

Assuming that an entering firm cannot identify the factors that lead to intra-industry earnings differentials, this approach measures the risk of entering an industry. It is not clear, however, why a firm already engaged in some industry should be concerned with the industry average. The firm's own history would seem a better guide to the future than the overall industry experience. Nonetheless, in order to compare the intraindustry-dispersion approach to risk with the approach used in the previous model, average risk-adjusted rates of return have been computed using the following equation to measure standard deviation:

$$\sigma_j = \left[\frac{\sum_{i=1}^n \sum_{t=1}^m (r_{it} - R_j)^2}{nm - 1} \right]^{1/2} \quad (5)$$

where

σ_j = standard deviation of firm rates of return about the industry average, industry j ;

R_j = average rate of return on net worth in industry j ;

r_{it} = rate of return for firm i during year t ;

n = number of years in sample;

m = number of firms in industry j .

The relationship between risk and rate of return becomes

$$R_i = R_o + b\sigma_i \quad (6)$$

where R_o = intercept, and b is the marginal effect of intraindustry dispersion on average industry rates of return. Estimates of these terms for the 11-industry sample are:¹³

$$R_i = 6.979 + 1.084 \sigma_i \quad R^2 = 0.734. \quad (7)$$

(0.223)

The average risk-adjusted rate of return for each industry, R_i^* , can be computed from

$$R_i^* = R_i - b\sigma_i. \quad (8)$$

Table 4 compares these estimates of the average risk-adjusted rates of return with those obtained above using the previous measure of risk exposure. For most industry groups, the risk-adjusted rates of return are not greatly affected by the choice of a measure of risk. Two that differ substantially, however, are the drug and aerospace groups. The intraindustry-dispersion measure results in a risk premium of about 8 percent for both groups. Measuring risk by temporal earnings variability results in risk premiums of 1.6 and 2.5 percent, respectively.

TABLE 4.—Average risk-adjusted rates of return and risk premiums¹

Industry	Risk-adjusted rates of return		Risk premiums	
	Intraindustry dispersion	Firm-temporal dispersion	Intraindustry dispersion	Firm-temporal dispersion
Drugs.....	0.1042	0.1664	0.0790	0.0168
Aerospace.....	.0772	.1335	.0808	.0245
Chemicals.....	.0995	.1131	.0414	.0278
Office machinery.....	.0605	.0724	.0803	.0684
Electrical machinery.....	.0596	.0857	.0509	.0339
Petroleum.....	.0898	.1026	.0249	.0121
Rubber.....	.0791	.1021	.0305	.0075
Food.....	.0604	.0915	.0468	.0157
Steel.....	.0566	.0703	.0259	.0122
Textiles.....	.0487	.0594	.0302	.0195
Automotive.....	.0619	.0754	.0858	.0723

¹ The firm-temporal dispersion figures include the effects of both skewness and standard deviation of firm's earnings. The intraindustry figures reflect only the effect of standard deviation. While these alternative estimates of risk-adjusted rates of return and risk premium are not computed the same way, the figures are consistent with the conceptual basis underlying each alternative measure of risk exposure. Moreover, excluding the effect of skewness from the firm-temporal dispersion figures has little effect on the magnitude of the risk-adjusted rates of return or risk premiums.

¹³ Significant at the 0.01 level.