Rethinking Incomplete Contracts

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• It is generally accepted that the contracts that parties—even sophisticated ones-- write are often significantly incomplete.
• Some evidence: contract renegotiation and contractual disputes occur.
• Two natural questions: why and what are the consequences?
• Most common explanation: the future is complicated and it is hard to put in all the relevant contingencies.
• Economic consequences? Once the omitted contingency occurs presumably both parties observe this. Much of the literature (e.g., the property rights theory of the firm, discussed yesterday) supposes that the parties can renegotiate the contract to adjust to the contingency. Natural to model this as bargaining under symmetric information. According to standard arguments (Coase, Nash, etc.), this leads to an ex post efficient outcome.
• However, the division of ex post surplus may not reflect ex ante non-contractible investments, and so these will be distorted. In other words we have what is known as the **hold-up problem**.

• A now large economics literature has analyzed how this hold-up problem can be mitigated, e.g., by allocating ownership of physical assets. Among other things this has led to a theory of who should own what and, to the extent that we can identify a firm with the physical assets it owns, a theory of firm boundaries (cf. yesterday).
• This approach has been useful but it has some limitations. The two main ones are:
• (A) As economists we want to understand not only who owns which assets but also resource allocation and decision processes in large organizations. If bargaining always yields ex post efficiency, I do not think that we can do this.
(B) Foundational problems: it turns out that revelation mechanisms can solve the hold-up problem (without the need for asset ownership) under some conditions. These mechanisms elicit the parties' common information, and the state of the world is thus made verifiable. The mechanisms involve the use of third parties or random schemes. They are never observed in reality, but they pose a challenge to the theory.
• Concerning (A): one way to incorporate ex post inefficiency is to introduce ex post asymmetric information. The trouble with this is that as long as there is ex ante symmetric information there are sophisticated revelation mechanisms that deal with this problem too. Introduce ex ante asymmetric information??? (Probably not.)
Concerning (A) and (B): one can argue that revelation mechanisms are too complicated to use in practice and so we can safely ignore them. Unfortunately, we don’t have a good way to measure complexity, and so I am not very comfortable with this. Another possibility is to argue that these mechanisms are not robust to small deviations from common knowledge. See Aghion, Fudenberg, Holden, et al.
• Too early to say where the robustness approach will go. One concern: it may throw out some quite simple contracts/mechanisms that we do observe as well as ones we don’t.

• For these reasons I think that we need to consider moving outside the usual paradigm…
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 \( c = \{ \)
  \[ \begin{array}{l}
  16 \text{ prob } \pi \\
  10 \text{ prob } 1-\pi
  \end{array} \]

Date 0

Parties meet

Date 1

Uncertainty resolved

Trade?
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. Parties are risk-neutral.
4. Only S can shade. S feels entitled to best outcome permitted by the contract and shades to point where B’s payoff falls by $\theta$ times the difference between S’s ideal payoff and what S actually receives.
Example 1: Payoff Uncertainty (Continued)

5. 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.

6. No lump-sum transfers (e.g., because S is wealth-constrained).

7. No renegotiation.

Note: (4)-(6) 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 $\pi$ is small enough, even though it leads to \textit{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 (2010) 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 \textit{ex ante} investments). For details, see Hart (2009).
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?

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<tr>
<td>Surplus</td>
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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 ($W = 10-8\theta$).


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Conclusions

- Formal models of incomplete contracts 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. (But does not suffer from foundational issues of standard approach!) 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.