IN PURSUIT OF MONOPOLY POWER

Measure of monopoly power: The ability of firms to raise prices above competitive levels, i.e. $P>MC_i$ leads to the Learner index of monopoly power, also called the price-cost margin:

$$(P-MC_i)/P \tag{1}$$

Cowling & Waterson (1976) model:

From the lectures on profit maximising behaviour we had found the relation:

$$P\left(1-\frac{1+\lambda_i}{\eta}S_i\right) = MC_i \quad \Leftrightarrow$$

where η is the absolute value of the price elasticity of demand, $\eta= -\frac{dP\cdot Q}{dQ\cdot P}$ and S_i the market share of firm i.

$$\frac{p-MC_i}{p} = \frac{1+\lambda_i}{\eta}S_i \tag{2}$$

The above gives the relationship between price-cost margins and market shares.

Multiplying both sides by $S_i = \frac{Q_i}{Q}$ and summing over N firms we get

$$\frac{\sum_{i=1}^{N}PQ_i - \sum_{i=1}^{N}MC_iQ_i}{PQ} = \frac{1}{\eta}(1+\mu)\sum(S_i)^2 \tag{3}$$

where $\mu = \frac{\sum\lambda_iQ_i^2}{\sum Q_i^2}$ is a market shares weighted average of λ_i's, the conjectural variation terms for each firm in the industry. By assuming that firms have constant marginal cost, equal to the average cost, one may consider the L.H.S. in (3) as the average industry profit margin (profit to revenue ratio). On the R.H.S. $\sum(S_i)^2$ is the Herfindahl index of concentration. Therefore equation (3) may be rewritten as:

$$\frac{\Pi}{R} = \frac{H}{\eta}(1+\mu) \qquad (4)$$

The equation above indicates that the Herfindahl index of concentration is an appropriate index of concentration to be included in the explanation of the profit margin. Therefore we can write the following regression equation for an industry j:

$$(\Pi/R)_{jt} = \beta_{jt}H_{jt} \qquad (5)$$

Cowling & Waterson assume that β differs among industries but is constant over time within each industry because all price elasticities and μ's are constant over the relevant time of analysis. Thus we have:

$$\frac{(\Pi/R)_{jt}}{(\Pi/R)_{j(t-1)}} = \frac{H_{jt}}{H_{j(t-1)}}$$

thus eliminating conjectural variation and the elasticity of demand. If μ is expected to increase as H increases, as a result of an increasing degree of collusion then the appropriate specification is:

$$\frac{(\Pi/R)_{jt}}{(\Pi/R)_{j(t-1)}} = \left(\frac{H_{jt}}{H_{j(t-1)}}\right)^{\beta}$$

Also if it is accepted that η may vary through the business cycle, then this can be allowed for by control variables. In the end C&W run two regressions, one for durable goods industries (50 obs.) and one for the non-durable goods (43 obs.) of the form:

$$\log\left[\frac{(\Pi/R)_{j,63}}{(\Pi/R)_{j,58}}\right] = \gamma_0 + \beta \log\left[\frac{H_{j,63}}{H_{j,58}}\right] + \gamma_1 \log\left[\frac{TU_{j,63}}{TU_{j,58}}\right]$$

	Durables	Non-Durables
γ_0	0.05 (0.82)	0.04 (1.52)
β	0.56 (3.13)	0.01 (0.13)
γ_1	0.87 (1.56)	0.003 (0.013)

TU = union density, % of total employees in the industry who are union members.