INCOMPLETE CONTRACTS AND OPPORTUNISM

Contracts governs the rights and duties of the parties to the agreement. But contracts cannot anticipate all states of the world and cannot specify what the parties should do in all states of the world. Plus, enforcement of contracts is costly. Hence, all contracts are incomplete.[1] The degree of incompleteness depends on gaps, missing provisions, and ambiguities that give rise to a mix of opportunistic behavior, costly renegotiations, and inefficient behaviors.

Incomplete contracts are an everyday phenomenon. You agree to pay for a trip to the airport. Upon arrival, the driver is unable to execute payment with your credit card. Now what?[2] In high-tech settings, incompleteness is common because ongoing innovations take place in face of great uncertainties and complexities. For example, IoT interfaces for autonomous vehicles and infrastructure are evolving. Vehicle manufacturers cannot write contracts with technology partners that can anticipate future protocols. In addition, local and national governments are likely to diverge in how they want all the "moving parts" to connect with local infrastructure. How much will it cost to adjust to divergent protocols? And who will pay?

The combination of incomplete contracts, uncertainties, and specific investments leads directly to *opportunistic behavior* in exchange relationships.[3] Consider the security service for a firm's commercial property. The provider may not have to update the wireless connections for the transition from 4G to 5G, but says that an expensive major upgrade is necessary. Your contract does not cover that contingency. If the customer could switch suppliers without the loss of asset-specific investments, then opportunistic behavior would not be a problem. But, as explained in *Asset-Specificity*, industry participants in high-tech settings invest heavily in such assets.

Along with hiring more lawyers to write more complete contracts and thereby reduce opportunism, markets provide two alternatives. First, firms can develop *reputations* for working through problems that arise in unforeseen circumstances. This solution is more relevant for firms with longer histories and frequent transactions. However, given the dynamic nature of high-tech industries, many innovative firms have short histories and relatively few major transactions. Second, firms can decide to *integrate* activities rather than attempt to contract with others. In the end, firms decide what is the "least bad" approach.

Readings:

---

[1] Oliver Hart and Bengt Holmström won the Nobel Prize in Economics for their contributions to the incomplete contract theory only in 2016. See Oliver Hart's website at scholar.harvard.edu/hart/publications.

[2] Your professor has experiences of a more dire nature. After a two-week stay at the Motor City Inn in Hubei Province, China, I offered my Visa card for payment. I was told that the signage for Visa and MasterCard at the front desk was only credit cards issued by Chinese banks. Now what? Here's another: Arriving late to check in at a hotel in Russia, I was told that I needed to give up my passport for the duration of my stay.

[3] Oliver Williamson, *The Economic Institutions of Capitalism*, New York, Free Press, 1985.

1. Bolton and Dewatripont (2005), *Contract Theory*, Chapters 11 and 12.
2. Hart (1995), *Firms, Contracts, and Financial Structure.*
3. Hart, O. (2008). Incomplete Contracts. In: The New Palgrave Dictionary of Economics. Palgrave Macmillan, London. https://doi.org/10.1057/978-1-349-95121-5_694-2
4. Aghion, Philippe, and Richard Holden. 2011. "Incomplete Contracts and the Theory of the Firm: What Have We Learned over the Past 25 Years?" Journal of Economic Perspectives, 25 (2): 181-97.
5. Hadfield-Menell, Dylan, and Gillian K. Hadfield. "Incomplete contracting and AI alignment." In Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society, pp. 417-422. 2019.
6. Nyarko, Julian. "Stickiness and incomplete contracts." U. Chi. L. Rev. 88 (2021): 1.