Despite its major advances, finance theory has had scant impact on strategic planning. Strategic planning needs finance and should learn to apply finance theory correctly. However, finance theory must be extended in order to reconcile financial and strategic analysis.

(1) Finance theory and traditional approaches to strategic planning may be kept apart by differences in language and "culture."

(2) Discounted cash flow analysis may have been misused, and consequently not accepted, in strategic applications.

(3) Discounted cash flow analysis may fail in strategic applications even if it is properly applied.

Each of these explanations is partly true. I do not claim that the three, taken together, add up to the whole truth. Nevertheless, I will describe both the problems encountered in applying finance theory to strategic planning, and the potential payoffs if the theory can be extended and
properly applied. The first task is to explain what is meant by "finance theory" and the gap between it and strategic planning.

**The Relevant Theory**

The financial concepts most relevant to strategic planning are those dealing with firms' capital investment decisions, and they are sketched here at the minimum level of detail necessary to define "finance theory."

Think of each investment project as a mini-firm, all-equity financed. Suppose its stock could be actively traded. If we know what the mini-firm's stock would sell for, we know its present value, and therefore the project's present value. We calculate net present value (NPV) by subtracting the required investment.

In other words, we calculate each project's present value to investors who have free access to capital markets. We should therefore use the valuation model which best explains the prices of similar securities. However, the theory is usually boiled down to a single model, discounted cash flow (DCF):

\[ PV = \sum_{t=1}^{T} \frac{C_t}{(1 + r)^t}, \]

where \( PV \) = present (market) value;
\( C_t \) = forecasted incremental cash flow after corporate taxes — strictly speaking the mean of the distribution of possible \( \bar{C}_t \)'s;
\( T \) = project life (\( C_T \) includes any salvage value);
\( r \) = the opportunity cost of capital, defined as the equilibrium expected rate of return on securities equivalent in risk to the project being valued.

NPV equals \( PV \) less the cash outlay required at \( t = 0 \).

Since present values add, the value of the firm should equal the sum of the values of all its mini-firms. If the DCF formula works for each project separately, it should work for any collection of projects, a line of business, or the firm as a whole. A firm or line of business consists of intangible as well as tangible assets, and growth opportunities as well as assets-in-place. Intangible assets and growth opportunities are clearly reflected in stock prices, and in principle can also be valued in capital budgeting. Projects bringing intangible assets or growth opportunities to the firm have correspondingly higher NPVs. I will discuss whether DCF formulas can capture this extra value later.

The opportunity cost of capital varies from project to project, depending on risk. In principle, each project has its own cost of capital. In practice, firms simplify by grouping similar projects in risk classes, and use the same cost of capital for all projects in a class.

The opportunity cost of capital for a line of business, or for the firm, is a value-weighted average of the opportunity costs of capital for the projects it comprises.

The opportunity cost of capital depends on the use of funds, not on the source. In most cases, financing has a second-order impact on value: You can make much more money through smart investment decisions than smart financing decisions. The advantage, if any, of departing from all-equity financing is typically adjusted for through a somewhat lowered discount
Finance theory stresses cash flow and the expected return on competing assets. The firm’s investment opportunities compete with securities stockholders can buy. Investors willingly invest, or reinvest, cash in the firm only if it can do better, risk considered, than the investors can do on their own.

Finance theory thus stresses fundamentals. It should not be deflected by accounting allocations, except as they affect cash taxes. For example, suppose a positive-NPV project sharply reduces book earnings in its early stages. Finance theory would recommend forging ahead, trusting investors to see through the accounting bias to the project’s true value. Empirical evidence indicates that investors do see through accounting biases; they do not just look naively at last quarter’s or last year’s EPS. (If they did, all stocks would sell at the same price-earnings ratio.)

