Division of Research
Graduate School of Business Administration
The University of Michigan

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PRICE FIXING ABOVE COMPETITIVE EQUILIBRIUM

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Lu Wang

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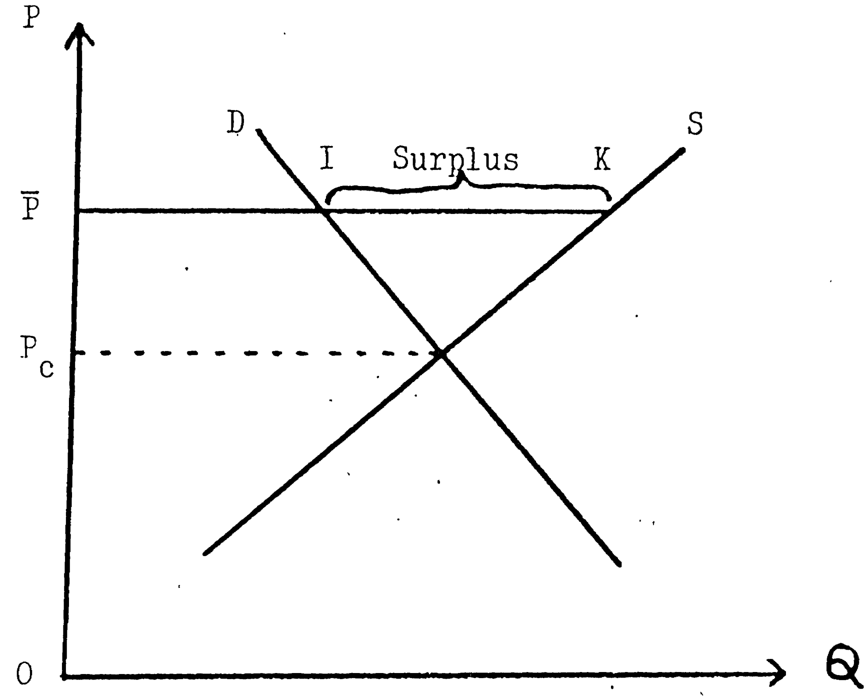
Lu Wang
Assistant Professor of Finance
School of Management
The University of Michigan-Dearborn

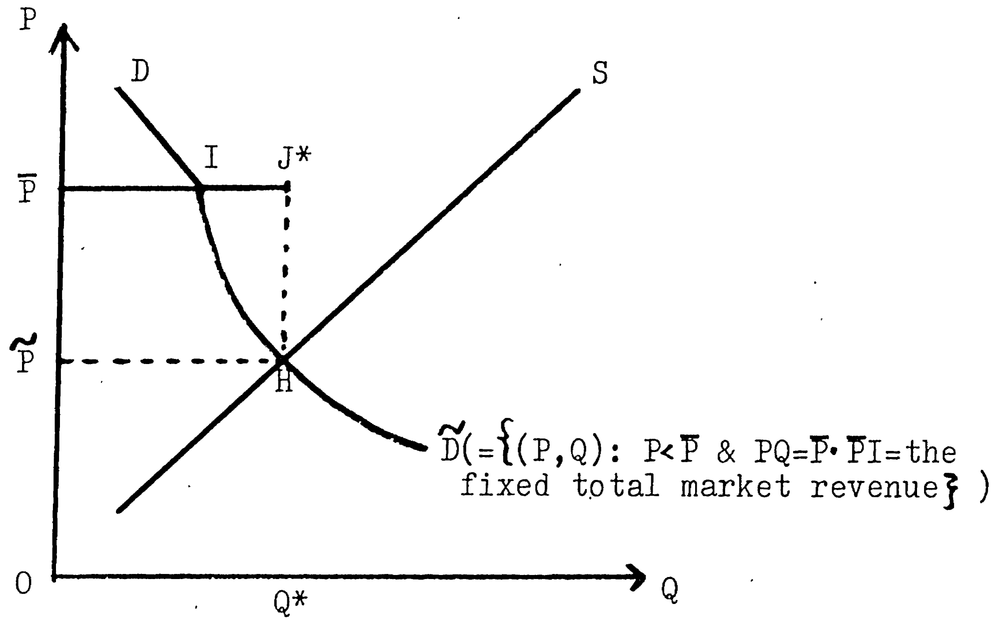
This paper intends to make a modification of the following familiar diagram:



that is, a purely competitive industry constrained with a price fixing, with the price $\overline{p}$ fixed above its market-clearing level P_c. This paper argues that the surplus IK shown in the above diagram can not be sustained over time; since the industry will not supply a quantity as much as $\overline{p}$K, incurring a marginal cost MC = $\overline{p}$ yet finding that they really are not able to sell all of the quantity $\overline{p}$K to realize the $\overline{p}$ for each of the units they have produced. But the industry will not supply so few units as $\overline{p}$I, either; since the now realizable unit price $\overline{p}$ > MC and thus there is an incentive for each firm to supply more in order to maximize its profit. From the above two considerations, we see that $\overline{p}$ K is too much and yet $\overline{p}$I is too less; thus, intuitively, the equilibrium state can only be settled somewhere between points I and K.

