

### 3. Inter-Firm Contracting

#### *The Firm as a Nexus of Contracts*

So far we have developed the concept of the firm as a tradeoff between the benefits of size due to economies of scale and specialization, and the costs of managerial control. In this sense the corporation is an organization that allows for growth by expanding the financial resources of the firm. This comes through the securities markets and results from the gains due to specialization in risk bearing.<sup>1</sup> Jensen & Meckling use the phrase *nexus of contracts* to describe the corporation.<sup>2</sup> It is enlightening because it forces us to look at the problem as one of contract enforcement. Agency costs are simply the costs of contract enforcement. The organizational structure of the corporation can be explained as adaptations in an attempt to maximize the gains from trade among the various contracting parties that come together within the corporation.

However, the limits of the corporation are not solely determined or even well explained by search for economies of scale and the availability of financial resources as a result of specialized risk bearing. Economies of scale can occur in any line of business and can be exploited by horizontal expansion as well as vertical or conglomerate. Coase and Alchian & Demsetz suggest that opportunities for team production may exist and spur the expansion of the firm, but they do not tell us where to look for these or what to look for. We will try to remedy this.

The overall focus of our inquiry is contract enforcement. For argument's sake let's assert that sometimes contracting problems are most efficiently solved by subsuming them into a corporate entity. That is, it may be that corporations exist because the corporate "nexus of contracts" has lower enforcement cost than contracts between corporate entities or other economic agents. However, inter-corporate contracts are equally ubiquitous. In this sense, every inter-corporation transaction could be an intra-corporate transaction. The question posed is "*to make or buy.*"

#### **The Hold-Up Problem**

The corporation might "make" as opposed to "buy" because it is fearful that it will be cheated. In every transaction there is the risk that the buyer or seller may be cheated. When you buy milk at the Winn-Dixie, it may be spoiled when you open it in the morning. When you do research for a professor, the prof may ignore your invoice.

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<sup>1</sup> Specialized risk bearing creates agency costs because of the separation of ownership and control. This is combated in the corporation by management structures that separate decision management and decision control. See Fama, Eugene, and Michael Jensen. "Separation of Ownership and Control," and "Agency Problems and Residual Claims," *Journal of Law & Economics*, June 1983, 301-350; and also Alchian, Armen A., and Susan Woodward. "Reflections on the Theory of the Firm," *Journal of Institutional & Theoretical Economics*, 143 (1987), 110-136.

<sup>2</sup> Michael Jensen and William Meckling, "Theory of the Firm: Managerial Behavior, Agency Cost and Ownership Structure," *Journal of Financial Economics*, 1976.

The economic analysis of contract cheating has labeled it the “hold-up” problem. The hold-up problem exists when a contract requires that resources be committed to a project by one party before another. It is almost always the case that one party to a contract commits resources before the other (for instance, you pay for the milk before you drink it). However, the problem becomes more acute when this time lag is extended.

When these resources are sunk, that is, have little salvage value, then the second party to act in a contract is in a position to hold up the first. Klein, Crawford, and Alchian call this hold-up behavior *post contractual opportunistic behavior*.<sup>3</sup> “Post contractual” means that the second party acts after the first has committed the resources. “Opportunistic behavior” implies that the second party acts in a way that benefits him at the expense of the first party.

Consider the case of the restaurant, Ichiban’s Steak House, formerly operating in Atlanta. The proprietor of this restaurant had a long term lease in a building in downtown Atlanta. The restaurant operated from 1970 to 1993. The lease agreement signed in 1990 was for 5 years with an additional 5 years at the option of the leasee. The building changed hands in 1992 and the new landlord wanted the restaurant to move out. The restaurateur refused so the landlord acted opportunistically. The landlord blocked Ichiban customers’ access to parking behind the building which had historically been available. The landlord also engaged in building renovations in a fashion meant to inconvenience Ichiban customers. Large “Hazardous Materials” signs were posted in the immediate vicinity of the entrance to the restaurant.

