Relational Contracts: Theory and Experiments
CES lecture 2: Relational Contracts and Legal Institutions

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Legal institutions and relational contracts

- Legal system: civil law versus common law tradition
- Court quality: probability of enforcement
- Contract law: breach remedies
- How does these legal institutions affect the scope for relational contracting?
- How does formal explicit contracts and relational contracts interact?
Today’s lecture

- Literature overview
- Formal versus relational contracts
- Endogenous verifiability in relational contracts
The field “law & economics” was in its early years (the seventies) regarded as a “movement” on the sidelines of mainstream legal academy (promoted by Posner, Schwartz Shavell and others).

Now, the majority of legal scholars, especially in the US, have recognized the value of using economic methodology on legal problems.

The economic sub-discipline, contract theory, has developed quite independently from the law and economics field.

Provides a framework to analyze the scope and limits of what contracts can accomplish at a theoretical level.

Mostly assumed that court enforces anything that contracting parties agree on.

But a literature on incomplete contracts have emerged, where it is analyzed what contracts can accomplish if the court cannot enforce anything.
The law and economics of relational contracts

- Analyzes how the interaction between formal contracts, legal institutions and relational contracts affect incentives within and between firms.
- Develop models of formal and relational contracting that incorporate legal institutions.
- By imposing institutional restrictions on contracts we i) get models with more explanatory power ii) learn how institutions affect contract behavior
Most of the existing principal-agent literature assumes at the outset that some variables are verifiable, and thus enforceable by courts, and some are not.

In classic economic contract theory (like e.g. Holmström, 1979), perfect enforcement is assumed.

In models of incomplete contracting, it is commonly assumed that contracting is prohibitively costly so that legal enforcement is impossible (starting with Grossman and Hart, 1986).

However, imperfect enforcement is increasingly recognized as an important ingredient in models of contractual relationships.
Imperfect enforcement and costly contracting

- Models with Costly State Verification (CSV), starting with Townsend (1979), have focused on contract design problems where enforcement and verifiability is a decision variable.

- Also a literature that examines the relationship between evidence disclosure and verifiability (Ishiguro, 2002; Bull and Watson, 2004).

- Papers on costly contracting: contracts are neither costless to write nor are they prohibitively costly.

- On strand, starting with Dye (1985), the issue is to explain and describe the formation of incomplete contacts. See also Booth et al. (1993), Anderlini and Felli (1999), Battigalli and Maggi (2002), and Shavell (2006).

- Another strand focus on how ex ante contract specifications affect the parties’ actions ex post (such as renegotiations). See Bajari and Tadelis (2001), Schwartz and Watson (2004), and Chakravarty and MacLeod (2006).
In repeated game models of relational contracts, verifiability is usually exogenously given.

Schmidt and Schnitzer (1995) analyze a repeated relationship where some actions can be verified and some cannot.

Baker, Gibbons and Murphy (1994) analyze a model with one action generating one verifiable, but imperfect signal and one perfect, but non-verifiable signal.

Shows that formal (explicit) contracts can substitute for relational contracts (see also Bernheim and Whinston, 1998, and Pearce and Stachetti, 1998).
Experiment by Sloof and Sonnemans (2011)
Formal versus relational contracts

- Player 2 honors if

  \[
  \frac{1}{1-\delta}e \geq f + \frac{\delta}{1-\delta}d \Rightarrow \delta \geq \frac{f-e}{f-d} \equiv \delta
  \]

- The cut off value $\delta$ is increasing in $d$ and $f$ and decreasing in $e$. Better explicit contracts have two effects:
  - The worst possible punishment in case of deviation from the relational contract is less severe. Here this implies that $d$ increases.
  - The relational contract adds less surplus such that short-term incentives for deviation are lower, corresponding to a decrease in $f$.
- If the former dominates, explicit contracts and relational contracts are substitutes, if the latter dominates, they are complements.
Experiment (Sloof and Sonnemans, 2011) focus on the potential substitution effect, i.e. a change in $d$.

Discount factor $\delta = \frac{2}{3}$. Supports cooperation only under the bad contract. Finds that:

- Cooperation is higher under the bad explicit contract.
- 31% choose the bad explicit contract in the one shot game.
- 85% choose the bad explicit contract in the repeated game.
Battigalli and Maggi (2008), Sobel (2006) and MacLeod (2007) and Kvaløy and Olsen (2009) study the interaction between legal enforcement and self-enforcement in repeated game models of costly contracting.