All these concepts are generally accepted by financial economists. The concepts are broadly consistent with an up-to-date understanding of how capital markets work. Moreover, they seem to be accepted by firms, at least in part: any time a firm sets a hurdle rate based on capital market evidence, and uses a DCF formula, it must implicitly rely on the logic I have sketched. So the issue here is not whether managers accept finance theory for capital budgeting (and for other financial purposes). It is why they do not use the theory in strategic planning.

The Gap Between Finance Theory and Strategic Planning

I have resisted referring to strategic planning as “capital budgeting on a grand scale,” because capital budgeting in practice is a bottom-up process. The aim is to find and undertake specific assets or projects that are worth more than they cost.

Picking valuable pieces does not insure maximum value for the whole. Piecemeal, bottom-up capital budgeting is not strategic planning.

Capital budgeting techniques, however, ought to work for the whole as well as the parts. A strategic commitment of capital to a line of business is an investment project. If management does invest, they must believe the value of the firm increases by more than the amount of capital committed — otherwise they are throwing money away. In other words, there is an implicit estimate of net present value.

This would seem to invite the application of finance theory, which explains how real and financial assets are valued. The theory should have direct application not only to capital budgeting, but also to the financial side of strategic planning.

Of course it has been applied to some extent. Moreover, strategic planning seems to be becoming more financially sophisticated. Financial concepts are stressed in several recent books on corporate strategy [Fruhan 1979; Salter and Weinhold 1979; and Beirman 1980]. Consulting firms have developed the concepts’ strategic implications [Alberts 1983].

Nevertheless, I believe it is fair to say that most strategic planners are not guided by the tools of modern finance. Strategic and financial analyses are not reconciled, even when the analyses are of
the same major project. When low net present value projects are nurtured "for strategic reasons," the strategic analysis overrides measures of financial value. Conversely, projects with apparently high net present values are passed by if they don't fit in with the firm's strategic objectives. When financial and strategic analyses give conflicting answers, the conflict is treated as a fact of life, not as an anomaly demanding reconciliation.

In many firms, strategic analysis is partly or largely directed to variables finance theory says are irrelevant. This is another symptom of the gap, for example:

(1) Many managers worry about a strategic decision's impact on book rate of return or earnings per share. If they are convinced the plan adds to the firm's value, its impact on accounting figures should be irrelevant.

(2) Some managers pursue diversification to reduce risk — risk as they see it. Investors see a firm's risk differently. In capital markets, diversification is cheap and easy. Investors who want to diversify do so on their own. Corporate diversification is redundant; the market will not pay extra for it. If the market were willing to pay extra for diversification, closed-end funds would sell at premiums over net asset value, and conglomerate firms would be worth more to investors than their components separately traded. Closed-end funds actually sell at discounts, not premiums. Conglomerates appear to sell at discounts too, although it is hard to prove it, since the firm's components are not traded separately.

Much of the literature of strategic planning seems extremely naive from a financial point of view. Sometimes capital markets are ignored. Sometimes firms are essentially viewed as having a fixed stock of capital, so that "cash cows" are needed to finance investment in rapidly growing lines of business. (The firms that pioneered in strategic planning actually had easy access to capital markets, as do almost all public companies.) Firms may not like the price they pay for capital, but that price is the opportunity cost of capital, the proper standard for new investment by the firm.

The practical conflicts between finance and strategy are part of what lies behind the recent criticism of US firms for allegedly concentrating on quick payoffs at the expense of value. US executives, especially MBAs, are said to rely too much on purely financial analysis, and too little on building technology, products, markets, and production efficiency. The financial world is not the real world, the argument goes; managers succumb to the glamour of high finance. They give time and talent to mergers, spinoffs, unusual securities, and complex financing packages when they should be out on the factory floor. They pump up current earnings per share at the expense of long-run values.

Much of this criticism is not directed against finance theory, but at habits of financial analysis that financial economists are attempting to reform. Finance theory of course concentrates on the financial world — that is, capital markets. However, it fundamentally disagrees with the implicit assumption of the critics, who say that the financial world is not the real
world, and that financial analysis diverts attention from, and sometimes actively undermines, real long-run values. The professors and textbooks actually say that financial values rest on real values and that most value is created on the left-hand side of the balance sheet, not on the right.