It is important to note that if the contract were perfectly enforceable, both parties would benefit because there are gains from contracting and joint production. Opportunistic behavior unilaterally changes the terms of trade after the initiation of the contracted behavior, after one contracting party has put resources at risk. It may well change the terms of trade so dramatically that the first party actually loses money on the deal. In this case, if the first party is smart and recognizes the potential problem, and is unable to contract around it, then the contract may be foregone.

The resources at risk in the hold-up problem are sometimes called *appropriable, specialized quasi-rents*. “Appropriable” implies that they are at risk. “Specialized quasi-rents” tells us why. When resources must be committed in a fashion that causes them to become specific to a particular project and have high value in their primary use in that project but low value in any other application, they are at risk. The differential between the primary value and their salvage value is called a quasi-rent. After the resources are sunk, their capitalized cash flow need only be larger than the salvage value to keep them operating. (Think of an oil well.) Any additional cash flow is rent. (“Quasi” means that the rents are only there after the resources are committed as opposed to monopoly rents or profits.) Highly specialized projects have high quasi-rents. These often afford great opportunity for expropriation.

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<sup>3</sup> Klein, Benjamin, Robert Crawford, and Armen Alchian, “Vertical Integration, Appropriable Rents, and the Competitive Contracting Process,” *JLE*, 10/78, pp. 297-326.

A good example of the contracting problems created by specialized resources can be found in the production of wines. Wine is made from grapes grown on vines that are extravagantly cultured. These vines only produce grapes after several years of growth. When well tended they continue to produce for decades. The different grapes make different wine, and grapes vary in quality both between vineyards and across time.

Similarly, wine makers specialize. For instance, champagne producers have caves to store the fermenting bottled wine. They have a large staff trained in turning the wine kept inverted in racks. Wine makers specialize in analyzing and stabilizing the fermentation of wines of specific characteristics, wines made from specific types of grapes.

Because of these investments in specialized resources, long-term contracts are arranged between wine makers and grape growers. Even so, a hold-up problem can develop at harvest time. The wine maker can refuse to take the grapes in order to try to drive the growers supply price down. The grower in another circumstance can refuse to sell in order to drive the wine makers demand price up. When these problems are too severe, and we predict they become more severe as the variation in quantity and quality increases, then the wine making and grape growing functions are merged into one firm. On the other hand, when the hold-up problem is minimal, it makes sense to separate these functions in order to prevent shirking.

The stylized facts of French viticulture are several: Champagne vintners grow only the grapes that they use to flavor the champagne. The bulk of the grapes used to make champagne are purchased on the wholesale market and often after the grapes have been crushed and partially fermented. This seems to make sense because in champagne manufacture, the process of flavoring and carbonating the wine is the specialized resource.<sup>4</sup> A potential hold-up would occur if the house were forced to buy a necessary ingredient from an outside source.

In red wines, the vines themselves are the more specialized. In Bourdeaux, the vinyards are much smaller than they are in Burgundy. Presumably this is due to the fact that the variability in the quality of the grapes is more extreme in Bourdeaux and minimizing shirking in tending the vines is more important. However, to combat the hold-up problem, the vintners and vinyards have long-term contracts. The vintners are more likely to own their vinyards in the Burgundy region.

In another example, newspapers typically own their printing presses whereas other, more infrequent publishers do not. The circulation of a newspaper is a specialized resource.

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<sup>4</sup> Champagne is a sparkling white wine, traditionally made from a mixture of grapes grown in the old French province of Champagne; the best is from the Marne valley. It was reputedly developed in the 17th cent. by a monk, Dom Perignon. The fermented and blended wine is bottled, then sweetened and allowed to ferment further. The carbonic acid left in the bottle after the final fermentation gives champagne its sparkle. Dom Perignon is now a brand of champagne made by Moet & Chandon in Epernay. As an aside, champagne does not age well. It is best consumed within a year or two of the time that it is released by the house.

