

the percent of the firms which earned a given rate of return, and here we have the rate of return which they earned.

Distribution A might be considered typical of the utilities industry where, because of regulation the final rate of return earned is very similar from firm to firm. It is narrowly distributed, centered around 6 percent, and if you earned 8 percent one year, the next year at a rate hearing, you are pulled back down. In any one year, given that you are making a physical or stock market investment in utilities, you can be fairly certain of what your rate of return will be.

In another industry, like the computer industry, the rates of return are indeed very dispersed. They have a high average, but there are some earning a good deal of return, and there are some earning less return. In the same sense that venture A was less risky than venture B, I would like for you to think of these two industries here characterized as industry A being less risky than industry B. Industry B, if you are selecting a company at random, is more difficult to predict than is industry A under these terms.

We have now defined the basis of our measure of risk; that is, the dispersion of the results of individual companies based on some measure of return about the industry average.

I would like, returning to the desk there, to concentrate for a moment on the problem you asked us to keep in mind, the definition of the rate of return for that, too, must be specified before we can measure the two quantities, the relationship between risk and return.

However, I do not wish to underestimate the difficulties with this approach to risk measurement.

For example, the indicated amount of risk in the particular industry will depend on how carefully the industry is defined or for some particular industry, investors may not have foreseen the actual degree of risk that really did occur. But if we define our variables carefully and utilize a large number of industrial classifications, and they standardized outside source, we can find a stable relationship with a high degree of statistical confidence.

Furthermore, a number of different studies were undertaken by us at the Arthur D. Little organization, as well as other scholars, to compare the effect of using a number of different periods and different industrial classifications.

It is encouraging, as Professor Cootner said before, and I reiterate here, that the results were not found to be highly sensitive to the precise definition or the precise number of years or industrial classification.

Therefore, as a scholar and technician, we can be sure what we are seeing unfolding here is not a fluke due to chance and a particular set of definitions, but is objective and verifiable and can be constructed by any interested scholar.

As with the measure of risk, we have followed the same approach in the measure of rate of return. The main variable used, and the one we believe to have the most significance for this purpose, is simply the rate of return earned by companies on their long-term investment at book value, since it is this rate of return which is the most commonly used and is the one considered by most investors and economists when they are at all concerned with the overall profitability of the industry. When the economists is charged with answering the question: "Is a sufficient amount of capital flowing into that industry to provide the