

Reputations, Relationships and Enforcement of Incomplete Cont

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- A good reputation is more valuable than money.
 - Publilius Syrus (1st century B.C.), Roman writer of mimes.
- Reputation, reputation, reputation! O, I have lost my reputation! I have lost of myself, and what remains is bestial.
 - William Shakespeare (1564–1616), British dramatist, poet. Cassio, in *Othello*, 262-4.

1 Introduction

- Exchange in a modern economic is built upon:
 - The enforcement of property rights - the ability to exclude others from access.
 - Free exchange of Property - markets..
 - Enforcement of Promises to Perform.
- Economics tends to take the enforcement problem for granted, and focuses on the determination of the optimal contract given assumptions on the information available to contract parties.
- The purpose of this paper is to review and synthesize the literature on the determination of optimal contracts, taking for granted property rights and the existence of markets.

2 Some Classic Literature

- Stewart Macauley in a famous study showed that most transactions between formal language on purchase orders and sales agreements - in fact they are inconsistent - the so called battle of the forms problem.
- Milton Friedman observed that reputations and long term relationships can improve performance - predicted the development of the modern HMO
- Akerlof (1970) showed that asymmetric information can lead to a complete market failure (change in volume of trade effect) - observed that enforceable promises of a warranty can solve this problem.
- This has led to the general presumption among many law and economics scholars, including Richard Epstein, that there is little role for government intervention into private law. Particular quality regulation is in general wasteful and unnecessary.
- However, successful economies depend upon a large number of institutions that enforce contracts - courts, lawyers, regulation etc.

3 The Goals of the Paper

- Review the literature on informal enforcement of incomplete contracts.
- Highlight how the characteristics of the good or service being traded can explain the prevalence of informal enforcement.
- The informal claim that reputations can solve the contract enforcement problem is made with a number of qualifications.
- In some important cases formal enforcement, even if costly, is superior to informal enforcement.
- Illustrate the trade-off between formal and informal enforcement, and in particular how the *quality of law* can affect contract form.
- Provide an overview of the notion of reputation - contracts can be used to create a reputation - reputation market requires the existence of a self-enforcing set of beliefs (see work by Avner Greif)..
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4 Basic Model

- At the beginning a buyer and seller meet and agree upon the quality of a good to be traded over a period of length $\Delta > 0$ - the divisibility of the good. The price is agreed upon.
- The seller chooses the *quality* $q \in [0, 1]$ at flow cost $c(q)$, $c(0) = 0$, $c', c'' > 0$.
- From a good with characteristics (Δ, q) the buyer experiences a return:

$$\frac{1 - \delta}{r}v + R \cdot \lambda_g(q) - L \cdot \lambda_b(q) - \text{payments to seller}$$

where the flow value of the good is v , where R is a return when *performance* is high and L when performance is low.

- Observe that quality is not directly observable

5 Notes on the Literature - 1

- Early literature tends to assume quality is directly observable upon consumption
 - Akerlof (1970) - quality not observed at time of purchase, but only after the fact. This market is incomplete because it is assumed no further payments are enforceable.
 - Telser (1980) and Klein and Leffler (1981) follow Akerlof, and show that if quality and price are in a relationship, then high quality can be enforced.
 - Macleod and Malcolmson (1989) extend these results to allow for more general relationships, building upon Abreu (1988).

6 Notes on the Literature - 2

- Levin (2003) and Macleod (2003) extend these results to the case where quality is not contractible, performance not contractible, building upon the results of Kandori-Matsushima repeated games.
- Abreu, Pearce and Milgrom (1991) illustrate the role that imperfect information plays in enforcing efficient equilibria - in this paper the APM results are used to show how the characteristics of the good (e.g. physical commodity, labor services, human capital development, etc.) can explain contract form, and the trade-off between contract form and contract enforcement.

7 Legally Enforceable Contracts

- Suppose can write an enforceable contract with performance contingent pay

$$C = \{P, P_g, P_b\}.$$

- Payoffs:

$$U^B(\Delta, q, C) = \frac{1 - \delta}{r}v + (R + L - P_g - P_b) \cdot \lambda_g(\Delta, q) - (L + P_b +$$

$$U^S(\Delta, q, C) = (P + P_b) + (P_g + P_b) \cdot \lambda_g(\Delta, q) - \frac{1 - \delta}{r}c(q).$$

