APPENDIX 9B

TECHNIQUES FOR MEASURING BETA RISK

In Chapter 5 we discussed the estimation of betas for stocks, and we indicated the difficulties encountered when estimating beta. The estimation of project betas is even more difficult, and more fraught with uncertainty. However, two approaches have been used to estimate individual assets' betas—the pure play method and the accounting beta method.

THE PURE PLAY METHOD

Pure Play Method
An approach used for estimating the beta of a project in which a firm (1) identifies several companies whose only business is to produce the product in question, (2) calculates the beta for each firm, and then (3) averages the betas to find an approximation to its own project's beta.

In the **pure play method,** the company finds several single-product companies in the same line of business as the project being evaluated and then averages those companies' betas to determine the cost of capital for its own project. For example, suppose Erie (which was discussed in Web Appendix 9A) found three existing single-product firms that operate barges, and suppose also that Erie's management believes its barge project would be subject to the same risks as those firms. Erie could then determine the betas of those firms, average them, and use this average beta as a proxy for the barge project's beta.[1]

The pure play approach can only be used for major assets such as whole divisions, and even then it is frequently difficult to implement because it is often impossible to find pure play proxy firms. However, when IBM was considering going into personal computers, it was able to obtain data on Apple Computer and several other essentially pure play personal computer companies. This is often the case when a firm considers a major investment outside its primary field.

THE ACCOUNTING BETA METHOD

Accounting Beta Method
A method of estimating a project's beta by running a regression of the company's return on assets against the average return on assets for a large sample of firms.

As noted above, it may be impossible to find single-product, publicly traded firms as required for the pure play approach. If that is the case, we may want to use the **accounting beta method.** Betas normally are found as described in Web Appendix 5A—by regressing the returns of a particular company's *stock* against returns on a *stock market index*. However, we could run a regression of the company's *accounting return on assets* against the *average return on assets* for a large sample of companies, such as those included in the S&P 400. Betas determined in this way (that is, by using accounting data rather than stock market data) are called *accounting betas*.

[1] If the pure play firms employ different capital structures than that of Erie, this fact must be dealt with by adjusting the beta coefficients. See Eugene F. Brigham and Phillip R. Daves, *Intermediate Financial Management*, 7th ed. (Cincinnati, OH: Southwestern College Publishing, 2002), Chapter 13, for a discussion of this aspect of the pure play method.

Accounting betas for a totally new project can be calculated only after the project has been accepted, placed in operation, and begun to generate output and accounting results—too late for the capital budgeting decision. However, to the extent management thinks a given project is similar to other projects the firm has undertaken in the past, some other project's accounting beta can be used as a proxy for that of the project in question. In practice, accounting betas are normally calculated for divisions or other large units, not for single assets, and divisional betas are then used to find the division's cost of capital.