

The regression equation for the unadjusted sample containing 26 observations is:

Equation III $Y=9.8+0.018X$
with explained variance, $R^2=0.17$.¹²

Computing a similar simple regression equation for the adjusted producer goods and mining sample containing 32 observations, the resulting equation is:

Equation IV $Y=10.2+0.016X$
with explained variance, $R^2=0.10$.¹³

Whereas the expansion of the sample size improved the statistical relationship between intra-industry profit variance and industry average profit rate in the consumer goods sector, exactly the opposite results occurred in the producer goods and mining sectors. The explained variance, R^2 , decreased from 0.17 to 0.10, indicating that an even smaller percentage of the differences in industry average profit rates resulted from the variance in intra-industry profits.¹⁴ Moreover, the slope of the regression line, which shows the response of industry profit rates to changes in industry profit variances, decreased from its already low level of 0.018 to 0.016.

In sum, the strong statistical relationship between intra-industry profit variances and industry average profit rates in the consumer goods sector proved to be even stronger when the size of the consumer goods sample was increased, while the already weak statistical relationship between variances in industry profit rates and industry profits in the producer goods and mining sample became still weaker when the size of the producer goods and mining sample was expanded. This finding is significant. Together with the findings I reported in my January 18, 1968 statement to this Subcommittee, it demonstrates conclusively that the statistical relationship reported by Conrad and Plotkin was due entirely to the differentiated consumer goods industries in their sample. As pointed out in my original statement, a basic assumption of their hypothesis is that the industries analyzed be homogeneous. The producer goods industries in their sample most closely approximate this assumption. Yet, when only these industries are analyzed, no significant statistical relationship exists between industry variance and profit rates.

PROFIT RATES OF LARGEST COMPANIES AND OTHER COMPANIES

The underlying data furnished by Arthur D. Little provide additional facts with which to test our hypothesis that the intraindustry variance in profit rates is really a measure of the advantage which some firms enjoy over others by reason of their success in differentiating their product. If we are correct that in many consumer goods industries product differentiation creates advantaged positions for the largest companies relative to smaller ones, then the largest companies may be expected to enjoy persistently higher profits than other companies.¹⁵ On the other hand, we generally would not expect the largest firms in producer goods industries to enjoy a significant product differentiation advantage over other companies in the industry. So, unless such firms enjoyed some other advantage we would not expect the largest companies in such industries to earn persistently higher profits than the remaining companies in the industry.

To test the above hypothesis, the Arthur D. Little sample of companies in each industry was divided into two size classes on the basis of relative company size.

¹² Values for X and Y in Equations III and IV are unweighted with respect to company size. Unweighted variables had to be used in measuring the effects of adding the 7 additional ungrouped observations because the company size weights employed by Conrad and Plotkin were not made available by Arthur D. Little. The effect of using unweighted values rather than weighted values can be seen by comparing the R^2 and the slope of Equation III with comparable values for the equation shown in Figure 5B of my January 18, 1968, statement before this Subcommittee. This comparison shows that the relationship between intra-industry profit variability and average industry profit rates is even less significant when Conrad and Plotkin's weighted values are used.

¹³ *Ibid.*

¹⁴ The statistical probability that the relationship could have occurred due to chance increased from 2.5 to 5 percent.

¹⁵ Ideally, we should know the degree of product differentiation enjoyed by each firm in the industry. Lacking this information, we have assumed that the largest companies possess the most highly differentiated products. This assumption is generally valid because the leading companies in consumer products industries are also by and large the leading advertisers.