7.1 Implementable Trades

- A contract C implements the trade of good (Δ, q) if:
 - Trade is *individually rational*:

$$U^B(\Delta, q, C) \geq \frac{1 - \delta}{r} u_0^B,$$

$$U^S(\Delta, q, C) \geq \frac{1 - \delta}{r} u_0^S.$$

- Producing quality q is *incentive compatible*:

$$\frac{c'(q)}{r} \begin{cases} \leq (P_g + P_b) \frac{MP(\Delta, 1)}{(1-\delta)} & \text{if } q = 1, \\ = (P_g + P_b) \frac{MP(\Delta, q)}{(1-\delta)}, & \text{if } q \in (0, 1), \\ \geq (P_g + P_b) \frac{MP(\Delta, 0)}{(1-\delta)} & \text{if } q = 0. \end{cases}$$

Where $MP(\Delta, q^*) = \partial \lambda_g(\Delta, q^*) / \partial q$ is the marginal impact of quality on the pro outcome.

Gains from Trade:

$$S(\Delta, q) \equiv \left(U^B(\Delta, q, C) - \frac{1-\delta}{r} u_0^B \right) + \left(U^S(\Delta, q, C) - \frac{1-\delta}{r} u_0^S \right) \equiv \frac{1-\delta}{r} \left(U^B(\Delta, q, C) + U^S(\Delta, q, C) - u_0^B - u_0^S \right)$$

Proposition 1 For every price P , there exists a contract $C = \{P, P_g, P_b\}$ implementing a change of (Δ, q) if and only if the net surplus is non-negative ($S(\Delta, q) \geq 0$).

8 Quality of Law and the Enforcement of Contract

- Contracting costs consists of two elements:
- Fixed cost of contract formation (Williamson (1975), Dye (1985)) - $K_A(Q)$.
 - Cost are lower if there are good form contracts, and experienced lawyers.
- Fixed cost of enforcing a contingency $K_P(Q)$:
 - These fall with the existence of specialized courts and arbitrators that can swiftly and fairly
- Both of these costs are assumed to fall with the quality of law.
- A contract C is *legally enforceable* if parties pay $K_A(Q)$ up front and $\|P_E\| \geq$

9 Implications for Contract Form - Normal versus Goods

The costs $K_p(Q)$ are paid only if litigation is required, and hence if one can avoid litigation through the possibility of ex post transfers, then this lowers the burden upon the courts. This is a function of the characteristics of the goods. This can be illustrated with two extreme cases:

- Normal goods - this case corresponds to physical goods that can in the event perform, but may occasionally have a defect.
- Innovative goods - research and development is typically a slow process, and the outcome is non-performance - with the good state corresponding to say a large sale of real-estate.

Proposition 2 When using a legally enforceable contract for an innovative good use a bonus contract - payment P to the seller, and then a reward P_g to the seller if the event occurs. When using a legally enforceable contract for a normal good use a warranty contract - payment P for the good, and compensation $-P_b$ to the seller if the good is defective.

Proposition 3 If the cost of enforcement $K_P(Q)$ is a binding constraint, then as $K_P(Q)$ increases, the quality of the good falls.

10 The Repeat Purchase Mechanism - Enforcement Reciprocal Norms

- In a seminal paper (700 cites) Klein and Leffler argue that firms will pro through the fear of losing customers - they call this the repeat purchase timing is as follows:
 - (a) The seller fixes her price P at the beginning of the period.
 - (b) The buyer agrees to purchase or not at price P .
 - (c) The seller chooses quality and produces the good.
 - (d) Trade occurs, *ex post* realized quality is observed.
 - (e) The buyer decides whether to continue the relationship or not.

11 Features of the Repeat Purchase Mechanism

1. Quality and the seller's payoff are increasing with price P .
2. The seller's optimal price leaves the buyer indifferent between purchasing and not purchasing.
3. In order to have positive quality the buyer must ensure that the seller's payoff is greater than her next best market alternative.
4. The buyer's optimal price P is increasing with R in the case of innovative goods and decreasing in the case of normal goods.
5. If at the efficient allocation performance is not perfect, then repeat purchases *cannot* implement the efficient allocation, regardless of the discount rate, and the good.
6. From Abreu, Milgrom and Pearce, if a good is innovative, and highly divisible, the repeat purchase mechanism provides *ZERO* performance incentives.

12 Relational Contracts

- Rather than restricting attention to the repeat purchase behavior, relational contracts focus on any pattern of payments that parties might agree upon.
- This expands the definition of breach to include state contingent payments.
- The agreement is enforced by the threat of separation.

