

In consumer goods, 76 percent of the variation among average industry profit rates is associated with the variance of intra-industry profit rates. Additionally, the slope of the regression line fitted to the observations is quite steep, which means industry profit rates rise sharply with high intra-industry profit variance.

On the other hand, when only producer goods industries are used in the analysis, the statistical relationship is extremely weak. Only 8 percent of the variation in industry profit rates is associated with variation in intra-industry profit variance. Moreover, the regression line is much less steeply inclined, indicating that average industry profit rates increase very slightly with increases in intra-industry profit variance. These findings are extremely significant. They demonstrate that the statistical relationship found by Conrad and Plotkin was due almost entirely to the consumer goods industries in their sample. The fact that no significant statistical relationship remains when only producer goods industries are used to test their model is especially damaging to the Conrad-Plotkin analysis. A basic assumption of their method of measuring intra-industry risk is that the industries analyzed be homogeneous. Producer goods manufacturing industries are, of course, much more homogeneous than are consumer goods industries. Hence, according to their assumptions the "purest" relationship between "risk" and profits should have been uncovered in the analysis of producer goods industries.

The close statistical relationship existing in consumer goods industries very probably results because intra-industry profit variance in consumer industries is a rough proxy for the height of entry barriers. Thus, Conrad and Plotkin unwittingly have made a case for the inference that a substantial part of the high profits earned by drug companies is really due to advertising- and promotion-created barriers to entry, rather than risk. This, of course, coincides with the conclusion of nearly every economist who has carefully studied the drug industry.

CONCLUSION

Upon completing our analysis of the Conrad-Plotkin-Markham-Cootner explanation of risk and profits in the drug industry, I recalled the admonition once given by the great classical economist and logician, John Stuart Mill. Mill cautioned economists against the pitfall of multiplicity of causes. We must always be skeptical of simple statistical associations among complicated economic phenomena. Professor Kenneth Boulding put it well when he said, "Some of us, perhaps, still have to learn that arithmetic is a complement to, not a substitute for, thought, and that what my spy in IBM calls the 'gigo principle,' (that is, garbage in, garbage out) is a sound approach even to the most elegantly computerized simulation."³⁵

This more or less capsules my findings in reviewing the analysis of drug profits and their possible association with risk. I find, to be very brief, that the high profit experience of the drug industry is related only minimally to risk and uncertainty in a causal way. On the other hand, the high profits of the drug industry are more closely associated with high barriers to entry of new competition. In other words, in the classic tradition, the market power enjoyed by drug firms has been achieved primarily because the leading drug companies have been able to fence themselves off from effective competition, and in this sheltered position they have garnered extremely high profits—profits which the economist would label as "abnormal" or "excessive," profits substantially above the competitive norm.

³⁵ Kenneth Boulding, "The Economics of Knowledge and the Knowledge of Economics," *American Economic Review*, May 1966, p. 10.