

Contracts, Reference Points, and Firms

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Guido Carli Lecture 2009

Background and Motivation

- Coase (1937): To understand firms, we must understand why markets/contracts are costly.
- What are these costs?
- Williamson (1971), Klein, Crawford and Alchian (1978): Relationship-specific investments cause lock-in. Long-term contracts incomplete. Under non-integration, quasi-rents dissipated in *ex post* bargaining. Integration avoids this.

Background and Motivation (Continued)

- No formal model here. A formal model is provided in Grossman and Hart (1986), Hart and Moore (1990). In GHM, contracts incomplete, but renegotiation a la Coase (1960) leads to ex post efficiency. However, as a result of hold-up, non-contractible *ex ante* investments are distorted. Allocation of residual control rights/asset ownership can mitigate this distortion. Leads to a theory of optimal asset ownership/firm boundaries.
- Weaknesses: not very helpful for internal organization of large firms.

Complementary Approach: Contracts as Reference Points

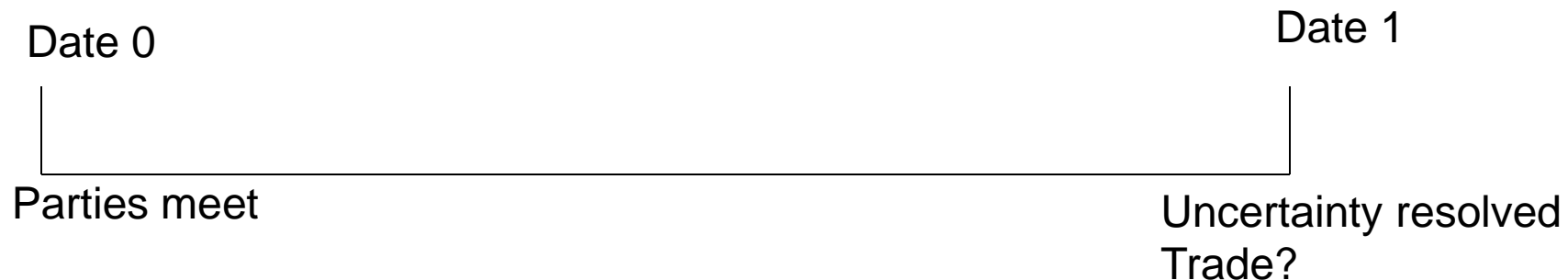
- Basic idea: an *ex ante* contract negotiated under (relatively) competitive conditions shapes parties' entitlements regarding *ex post* outcomes.
- A party compares the *ex post* outcome to other outcomes permitted by the contract, and if he does not get what he feels entitled to, he is aggrieved and shades on non-contractible aspects of performance.
- Shading does not (significantly) affect own payoff but does significantly affect other party's payoff. Shading=> deadweight losses.

Complementary Approach (Continued)

- Leads to tradeoff between contractual flexibility and rigidity. A flexible contract is good in that parties can adjust to the (observable but unverifiable) state of the world but bad in that there is a lot of aggrievement and shading. A rigid contract is good in that there is little aggrievement and shading but bad in that the parties cannot adjust to the state of the world.
- Two new ingredients: *Ex post* trade is only partially contractible, and behavioral elements affect performance.

Example 1: Payoff Uncertainty

- Simplified version of Hart and Moore (2008), Section III
- Buyer B/Seller S
- B's value $v = 20$
- S's cost $c = \begin{cases} 16 & \text{prob } \pi \\ 10 & \text{prob } 1-\pi \end{cases}$



Example 1: Payoff Uncertainty (Continued)

Assume:

1. Trade is voluntary *ex post* (e.g., because third parties cannot verify why trade didn't occur).
2. S's cost is observed by both parties *ex post* but is not verifiable.
3. Only S can shade. S feels entitled to best outcome permitted by the contract and shades to point where B's payoff falls by θ times the difference between S's ideal payoff and what S actually receives.

Example 1: Payoff Uncertainty (Continued)

4. There are many sellers relative to buyers at date 0, i.e., B has all the bargaining power at date 0 and chooses date 0 contract.
5. No lump-sum transfers (e.g., because S is wealth-constrained).
6. Parties are risk-neutral.
7. No renegotiation.