In Battigalli and Maggi’s model the parties know ex ante for sure whether an action is verifiable or not.

In both Sobel and MacLeod legal enforcement is probabilistic and determined by court quality, but the parties cannot influence the verifiability level.

In Kvaløy and Olsen (2009) verifiability is endogenous.
(Kvaløy and Olsen, 2009)

- We assume that contracting can improve the court’s ability to verify whether an action conforms with the one described in the contract.
- Then we ask: What happens to the self-enforcing contract equilibrium if a party takes actions ex ante that affect the probability of verification?
- We analyze a simple repeated principal-agent game where the verifiability of the agent’s actions is endogenously determined by the principal’s investments in drafting an explicit contract pertaining to the quality of the agent’s output.
- The model makes it possible to study different effects of two key enforcement devices: legal courts and repeated interaction.
Model

- Principal and agent, both risk neutral.
- The principal offers a contract \((s, q)\) to the agent, saying that the agent is paid \(s\) if he delivers a good with a quality \(q\).
- The cost of producing quality \(q\) is \(C(q)\), where \(C'(q) > 0\), \(C''(q) > 0\), \(C(0) = 0\).
- Reservation payoffs are zero.
- There is a probability \(v \in [0, 1]\) that the contracted quality can be verified, and hence (a probability \(v\)) that the contract can be enforced.
- The probability \(v\) is assumed to depend on the level of contracting: the more the parties invest in specifying contract terms, the higher is the probability that the court can verify whether the realized quality deviates from the one described in the contract.
- \(K(v)\) is the cost that must be incurred to achieve verifiability level \(v\), and we interpret \(K\) as the costs associated with writing explicit contracts specifying quality aspects of the good.
Repeated relationship where the following stage game ($\Gamma$) is played each period:

- The principal makes an investment $K(v)$ in writing a contract with verifiability level $v$, where $v$ is common knowledge, and offers a contract $(s, q)$ to the agent.
- If the agents accepts the contract, he provides quality $q'$.
- The principal observes $q'$ and chooses payment $s'$.
- The parties choose whether or not to go to court. If at least one party goes to court and the court verifies quality, it rules according to a given breach remedy. If no party goes to court, or if the court does not verify quality, the agent and the principal obtain payoffs $s' - C(q')$ and $q' - s' - K(v)$, respectively.

A spot contract is taken to be a subgame perfect equilibrium (SPE) of this stage game.

A relational contract between the parties describes a SPE of this infinitely repeated game.
Breach remedies

- Expectation damages (ED): the breacher has to compensate the victim so as to make her equally well off as under contract performance.
  - If the court verifies insufficient quality or payments ($q' < q$ or $s' < s$), it rules that any breaching party is to comply with that party’s part of the contract $(s, q)$.

- Reliance damages (RD): the breacher has to compensate the victim such that the latter is no worse off than before the contract was signed.
  - If the court verifies $q' < q$, the principal is compensated for reliance costs, taken here to mean the contracting costs $K(v)$ incurred in preparing the contract. If the court verifies $s' < s$ (given $q' \geq q$) it holds the principal as the breacher, and then awards damages $C(q)$ to the agent.

- Given (UCC §2-718 (1987)) and RESTATEMENT (SECOND) OF CONTRACTS §356, the court is prevented from enforcing terms stipulating damages that exceed the actual harm.
The spot contract

- Under ED, the equilibrium spot contract specifies first-best quality \( q = q^F \) and payments \( s = C(q^F) \). In equilibrium both parties deviate from the contract, supplying minimal quality \( q' = 0 \) and offering minimal payments \( s' = 0 \), respectively, and the case ends in court. The equilibrium investment \( K(v) \) and the associated value \( U_1 \) for the principal are given by
\[
\max_v \left[ v \left( q^F - C(q^F) \right) - K(v) \right] = U_1,
\]
provided \( U_1 > 0 \). If \( U_1 \leq 0 \), no contract can yield a positive surplus.

