1 at 2.

The bank transforms an illiquid loan with market value of 0.8 into liquid demand deposits that pay 1.1 at date 2.

Banks also create inside money (checks) since buyers of deposits have no less ability to extract payments than sellers of deposits.
Robustness of banks

- E cannot issue deposits in an attempt to commit to pay more.

- Unlike LR (who just transfer money), E creates value.

- Stability policies (as deposit insurance, lender of last resort or suspension of convertibility) may reduce commitment, impairing the ability of financial institutions to provide liquidity.
Empirical Evidence

- Banks that are more heavily funded through core deposits do provide borrowers with smoother loan rates in response to aggregate shocks. (Berlin and Mester (99))

- Banks make more loan commitments than other types of intermediaries and, within the banking sector, banks with high ratios of transaction deposit to total deposits also have high ratios of loan commitments to total loans. (Kashyap, Rajan, and Stein (01))