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# The Make or Buy Decision

Haim Levy\* and Marshall Sarnat†

To buy or not to buy, that is the question. Almost every firm at one time or another is faced with the problem of choosing between the production or purchase of the component parts of its final product. Of course some companies produce all of their components themselves, but many, and perhaps most, do purchase part of their components from outside suppliers.

The decision to *make* or *buy* a given component depends on many factors. For example, should the firm decide to purchase the parts from an outside supplier, it must weigh the risk of delay in their delivery. If the market for the particular component is competitive, and there are many suppliers, this risk may be negligible. However, if there are only a limited number of suppliers, the risk of non-delivery or delay, and the subsequent financial loss to the firm, may be substantial. Similarly, considerations of quality control or even secrecy may preclude the firm from utilizing the services of an outside supplier even when the profitability calculation indicates that this is the preferred alternative. On the other hand, patents, lack of know-how or other technological and legal barriers may preclude a firm from producing the component.

In this essay we focus attention on the quantitative analysis of the very large and important subset of decisions in which both the make and buy alternatives

are technically feasible. Hence the firm's decision depends on considerations of relative efficiency and costs. Under these circumstances make or buy decisions, like any investment, should be based on the present values of the cash flows engendered by the alternatives.

In that hypothetical, and incidentally very happy, world in which no taxes are levied on the firm, the solution to this problem is straightforward. The introduction of taxes complicates the analysis and great care must be taken if the present values are to be expressed correctly on an after-tax basis. Traditional approaches to the make or buy problem have failed to reflect the differential risk of the various components of the cash flow, thereby introducing a systematic bias into the profitability analysis.<sup>†</sup>

## The Make or Buy Formula

As a first step in the present value analysis we define the annual after tax cash flow emanating from the decision to produce rather than purchase a particular component.

Let:

- T = the corporate tax rate
- P = the per unit purchase price from an outside supplier
- C = the production cost per unit in the firm (excluding interest and depreciation)<sup>‡</sup>

† See, for example, American Institute of Certified Public Accountants.

‡ Costs should be defined in the broadest manner so as to reflect "opportunity" and not just outlay costs. The former may significantly exceed the latter, especially in cases where productive inputs are transferred from other divisions within the firm.

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