

Senator NELSON. If we thought it would be of value, would you be prepared to submit the supplemental data to the committee at a subsequent date?

Dr. MUELLER. Certainly. I would be happy to.¹

You will recall that Conrad and Plotkin attempted to test the hypothesis that the level of an industry's profit rate is positively correlated with the degree of risk faced by firms within the industry. In other words, the more risky an industry, the higher its average profits.

The concept of risk in investment decisionmaking theory refers to situations where it is impossible to predict with certainty the outcome of particular economic events. The presence of uncertainty is assumed to affect investors' decisions. A common assumption is that investors must be paid a "risk premium" if they have an aversion to assuming risks. "Risk aversion" has been an underlying assumption in a number of recent theoretical works, particularly in the areas of portfolio selection and monetary theory. However, the assumption of "risk aversion" is not a universal economic law. One need only view the crowds at the racetrack paying for the privilege of taking a gamble to infer that some persons regard risktaking as furnishing positive rather than negative satisfaction. These individuals may be viewed as "risk lovers." As a group, these risk lovers lose money at the racetrack. This is also the case with persons gambling in commodity futures markets.

In order to explain why individuals will both purchase insurance to guard against large losses and undertake gambles with remote possibilities of achieving high returns, Friedman and Savage have argued that some persons regard risk-taking as furnishing positive rather

This, in a nutshell, is what risk aversion theory is all about. But note two important points. First, the size of the risk premium is an empirical question. The theory tells us nothing about the amount of the premium, nor even whether it is positive or negative. Second, central to the hypothesis that is necessary to offer a positive premium to investors in order to attract adequate capital into a risky industry is the idea that risk may cause firms to incur losses, as well as to enjoy abnormally high profit rewards. Hence, risky industries would be characterized by the presence of both firms with abnormally high profits and firms with abnormally low profits. It would be inconsistent with risk theory if nearly all firms in an industry made very high profits and few or none ever suffered losses.

The Conrad-Plotkin measure of risk misses this point. Risk is quantified by Conrad and Plotkin by measuring the variance of individual companies' rates of return about the industry average in a given year and computing a simple average of these values for the 16-year period 1950-65. This measure assumes that the greater the variation in the profit rates of firms about the industry average, the riskier the industry. The chief conceptual shortcoming of this measure is that it does not necessarily tell us anything about the probability of incurring losses. In truth, using this measure an industry may be defined as risky even though all firms in it earn excessively high profits; on the other hand, this measure may define an industry as having very low risk even though all firms are making little or no profit. An example will illustrate this point. By the Conrad-Plotkin measure, the drug

¹ See supplemental statement beginning at p. 1843, *infra*.