

industry is a high risk industry and the aluminum industry is a low risk industry. Conrad and Plotkin's estimates of the average rate of return, standard deviation, and variance for the two industries are as follows, and I show that in my statement in tabular form.

The drug companies in their sample experienced an average rate of return of 17.5 percent over the period 1950-65. The standard deviation in profits around this average was 8.6 percent. This means that the profit ratio of roughly two-thirds of the companies in the industry fell in the range, 8.9 percent to 26.1 percent.

On the other hand, the average rate of return of a group of aluminum companies was 7.8 percent, with a standard deviation of 1.3 percent. This means that two-thirds of the time aluminum company profits fell in the range, 6.5 percent to 9.1 percent.

Thus, according to Conrad and Plotkin, the drug industry is riskier than the aluminum industry because of the greater standard deviation in the profit rates of drug manufacturers.

Just what do these facts concerning the variation in profits tell an investor about the relative profit expectations in these two industries? They say, in effect, that there is a 2-to-1 chance that profit rates in the drug industry will fall in a range from 8.9 percent to 26.1 percent, whereas there is a 2-to-1 chance in the minimum industry that profit rates will fall in a range from 6.5 percent to 9.1 percent. Can anyone seriously argue that investors would prefer to place new capital in the aluminum industry rather than in the drug industry? The only risk that the aluminum investor is saved from is the high probability that aluminum companies will earn less than 9 percent—there is only 1 chance in 6 of getting more than 9 percent.

On the other hand, the risk the investor in the drug industry faces is that the chances are poor that drug companies will earn a rate of return as low as the average return in the aluminum industry. In fact, there is only 1 chance in 6 that they will earn a rate of return of below 9 percent, whereas there are 4 chances out of 6 that they will earn between 9 and 26 percent, and 1 chance in 6 that they will earn over 26 percent. In other words, five-sixths of the time the drug companies would be well above the aluminum companies' average return. Clearly, then, it is nonsense to infer from the Conrad-Plotkin variance measure of risk that the drug industry is riskier than the aluminum industry in terms of attracting new capital.

Losses, or even low profits, are practically unheard of among large drug companies. In this respect the drug industry is practically unique among important American industries. Figure 2 shows for 22 major industries the percent of the time the eight largest companies fell in various profit rate categories during the period 1954-66. Large drug companies not only earned a higher return than any other of the major manufacturing industries shown, but none of the drug companies ever experienced losses during the period, nor did any companies experience profit rates below 5 percent. Only two other industries enjoyed this distinction, petroleum refining and cigarettes. I might say parenthetically that I used this 5 percent figure because it represents the approximate rate that someone would receive when purchasing very secure bonds during this period. So, in effect, this is the upper level of very secure investments. And when you receive