The immediacy of printing and distribution is the value of the circulation. This specialized resource is open to a hold-up problem. The printer, if operated as an independent agent, can refuse to print. In the time that it would take to arrange for another printer, circulation value would be lost. By such a threat an independent printer could force the publisher to sell out at a price significantly below the full value of the circulation. (This allegedly happened to the Spartanburg Herald many years ago.) Large newspapers with national circulation do not own their presses but contract with numerous printers to avoid the hold-up problem.

### **Explicit Contracting as an Imperfect Control Device**

The suggestion in the case of the printing press and in the case of wine making is that the hold-up problem can be solved by integrating the chain of production within the firm. However, we know that the larger firm admits to agency costs and shirking. It is a fair question to ask why explicit contracts with enforceable terms and sufficient penalties for renegeing cannot be substituted in place of integration. Sometimes they can.

Soon after the wholesale electricity market was opened in 1992, consulting companies began soliciting municipal power authorities offering to help them buy power on the wholesale market. These consulting companies would line up power suppliers from around the country who were willing to “wheel” power into the city over the transmission lines of the utility that surrounded the city. In effect, the consultants brought the market to the city buyer. Early on the consultants wrote contracts as a percent of the power used by the city. A royalty contract such as this is often efficient. However, in this case, the problem developed that the local utility often underbid the competition that the consultant lined up. When this happened the consultant received no payment for the services that had been provided, that is, creating the competition that resulted in a lower price to the city. It didn’t take long for the market to adjust and for the consultants to begin signing shared-savings contracts in which the consultant got a percentage of whatever electricity cost reductions the city enjoyed when it signed a new contract no matter who the supplier.

Explicit contracts of all sorts are common in our economy. We see specialized insurance contracts, performance contracts in labor relations, franchise contracts, and the like. Our interest will be to examine these explicit contracts to uncover the nature of the contracting problem that leads to the contract form chosen by the contracting parties. However, it is clear that explicit contracts are not necessarily the best solution to hold-up problems. We know this because we see the other techniques in use. We also have an appreciation of why this might be so. First, explicit contracts identify *specific performance*. Where specific performance is hard to measure, explicit contracts themselves can be manipulated by the contracting parties. Second, explicit contracts must specify price. When price changes, the behavior of the contracting parties should efficiently change. However, the contract itself then creates a hold-up. Where price is likely to change dramatically over the course of the contract period, explicit contracts may not be the best contracting solution unless some mechanism for price changes can be found.

One of the most compelling cases historically is that of General Motors and Fisher Body who finally merged in 1926. In 1919 they signed a long term contract providing that Fisher supply GM with a fairly new product--closed, metal automobile bodies. These new bodies required the use of dies that were durable and required a substantial investment. Hence, Fisher Body was concerned in signing the contract that GM would be in a position to act opportunistically. To alleviate this concern, GM signed a long-term, exclusive dealing agreement with Fisher. This put GM at risk. GM tried to solve this by fixing the price at which they would pay Fisher. Nonetheless, GM's guess about price proved to be wrong and they were forced to buy Fisher out in order to maximize joint profits. GM signed a bad contract. They erred in not fixing an upper limit on their exclusive dealing arrangement. They erred by not making sure that the contract terms favored them in the event that their most sanguine forecasts proved correct.

Given that GM had negotiated a price per unit that was in fact the wrong price, why did GM want to renegotiate to the right price. The answer in this case seems to be that the high price of car bodies caused GM to underproduce cars and to produce them the wrong way. For instance, GM wanted Fisher to build its stamping plants next to GM's assembly facilities. Fisher refused because, we suppose, they feared the potential hold-up problem that would create.<sup>5</sup> Even at the high price GM could not get the facilities where they wanted them. GM entered into an explicit agreement for a given quantity of car bodies at a high price. They were forced to pay off Fisher at the high price for the minimum agreed upon quantity, plus an additional quantity that reflected the time that it would take GM to build its own facilities. To minimize these negotiations, merger was undertaken.