12.1 Timing:

1. The seller/buyer agree to a contract $\{P, B, W, q\}$. If an agreement is not reached, they receive their alternative payoffs U_B^0 and U_S^0 .
2. The seller chooses quality and produces the good.
3. Trade occurs and P is paid.
4. The quality $s \in \{b, g\}$ is realized and observed by the buyer and seller (but not by the market or any third party).
5. The agreement calls for the buyer to pay the seller a bonus B if the good state occurs and the seller makes a warranty payment W to the buyer if the bad state occurs.
6. The buyer and seller simultaneously decide to continue the relationship given the quality s that has occurred at stages 1-5.

12.2 Formal Conditions

- First order conditions for quality:

$$c'(q) = (B + W) \frac{1 - \rho}{1 - \delta},$$

- The incentive constraints for honoring the payment of B or W are given by:

$$B \leq \frac{\delta}{(1 - \delta)} (U_B(q) - U_B^0),$$
$$W \leq \frac{\delta}{(1 - \delta)} (U_S(q) - U_S^0),$$

where $U_B(q)$ and $U_S(q)$ are the one period payoffs under the contract when

- If we add these constraints together we obtain the following necessary condition of a self-enforcing relational contract:

$$B + W \leq \frac{\delta}{(1 - \delta)} (S(\Delta, q) - S^0) = \delta s(\Delta, q) / r,$$

where $S(q)$ is the total gains from trade.

12.3 Proposition

The quality level q can be supported with the use of a self-enforcing relational contract if the marginal cost of quality is sufficiently low relative to the surplus from trade:

$$c'(q) \leq \frac{1 - \rho}{1 - \delta} \delta \frac{s(\Delta, q)}{r}.$$

Moreover, the parties may choose any combination of bonus and warranty to implement the quality level q .

13 Norms

- The Klein and Leffler mechanism *assumes* that when a buyer stops patronizing because the seller has chosen low quality.
- Under a relational contracts this inference is never valid - the decision to stop does not depend upon the quality choice of the seller:
 - If the contract calls for only bonus pay, then breach occurs if and only if the seller does not pay.
 - Conversely, if only a warranty is offered, then breach occurs if and only if the seller does not pay the warranty when performance is inadequate.
 - Hence, given the outside options, there are multiple *enforcement norms*.

14 Reputation

- In a competitive market relational contracts are enforced via a *reputational norm* in the market avoid trading with individuals who have lost their reputation.
- The discussion above illustrates that who is blamed for the breach of contract (and thus loses their reputation) depends upon the contract that is used.
- Given the social norm, the equilibrium can be constructed as in Kandori (1992).

15 The Trade-Off Between Formal and Informal E

- Consider a market where there are different gains from trade as parameterized by v
 - When v is large, then it is efficient to trade regardless of the quality of the goods
 - For small v , trade is never efficient.
 - For intermediate values trade is efficient if and only if quality is sufficiently high
- Observe that contracts affect the efficiency of the market in two ways:
 - Via the volume of trade - how many buyers and sellers decide to enter into the market
 - The quality of trade - how close is quality to the optimum in those matches

15.1 Effect of Low Quality Law

- Suppose that fixed cost of using the law is greater than the surplus needed to support a relational contract.
- In that case, given the gains from trade ν , parties would always prefer a relational contract over a legally enforceable contract.
- For high ν where contracts can be legally enforced, parties might use legal enforcement even if there is not an accepted norm (Johnson, McMillan and Woodruff (2002)).

15.2 Effect of High Quality Law

- Suppose fixed costs of the law are lower than the costs of enforcing a relational contract
- Relational contracts - when enforceable - are more efficient because they are less costly to enforce. However, high quality law will *crowd out* efficient informal contracts (Schmid and Kranton(1996))

16 Conclusions: Bilateral Trade

- Reputation is a complex and multi-faceted concept - whether or not it can solve the problem of incomplete contracts depends upon the context - market alternatives and the nature of the good to be traded.
- Relational contracts can assign the responsibility of trust to one or the other party - the outcome depends upon the information structure of the market.
- The market mechanism of shunning an agent with a poor reputation is efficient if we are *sure* that they have cheated.
- Hence, the market mechanism should be used mainly in cases where information is not verifiable, but not verifiable - for example if an agent makes good upon a transfer.
- Reputation mechanisms are a *poor* way to enforce the *quality* of a good!
- The form of payment makes a difference - for Normal goods - warranty contracts are best, while bonus pay contracts are optimal for Innovative goods.
- Legal contracts can undermine relational contracts! Hence an increase in legal enforcement does not necessarily result in more trade.

