

Workouts on Bargaining and Vertical Markets

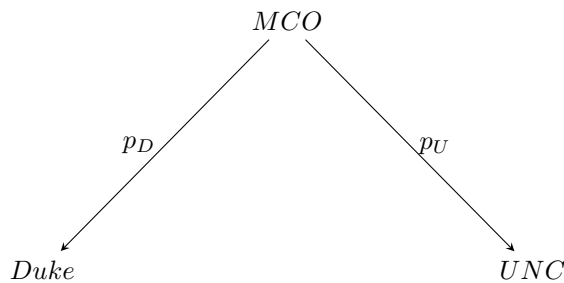
ECON-465: Market Power and Public Policy

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1. Bargaining and Hospitals

Suppose we have a market with a single MCO (insurance company or managed care organizations), and two hospital Duke and UNC – which are in the fact some of the largest hospital groups in the triangle.



Denote the prices paid by the MCO's to the hospitals as p_{ij} , so p_D , is the price the MCO pays to Duke Hospital System, and p_U is the price paid to

Profits for the MCOs (before they make payments to hospitals), depend on the network that have formed given by:

Network	MCO Profits
None (\emptyset)	0
Duke	7
UNC	5
Duke and UNC	10

Prices are negotiated via 50-50 split Nash-Bargaining.

(a) (4 points) What are the prices that the MCO will pay to Duke and UNC?

Solution:

Price for Duke Hospital

$$\begin{aligned}
 p_D &= \frac{1}{2} (\pi^{MCO}(D, U) - \pi^{MCO}(U)) \\
 &= \frac{1}{2} (10 - 5) = 2.5
 \end{aligned}
 \tag{1}$$

Price for UNC Hospital

$$\begin{aligned}
 p_U &= \frac{1}{2} (\pi^{MCO}(D, U) - \pi^{MCO}(D)) \\
 &= \frac{1}{2} (10 - 7) = 1.5
 \end{aligned}
 \tag{2}$$

- (b) (4 points) Suppose that Duke and UNC merge. What happens to the total price that the MCO needs to pay for Duke and UNC? Is this merger profitable for these hospitals?

Solution:

Now, the combined hospital can negotiate with the MCO over the combined Duke and UNC

$$\begin{aligned} p_{D,U} &= \frac{1}{2} (\pi^{MCO}(D,U) - \pi^{MCO}(\emptyset)) \\ &= \frac{1}{2} (10 - 0) = 5 \end{aligned} \tag{3}$$

So instead of getting $1.5 + 2.5 = 4$, the combined firm can extract 5 out of the MCO. Thus the merger is profitable.

- (c) (3 points) What happens to the effects of a merger between Duke and UNC if we change the profits of having Duke in network for the MCO to 3, i.e. the profit table becomes:

Network	MCO Profits
None (\emptyset)	0
Duke	3
UNC	5
Duke and UNC	10

Is the merger profitable? What is different compared to the previous case?

Solution:

Pre-Merger:

Price for Duke Hospital:

$$\begin{aligned} p_D &= \frac{1}{2} (\pi^{MCO}(D,U) - \pi^{MCO}(U)) \\ &= \frac{1}{2} (10 - 5) = 2.5 \end{aligned} \tag{4}$$

Price for UNC Hospital:

$$\begin{aligned} p_D &= \frac{1}{2} (\pi^{MCO}(D,U) - \pi^{MCO}(D)) \\ &= \frac{1}{2} (10 - 3) = 3.5 \end{aligned} \tag{5}$$

Post-Merger:

Now, the combined hospital can negotiate with the MCO over the combined Duke and UNC

$$\begin{aligned} p_{D,U} &= \frac{1}{2} (\pi^{MCO}(D,U) - \pi^{MCO}(\emptyset)) \\ &= \frac{1}{2} (10 - 0) = 5 \end{aligned} \tag{6}$$

So instead of getting $3.5 + 2.5 = 6$, the combined firm can extract 5 out of the MCO. Thus the merger is NOT profitable. The reason for this is that hospital are complements for the MCO, thus each hospital can get more individually than they can get collectively.

- (d) (3 points) Suppose as in the Evanston-Northwestern Highland Park Merger, there is a remedy that specifies that separate negotiating teams need to be used for the combined Duke-UNC merged

hospital. What is the effect of the merger on prices, given this remedy?

Solution: Same prices before and after the merger.