Note: (3)-(5) are not assumed in Hart and Moore (2008). (7) is relaxed in Hart (2009).

Contract A (Flexible)

- Parties agree *ex ante* on price range [10, 16]. B chooses the trading price p from this range *ex post*.
- In high-cost state, B chooses $p = 16$. B's payoff = 4; S's payoff = 0.
- In low-cost state, B chooses $p = 10$. B's payoff = $10 - 6\theta$; S's payoff = 0.
- Expected surplus $W = 4\pi + (10 - 6\theta)(1 - \pi)$.

Contract B (Rigid)

- Parties agree *ex ante* that $p = 10$.
- In high-cost state, no trade.
- In low-cost state, B's payoff = 10; S's payoff = 0.
- $W = 10(1-\pi)$.

Implications and Remarks

1. Rigid contract will be chosen if π is small enough, even though it leads to *ex post* inefficiency with positive probability.
2. More shading will occur if the flexible contract is chosen than if the rigid contract is chosen.
3. Fehr, Hart and Zehnder (2008) find support for implications (1) and (2) in an experiment.
4. Outside options matter in this world even if they are “dominated,” given that trade does not always occur. Thus, asset ownership will matter for reasons different from GHM (there are no *ex ante* investments). For details, see Hart (2009).
5. Model consistent with empirical evidence showing that uncertainty makes economic relationships hard to manage. See Goetz and Scott(1983).....Masten(2007).

Example 2: Task Uncertainty

- Based on Hart and Moore (2008), Section IV
- 2 tasks. Symmetric uncertainty such that not known in advance which task is better. Who should choose the task? (Hart and Moore (2008) also consider the possibility that the task should be fixed in advance.)
- Assume both parties can shade now.

Example 2: Task Uncertainty (Continued)

- Optimal to fix price and let B choose task ($W = 10 - 2\theta$), rather than letting S choose task ($W = 6 - 6\theta$).

- Why fix price?

	<u>Task 1</u>	<u>Task 2</u>
Value	20	14
Cost	10	8
Surplus	10	6

Example 2: Task Uncertainty (Continued)

- Now it's optimal to fix price and let S choose task ($W = 12 - 6\theta$), rather than letting B choose task ($W = 10 - 8\theta$).

- Remark: Can throw light on choice between employment and independent contracting. Cf. Simon (1951).

	<u>Task 1</u>	<u>Task 2</u>
Value	20	14
Cost	10	2
Surplus	10	12

Example 3: Coordination

See Hart-Holmstrom (2010)

Suppose now two units . Each unit can choose task 1 (Yes) or task 2 (No). In unit 1, the payoffs are (20,10), (14, 8), in unit 2 they are (20,10), (14, 2). However the (20, 10) payoff is earned in a unit if and only if both units choose Yes. Make the further assumption that the owner/ boss of a unit can divert the value from that unit (20 or 14).

A) Each unit is owned by its manager/employee (nonintegration).

Then coordination won't occur since unit 2 will veto.

This is inefficient since $20-10 + 20-10 < 14-8 + 14-2$.

B) Units owned together by an outsider (integration).

Coordination will occur since $20+20 - 10\theta > 28$

However, if we change the (14, 2) payoff to (14, -1), then integration may result in coordination even though this is inefficient (if $40 - 13\theta > 28$). In this case, nonintegration is better.

Conclusions

- Formal models of asset ownership and firm boundaries (“property rights theories”) have to date focused on *ex ante* investment inefficiencies. *Ex post* trade is always efficient as a result of Coasian bargaining. This is restrictive.
- “Contracts As Reference Points” broadens the scope of the theory by incorporating *ex post* inefficiency. I believe that this approach can explain why uncertainty makes economic relationships hard to manage, has new implications for asset ownership and firm boundaries, and may be helpful for going “inside the firm” (on the last, see Hart and Holmstrom (2010)).

Conclusions (Continued)

- Needless to say, the approach relies on some strong and nonstandard assumptions. One encouraging sign is that some of those assumptions receive support in experiments, but much more needs to be done to test their validity and robustness.