Finance theory, however, is under attack too. Some feel that any quantitative approach is inevitably short-sighted. Hayes and Garvin, for example, have blamed discounted cash flow for a significant part of this country's industrial difficulties. Much of their criticism seems directed to misapplications of discounted cash flow, some of which I discuss later. But they also believe the underlying theory is wanting; they say that "beyond all else, capital investment represents an act of faith" [Hayes and Garvin 1982, p. 79]. This statement offends most card-carrying financial economists.

I do not know whether "gap" fully describes all of the problems noted, or hinted at, in the discussion so far. In some quarters, finance theory is effectively ignored in strategic planning. In others, it is seen as being in conflict, or working at cross-purposes, with other forms of strategic analysis. The problem is to explain why.

Two Cultures and One Problem

Finance theory and strategic planning could be viewed as two cultures looking at the same problem. Perhaps only differences in language and approach make the two appear incompatible. If so, the gap between them might be bridged by better communication and a determined effort to reconcile them.

Think of what can go wrong with standard discounted cash flow analyses of a series of major projects:

1. Even careful analyses are subject to random error. There is a 50 percent probability of a positive NPV for a truly border-line project.

2. Firms have to guard against these errors dominating project choice.

3. Smart managers apply the following check. They know that all projects have zero NPV in long-run competitive equilibrium. Therefore, a positive NPV must be explained by a short-run deviation from equilibrium or by some permanent competitive advantage. If neither explanation applies, the positive NPV is suspect. Conversely, a negative NPV is suspect if a competitive advantage or short-run deviation from equilibrium favors the project.

In other words, smart managers do not accept positive (or negative) NPVs unless they can explain them.

Strategic planning may serve to implement this check. Strategic analyses look for market opportunities — deviations from equilibrium — and try to identify the firms' competitive advantages.

Turn the logic of the example around. We can regard strategic analysis which does not explicitly compute NPVs as showing absolute faith in Adam Smith's invisible hand. If a firm, looking at a line of business, finds a favorable deviation from long-run equilibrium, or if it identifies a competitive advantage, then (efficient) investment in that line must offer profits exceeding the opportunity cost of capital. No need to calculate the investment's NPV: the manager knows in advance that NPV is positive.
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The trouble is that strategic analyses are also subject to random error. Mistakes are also made in identifying areas of competitive advantage or out-of-equilibrium markets. We would expect strategic analysts to calculate NPVs explicitly, at least as a check; strategic analysis and financial analysis ought to be explicitly reconciled. Few firms attempt this. This suggests the gap between strategic planning and finance theory is more than just "two cultures and one problem."

The next step is to ask why reconciliation is so difficult.

Misuse of Finance Theory

The gap between strategic and financial analysis may reflect misapplication of finance theory. Some firms do not try to use theory to analyze strategic investments. Some firms try but make mistakes.

I have already noted that in many firms capital investment analysis is partly or largely directed to variables finance theory says are irrelevant. Managers worry about projects' book rates of return or impacts on book earnings per share. They worry about payback, even for projects that clearly have positive NPVs. They try to reduce risk through diversification.

Departing from theoretically-correct valuation procedures often sacrifices the long-run health of the firm for the short, and makes capital investment choices arbitrary or unpredictable. Over time, these sacrifices appear as disappointing growth, eroding market share, loss of technological leadership, and so forth.

The non-financial approach taken in many strategic analyses may be an attempt to overcome the short horizons and arbitrariness of financial analysis as it is often misapplied. It may be an attempt to get back to fundamentals. Remember, however: finance theory never left the fundamentals. Discounted cash flow should not in principle bias the firm against long-lived projects, or be swayed by arbitrary allocations.

However, the typical mistakes made in applying DCF do create a bias against long-lived projects. I will note a few common mistakes.

