

of statistical data and could derive such significant results. Since our study, the availability of data has radically improved and studies have multiplied. Fred Arditti of Rand Corp., Prof. Shannon Pratt of Indiana University and Portland State College, and Irving Plotkin and Gordon Conrad who you will hear after me, among others, have all completed major investigations into this question since 1964.

One of the surprises of all these recent studies—or at least it might surprise those who have heard economists disagree in public testimony—is that they all reach agreement on the broad outline of their results. The rate of return does rise as risk increases, and even the quantitative relationships show only minor differences. There are few settled empirical truths in economics, and I am sure that differences will arise and refinements will be made as time goes on and work is reviewed, but the competition is no longer between different “beliefs” or “feelings,” but a comparison of competing hypotheses and empirical tests.

Since the Conrad-Plotkin study is very similar to Professor Holland’s and mine through quite independently conceived, and will be presented in some detail, I am only going to discuss some of the main problems and implications of this type of work before you hear from Mr. Plotkin.

One of the greatest obstacles to a scientific study of the relation between risk and return is the difficulty of establishing a meaningful, objective definition of “risk.” Consider an investor planning to produce and sell a particular product. In choosing the size of the investment he must estimate, among other things, the size of the market, his level of costs, and the competitive response of others in the industry. In making his plans he will draw on whatever experience he has or on any market research he can perform. Such analysis may lead him to some “best guess,” or it may permit him to place upper or lower limits on the potential demand, but there will always remain a large number of possible outcomes which have at least some probability of occurring. There will be similar uncertainty about the levels of costs that he will experience, or the price or production response of his competitors. In making his final plans, he must weigh all these possibilities in estimating the profitability of the investment; whether he does so by “intuition” or “judgment,” or by mathematical calculation. Finally, after making that estimate he must decide whether the venture is worthwhile.

The whole theory about the relation between risk and rate of returns on this final decision. In essence, it turns on the belief that if our investor should examine investments in two different industries with identical return, he would prefer the investment which was least likely to result in a substantially reduced return if adversity befell the project. If this is so we will find that the more risky project will not be undertaken until the need becomes so pressing that the investor can anticipate a significantly higher rate of return than he could on the less risky project. If returns are out of line with risk, the flow of capital into the riskier industry will be cut back until profits return to the desired relationship. In that case, whenever capital is flowing into both industries, we will observe the more risky industry earning a higher rate of return. Conversely, if the more risky industry fails to