

about its mean, $E(U_2)$. The important point, however, is that the expected utility has decreased as a result of the increased dispersion of the earnings distribution. As a result, the risk premium, $(E(P) - P) > (E(P) - P^*)$. Consequently, greater variance in the distribution of earnings implies greater risk and, for risk-averse firms, leads to larger risk premiums. This implies that earnings should be larger, on average, for firms with greater variation in their earnings than for firms with little earnings variability.

Skewness may also have an important effect on the risk premium (Refs. 3, 12, 31). The entrepreneur may prefer positively-skewed earnings distributions because the likelihood of extremely low earnings is smaller. This, also, is illustrated in Fig. 1. Curve (3) in (b) has the same expected value as (1) and (2), but is skewed to the right. This function has been constructed so that the resulting distribution of utilities is symmetric about its expected value. In this example, skewness offsets variance and the risk premium is zero, i.e., $E(U_3) = U(E(P+W))$. Thus, positive skewness results in smaller risk exposure, while negative skewness leads to greater risk exposure, implying that earnings should be smaller, on average, for firms with earnings distributions positively skewed but larger, on average, for firms with negatively-skewed distributions.

The results of Fig. 1 suggest that once the form of the utility function is specified, risk exposure can be measured by characteristics of the probability distribution of earnings. The required risk premium becomes larger as the spread of the earnings distribution increases, but the premium decreases as the distribution becomes positively skewed.⁸ This illustrates that risk exposure, as defined here, can be measured by characteristics of the firm's earnings distribution.

Before testing this hypothesis, one link in the discussion of the relationship between risk and earnings remains to be completed—that of the mechanism by which entrepreneurial preferences for risk and profits are translated into industry profit differentials or risk premiums and discounts.

Conventional economic theory indicates that with well-functioning capital markets the equilibrium rate of return will be identical among all activities. Entrepreneurs theoretically seek those investments yielding the largest rates of return. As capital is withdrawn from less profitable activities, the rates of return in such activities rise. Similarly, the inflow of capital into higher-yield investments forces the rates of return in these activities downward. Equilibrium occurs when the rates of return of investment are identical among all activities.

When risk is considered, the adjustment process is more complex. Because differences in risk exposure exist among alternative investments, entrepreneurs balance risk against expected rates of return. Capital, therefore, is transferred from low-return, high risk activities to high-return, low risk investments until an equilibrium, characterized by a set of risk premiums reflecting differences in risk exposure, is achieved. In this equilibrium, risk-compensated rates of return are equal among alternative investments, but observed or actual rates of return will differ by the amount of the risk premiums.

⁸ This can be demonstrated formally in the following manner: Expand $U(P+W)$ in a Taylor series about the point $(\hat{P}+W) = E(P+W)$,

$$U(P+W) = U(\hat{P}+W) + U'(\hat{P}+W)(P-\hat{P}) + \frac{U''}{2!}(\hat{P}+W)(P-\hat{P})^2 + \frac{U'''}{3!}(\hat{P}+W)(P-\hat{P})^3 + \dots$$

Taking expected values and holding $W, \hat{P}$ constant,

$$E(U(P+W)) = U(\hat{P}+W) + \sigma_p^2 \frac{U''}{2!}(\hat{P}+W) + \sigma_p^3 \frac{U'''}{3!}(\hat{P}+W) + \dots$$

Rearranging terms, the difference between expected utility and utility of expected earnings is

$$U(P+W) - E(U(\hat{P}+W)) = -\left(\sigma_p^2 \frac{U''}{2!}(\hat{P}+W) + \sigma_p^3 \frac{U'''}{3!}(\hat{P}+W) + \dots\right).$$

Equation (3) is the risk premium, $R(P, W)$, and it becomes apparent that the second, third, and higher moments may affect the magnitude of the risk premium. Since $U''' < 0$ for a concave utility function, the risk premium must increase with larger variances. (The appropriate revisions for risk neutrality or risk preference should be apparent.) It is not, however, clear whether $U'' > 0$. If we assume that firms enjoy positive skewness (longshots), $U''' > 0$ and the risk premium becomes smaller as skewness increases. Higher moments add little information about the characteristics of the distribution and are ignored. (See references 3, 26).