- Under RD, no spot contract can generate a positive surplus. The reason is that, as in ED, the agent will deviate from the contract and supply zero quality, but when RD is breach remedy the court never induces a change of output.
Relational contract

- Focus on stationary contracts and grim trigger strategies.
- Spot surplus \( u = U_1 \) under ED and \( u = 0 \) under RD.
- The self-enforcement constraint is then

\[
\frac{\delta}{1 - \delta} \left[ q - C(q) - K(v) - u \right] \geq (1 - v)C(q)
\]

- Note that there is \( \delta^F < 1 \) such that the first-best allocation \( q = q^F, v = 0 \) is implementable for \( \delta > \delta^F \).
- For a range of discount factors in \((0, \delta^F)\) the efficient contract will entail an interior solution \((0 < v < 1, 0 < q < q^F)\) if \( K(v) \) has sufficiently small (fixed) costs at \( v = 0 \).
- Writing a formal contract on \( q \) (i.e. \( v > 0 \)) is valuable even if the contract will be self-enforcing in equilibrium.
Optimal breach remedy

\[ \frac{\delta}{1-\delta} [q - C(q) - K(v) - u] \geq (1 - \nu) C(q) \]

- While ED is a better breach remedy than RD under spot contracting, RD is better than ED under relational contracting \((u = 0 < U_1)\).
- Breach remedies that are optimal under one-shot contracting, may be suboptimal under relational contracting.
- The worst breach remedy under spot contracting has the advantage of being the maximum long-term punishment from breaking the relational contract.
Comparative statics

- How does equilibrium $q$ and $v$ vary with changes in:
- Discount factor $\delta$, which is a proxy for the trust-level in the relationship.
- Verification technology $K(v)$, which is a proxy for the court’s ability to verify and enforce contracts.
Indifference and constraint curves.

The constraint curve shifts down as $\delta$ increases or $K(v)$ decreases.
- Quality may decrease with a higher level of trust (higher $\delta$).
- More trust allows for 'less stringent' contracts.
- Better conditions for relational contracting in terms of higher $\delta$, may lead the parties to rely on less expensive contracts, at the cost of sacrificing some quality.
- May explain relationships that are blessed with trust, but troubled with underinvestments.
Courts and relational contracts

- Improved verification technology (VT) i.e. better courts through lower fixed costs may yield lower \( v \) in equilibrium.

- Gains from better VT is realized through reduced contract costs \( K \) and this lower the verifiability level.

- Gains from better VT is realized by reliance on relational contracts rather than costly explicit contracts.

- Implication: Ability of judicial system cannot be measured from enforcement probability in equilibrium.

- Supports the empirical work of Johnson, McMillan and Woodruff (2002):
  - Experience with courts does not provide a good basis for measuring the quality of courts.
  - Belief in the effectiveness of courts has a significant effect on trust shown in business relationships.
Courts in common law are less willing than civil law courts to interpret intentions that are not clearly expressed in the contract, or to consider extrinsic evidence that contradicts or adds to the written terms of the contract.

From the common law doctrines referred to as the *parole evidence rule*, courts should look at the outward appearance of the agreement, and endorse what the parties *objectively* seem to have intended.

If the contract is ambiguous, the court should generally not admit evidence of what the parties may have thought the meaning to be.

Courts in civil law rely to a larger extent on extrinsic evidence and try to find the real intentions when contract terms are vague.

The marginal effect on enforceability of investing in detailed contracts is higher in common law systems than in civil law systems, and thus that marginal contracting costs are higher in civil law.

But for low contracting costs, the parties can achieve a higher probability of legal enforcement under civil law.
A local cost variation that increases marginal but not total costs leads to lower quality and lower verification probability in equilibrium.

Implication: We will expect to see higher equilibrium $\nu$ and thus more detailed contracts in common law countries than in civil law countries.

Supports Djankov, La Porta, Lopez-De-Silanes and Shleifer (2003), who find less consistency in civil law than in common law courts.

However, this alone should not be interpreted as evidence that civil law is less efficient than common law systems, since equilibrium $\nu$ is not a good measure for court ability.

Model with unobservable effort (moral hazard) suggests that a move from common law to civil law leads to lower-powered incentive contracts.
Legal institutions affect the scope for relational contracting.

Endogenous verifiability in relational contracts offers a framework well suited for analyzing the relationship between relational contracts and legal institutions.

The approach can be extended to incorporate other legal variables such as litigation costs, litigation procedure and alternative breach remedies.

Variations on the framework presented could also be applied to other topics where repeated games and legal institutions are important, such as optimal firm boundaries, public versus private ownership, and the sustainability of cartels and collusions.