So we are searching for a point J lying between I and K, or in other words, $\frac{\overline{PI}}{\overline{PK}} < \frac{\overline{PI}}{\overline{PJ}} < \frac{\overline{PI}}{\overline{PI}} = 1$. This proportion $(\frac{\overline{PI}}{\overline{PJ}})$ should serve as the probability for each unit to be sold in the market, because of the assumption of homogeneous product from pure competition. It then follows that $\overline{p} \cdot (\frac{\overline{PI}}{\overline{PJ}})$ is the <u>expected unit price</u> (i.e., expected average revenue) $\tilde{p}$ for each unit produced. Furthermore, this expected <u>average</u> revenue $\tilde{p}$ should also be the expected <u>marginal</u> revenue; since -- <u>as</u> firms in <u>free</u> pure competition perceive their individual variations of the quantity supplied not to influence the market - determined price, <u>so</u> do competitive firms under price <u>fixing</u> $\overline{P}$ perceive their individual variations of the quantity supplied not to influence the market-determined proportion of quantity sold to quantity supplied $(\frac{\overline{PI}}{\overline{PJ}})$; i.e., firms take $(\frac{\overline{PI}}{\overline{PJ}})$ as given and see $\overline{P} \cdot (\frac{\overline{PI}}{\overline{PJ}}) = \tilde{P}$ both as the expected average revenue and as the expected marginal revenue for each unit they produce. As such,the equilibrium condition is $\tilde{p} = \overline{p} \cdot (\frac{\overline{PI}}{\overline{PJ}}) = MC$ (which, as usual, is a function of the quantity supplied $\overline{pJ}$). In other words, we want to solve the equation $\overline{p} \cdot (\frac{\overline{PI}}{\overline{PJ}}) = MC(\overline{PJ})$ for $\overline{pJ}$. That particular $\overline{pJ}^*$ is the equilibrium industry quantity supplied, with the resultant $IJ^* = \overline{pJ}^* - \overline{pI}$ being the equilibrium market excess supply.

Now, in addition to the above algebra, the geometry of determining $\overline{pJ}^*$ from $\overline{P} \cdot (\frac{\overline{PI}}{\overline{PJ}}) = MC(\overline{pJ})$ could also be done as follows:
Transposing $\overline{pJ}$ to the other side of the equation, we have $\overline{pJ} \cdot MC(\overline{pJ}) = \overline{p} \cdot \overline{pI}$ = the fixed total market revenue due to the price fixing. This suggests that we draw a rectangular hyperbola starting the point I; this 'effectual demand curve $\tilde{D}$' will intersect the industry's supply curve S at a point H, which will determine pJ^*. That is,



The above analysis is attributed to the existing rich airline studies. Following Yance [2], the equilibrium condition for a carrier under price regulation $\overline{p}$ is that $\overline{p}$ = the marginal cost seat sold = $\dfrac{\text{MC (marginal cost seat supplied)}}{\frac{\partial D}{\partial S}\text{(marginal load factor)}}$

$$= \frac{\text{MC}}{\frac{D}{S}\text{ (the average load factor) x } \left(\frac{S}{D} \cdot \frac{\partial D}{\partial S}\right)\text{ (the capacity elasticity of demand)}}$$

For an oligopolistic industry, due to the mutual dependence recognized, $\left(\frac{S}{D}\frac{\partial D}{\partial S}\right) < 1$. But for a purely competitive industry (without mutual dependence recognized), $\left(\frac{S}{D}\frac{\partial D}{\partial S}\right) = 1$, that is, the individual carrier takes the observed average load factor $\left(\frac{D}{S}\right)$ as given and believes that its incremental quantity supplied ΔS will bring about a proportional increase in ΔD, i.e., $\frac{\Delta D}{\Delta S} = \frac{D}{S}$ (Schmalensee [1]). Hence, $\overline{p}\left(\frac{D}{S}\right) = MC$, which is the concluding point of the above analysis.

Finally, we note that, like any other proposition of a static equilibrium point, no dynamic discussion is made here.

REFERENCES

[1] Schmalensee, R., "Comparative Static Properties of Regulated Airline Oligopolies," The Bell Journal of Economics, Autumn 1977.

[2] Yance, J.V., "Nonprice Competition in Jet Aircraft Capacity," The Journal of Industrial Economics, December 1972.