

Three widely used methods for evaluating capital expenditures will be considered, along with the shortcomings and advantages of each:

1. Payback method.
 2. Internal rate of return.
 3. Net present value.
- The first method, while not conceptually sound, is often used. Approaches 2 and 3 are more acceptable, and one or the other should be applied to most situations.

Payback Method

Under the **payback** method, we compute the time required to recoup the initial investment. Assume we are called on to select between Investments A and B in Table 12-3. Notice that the values in this table match the preceding timeline.

Table 12-3 Investment alternatives

Year	Cash Inflows (of \$10,000 investment)	
	Investment A	Investment B
1	\$5,000	\$1,500
2	5,000	2,000
3	2,000	2,500
4		5,000
5		5,000

The payback period for Investment A is 2 years, while Investment B requires 3.8 years. In the latter case, we recover \$6,000 in the first three years, leaving us with the need for another \$4,000 to recoup the full \$10,000 investment. Since the fourth year has a total inflow of \$5,000, \$4,000 represents 0.8 of that value. Thus the payback period for Investment B is 3.8 years.

In using the payback method to select Investment A, we ignore two important considerations. First there is no consideration of inflows after the cutoff period. The \$2,000 in year 3 for Investment A in Table 12-3 is ignored, as is the \$5,000 in year 5 for Investment B. Even if the \$5,000 were \$50,000, it would have no impact on the decision under the payback method.

Second, the method fails to consider the concept of the time value of money. If we had two \$10,000 investments with the following inflow patterns, the payback method would rank them equally.

Year	Early Returns	Late Returns
1	\$9,000	\$1,000
2	1,000	9,000
3	1,000	1,000

Capital Budgeting Practices Utilized by Smaller, Privately Held Businesses

While the techniques described in this chapter are intended to be used by the modern, sophisticated business manager, not everyone uses them. It is, however, true that survey studies of large business firms over the past decade have shown an increasing acceptance of such concepts as discounted cash flow (as represented by the internal rate of return or net present value methods) and weighted average cost of capital.

But what about people who do capital budgeting analyses for smaller, privately held business firms? Extensive studies show that only a relatively small percentage of these firms (generally less than 20 percent) use discounted cash flow methods. For example, Runyon^{*} found only 14.4 percent of his questionnaire respondents in small business firms used the internal rate of return or net present value approach. The rest used the payback method or some other unsophisticated approach.

Why do large business firms use theoretically correct approaches, while small business firms do not? There are two primary reasons. The first is that the small business manager is likely to

be less sophisticated and educated in financial matters than the CFO of a larger corporation. The small businessperson's skills are more likely to be in designing products, meeting customer demands, and hiring and satisfying employees.

But rather than be too critical, we should also realize the second reason why small business owners might be using the payback method or similar less sophisticated techniques. Small business owners must deal primarily with bankers or finance companies rather than stockholders or bondholders. When small business owners approach a banker for a loan to finance a capital investment, they should be prepared to demonstrate their capacity to repay the loan within a set period of time rather than quote their internal rate of return or net present value. That is the reason the payback method is often used, and the payback period required often is "the maturity the bank will allow on the loan."

^{*}L. R. Runyon, "Capital Budgeting Decision Making in Small Firms," *Journal of Business Research* 11, pp. 389-97.

Although both investments have a payback period of two years, the first alternative is clearly superior because the \$9,000 comes in the first year rather than the second.

The payback method does have some features that help to explain its use by U.S. corporations. It is easy to understand, and it emphasizes liquidity. An investment must recoup the initial investment quickly or it will not qualify (most corporations use a maximum time horizon of three to five years). A rapid payback may be particularly important to firms in industries characterized by rapid technological developments.

Nevertheless the payback method, concentrating as it does on only the initial years of investment, fails to discern the optimum or most economic solution to a capital budgeting problem. The analyst is therefore required to consider more theoretically correct methods.

Net Present Value

Net present value (NPV) is often the preferred investment selection method for two important reasons. First, it is a theoretically valid method. Second, it is well understood and used by real-world finance professionals. In other words, not only is NPV a theoretically correct method, it is also often the preferred method in practice. The net present value is the sum of the present values of all outflows and inflows related to a project. The present value of each inflow and outflow is usually discounted using the weighted average cost of capital, K_w , for the firm. Thus inflows that arrive in later years must provide a return that at least equals the cost of the invested capital. In