Organising a Network of Subcontractors

This follows Chapter 13 of McMillan closely.[1] He makes some assumptions about the material under incentives and contracts in Chapters 8, 9, and 10 that we haven't covered in class.

How do firms set incentives for their subcontractors? Illustrate the ideas of bargaining, contracting, and bidding.

Japanese (J) industry: close and extensive links between manufacturers and their parts suppliers. MITI: "J manufacturing industry owes its competitive advantage and strength to its subcontracting structure". Perhaps a ¼ of J cost advantage?

J firms with fewer than 50 employees account for 23% of the value of manufacturing-industry shipments: ratio of inputs purchased to outputs averages 69%.

US industry began to change, to more closely resemble J in these measures: because of the success of J methods of organising production. Gains and losses from making increasing use of subcontractors?

1. See his article, "Managing Suppliers: Incentive Systems in Japanese and U.S. Industry," *California Management Review*, **32**(4), Summer 1990.

1. Principal–Agent Theory and Business Practice

Principal–agent theory recognises the difference in bargaining power between the large buying firm and the smaller suppliers. The principal — here the buying firm — is modelled as being able to design the transaction and set the terms of exchange.

The agent — here the supplying firm — has two things going for it:

- its ability to reject a proposed contract, which it will rationally do if it has a more profitable alternative;
- knowledge is power: as a specialist, the supplier knows more about the production conditions than does the buyer. It can use this to advantage in negotiations.

J subcontracting firms are not without alternatives:

single customer	17% of suppliers
two customers	20%
three to five customers	26%
six or more customers	36%

Over ½ subcontractors said they wanted increase their number of buying customers.

2. Incentives for Cooperation

Ongoing relationships can serve in place of formal contracts in creating incentives for cooperative behaviour.

3. Specific Investment

The manufacture of an item requiring some specific investment cannot be contracted to another firm unless short-term profit seeking can be curtailed, and can be seen to be curtailed.

4. Subcontracting v. In-House Production

A firm should contract out the production of a component when outside production costs less than in-house production.

5. Risk Sharing v. Incentives

The fraction of production-cost increases that the buyer permits the supplier to pass on in price increases should be higher:

- *the less scope there is for discretionary cost reductions by the supplier; and*
- *the more risk-averse the supplier relative to the buyer.*

6. Multiple Sourcing

When multiple sourcing is used, the buyer should make the price paid to one supplier vary with the other suppliers' costs.

7. The Trajectory of Prices

If the supplier's costs are expected to fall during the course of a contract owing to learning by the supplier, then the buyer shouldn't plan to adjust the price downwards in response to cost improvements. Rather, he should announce in advance the trajectory of the price, based on his prediction of a reasonable rate of innovation, and then keep to this trajectory.

8. Bidding Competition?

By promising to discriminate in favour of incumbent suppliers at the next contract-renewal time, the buyer can induce the incumbents to undertake cost-reducing innovations to achieve high-quality outputs. But by doing so, the procuring firm forgoes some of the price-lowering it could get from bidding competition.

9. The Subcontracting Hierarchy

Subcontracting can be organised either in a single tier, with the buyer directly controlling them all, or in multiple tiers, with the buyer dealing directly only with a few first-tier subcontractors, who in turn control second-tier subcontractors. The benefit of the multi-tier hierarchy is that the buyer then doesn't need to know as many of the details of low-level production. The cost to the buyer of operating a multi-tier hierarchy is that some profits that would otherwise go to the buyer are ceded to the first-tier subcontractors.