A similar case occurred when BMW built its North American manufacturing plant in Greer, South Carolina. BMW planned to buy many parts for its autos from local manufacturing establishments. It solicited proposals to supply parts made to its specifications. However, it found that there were only a few bidders. BMW was unwilling to hang that fate of its production line on only a few suppliers who might decide to act opportunistically. At the same time, it recognized that the reason so few companies were bidding was because of a fear that BMW might act opportunistically itself. BMW was asking these companies to build made-to-order parts using machines that were specially tooled and had little or no salvage value. The fear of the small machine shops and jobbers was that if they sunk \$100,000 into a machine on a promise that BMW would buy the parts at \$.50, after production began, BMW might try to cut the price to \$.25, which it could do if the variable cost of production were only \$.15.

BMW solved the problem by buying the machines itself and leasing them to the jobbers. In this way there was no hold up because the specialized resource was owned by the party that might choose to act opportunistically against it. Moreover, BMW was protected by the large number of shops with which it contracted.

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<sup>5</sup> In a reverse twist of this situation, Sonoco, which produces paper cones used in textile mills, builds its plants next to its major buyers. Presumably they do this to bond themselves against price manipulation. Sonoco has a monopoly in the production of cones.

Ownership of specific assets to avoid contracting problems can be usefully employed to explain a number of phenomena observed around us. Leasing companies own many assets. For instance, airplanes are quite often owned by holding companies that lease them to carriers. Railroad engines are the same. However, this was not true of railroad engines before the invention of the modern diesel powered, electric engine. Before the new engines, each type of service required its own special engine that was unprofitably employed elsewhere. For short-term commercial property, the landlord makes the improvements on the building, for instance, the landscaping and painting. However, for long-term leases, the renter commonly takes over these duties.

### **Implicit Contracts**

Implicit contracts are so called because the contract implicitly makes renegeing unprofitable. These contracts are built around a device called a *price premium*. The party that has the potential to renege is paid a price above the cost of the services provided in order not to renege. The capitalized value of the price premium is equal to the quasi-rents that could be expropriated from the buyer by renegeing on the contract one time. The supplier could hold the buyer up once, after which the buyer would switch suppliers. The buyer pays a premium to avoid the losses associated with this. The buyer gets paid more than the cost of the service, hence the phrase, "Good work, if you can get it."

Implicit contracts work well when the service provided is technological and price stable, relatively inexpensive, but imposes substantial costs if it is misprovided. Low cost services mean that a small price premium will produce big incentives. Stability in the providers production process means that the contract has a long horizon. These types of contracts are most often long term because this amortizes the quasi-rents over a long time period and lowers the price premium. The contracts are renewed often to avoid the last-period problem. These inter-firm associations are often called continuous dealing contracts. E.g.: corp. defense lawyers are typically paid by the hour while plaintiff attorneys are paid on contingency.

### **Contracts v. Integration**

Sometimes inter-firm contracts work, sometimes they don't. We search for an understanding of what separates the two cases. Let's assert the working hypothesis that inter-firm contracting breaks down on price negotiation. When both parties commit substantial specialized resources, and when price varies substantially over the life of the resources, then integration instead of contracting is the optimal organizational structure.

### **The Outline**

A Taxonomy of Contracting Problems

- Shirking and Agency Costs—These are the problems of managerial control that arise when team production is required.
- Hold-Up—This is the problem of opportunism defined by Klein, Crawford, & Alchian.
- Measurement—Anytime it is hard to measure output because of hidden quality dimensions, costly measurement must be performed. For instance, in the case of the Alchian & Demsetz firm, this is the manager. A properly structured contract minimizes these costs. Barzel develops the measurement problem.
- Pricing—The price at which goods or services will be exchanged is an important part of the terms of a contract. However, many times the fundamental forces of supply and demand change, and hence, the terms of the contract should efficiently change.

#### A Taxonomy of Resolution Alternatives

- Corporate Integration. Integrating solves the contracting problems of the hold-up and measurement but substitutes shirking and agency costs in their place.
- Detailed Contracts. This includes things like franchise, royalty, and arbitration agreements. Also, warranties. Detailed contracts often employ contingency claims in an attempt to induce the contracting parties to supply hard to measure services.
- Price Premium, Brand names, Reputation. The notion of the price premium is a novel theme. It explains the phrase “Good work if you can get it.”