Ranking on Internal Rate of Return

Competing projects are often ranked on internal rate of return rather than NPV. It is easier to earn a high rate of return if project life is short and investment is small. Long-lived, capital-intensive projects tend to be put down the list even if their net present value is substantial.

The internal rate of return does measure bang per buck on a DCF basis. Firms may favor it because they think they have only a limited number of bucks. However, most firms big enough to do formal strategic planning have free access to capital markets. They may not like the price, but they can get the money. The limits on capital expenditures are more often set inside the firm, in order to control an organization too eager to spend money.

Even when a firm does have a strictly limited pool of capital, it should not use the internal rate of return to rank projects. It should use NPV per dollar invested, or linear programming techniques when capital is rationed in more than one period [Brealey and Myers 1981, pp. 101-107].

Inconsistent Treatment of Inflation

A surprising number of firms treat inflation inconsistently in DCF calculations. High nominal discount rates are used but
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cash flows are not fully adjusted for future inflation. Thus accelerating inflation makes projects — especially long-lived ones — look less attractive even if their real value is unaffected.

Unrealistically High Rates

Some firms use unrealistically high discount rates, even after proper adjustment for inflation. This may reflect ignorance of what normal returns in capital markets really are. In addition:

(1) Premiums are tacked on for risks that can easily be diversified away in stockholders’ portfolios.

(2) Rates are raised to offset the optimistic biases of managers sponsoring projects. This adjustment works only if the bias increases geometrically with the forecast period. If it does not, long-lived projects are penalized.

(3) Some projects are unusually risky at inception, but only of normal-risk once the start-up is successfully passed. It is easy to classify this type of project as “high-risk,” and to add a start-up risk premium to the discount rate for all future cash flows. The risk premium should be applied to the startup period only. If it is applied after the startup period, safe, short-lived projects are artificially favored.

Discounted cash flow analysis is also subject to a difficult organizational problem. Capital budgeting is usually a bottom-up process. Proposals originate in the organization’s midriff, and have to survive the trip to the top, getting approval at every stage. In the process political alliances form, and cash flow forecasts are bent to meet known standards. Answers — not necessarily the right ones — are worked out for anticipated challenges. Most projects that get to the top seem to meet profitability standards set by management.

According to Brealey and Myers’s Second Law, “The proportion of proposed projects having positive NPV is independent of top management’s estimate of the opportunity cost of capital” [Brealey and Myers 1981, p. 238].

Suppose the errors and biases of the capital budgeting process make it extremely difficult for top management to verify the true cash flows, risks and present value of capital investment proposals. That would explain why firms do not try to reconcile the results of capital budgeting and strategic analyses. However, it does not explain why strategic planners do not calculate their own NPVs.

We must ask whether those in top management — the managers who make strategic decisions — understand finance theory well enough to use DCF analysis effectively. Although they certainly understand the arithmetic of the calculation, they may not understand the logic of the method deeply enough to trust it or to use it without mistakes.

They may also not be familiar enough with how capital markets work to use capital market data effectively. The widespread use of unrealistically high discount rates is probably a symptom of this.

Finally, many managers distrust the stock market. Its volatility makes them nervous, despite the fact that the volatility is the natural result of a rational market. It may be easier to underestimate the sophistication of the stock market than to
accept its verdict on how well the firm is doing.

Finance Theory May Have Missed the Boat

Now consider a firm that understands finance theory, applies DCF analysis correctly, and has overcome the human and organizational problems that bias cash flows and discount rates. Carefully estimated net present values for strategic investments should help significantly. However, would they fully grasp and describe the firm's strategic choices? Perhaps not.

There are gaps in finance theory as it is usually applied. These gaps are not necessarily intrinsic to finance theory generally. They may be filled by new approaches to valuation. However, if they are the firm will have to use something more than a straightforward discounted cash flow method.

An intelligent application of discounted cash flow will encounter four chief problems: (1) Estimating the discount rate, (2) Estimating the project's future cash flows, (3) Estimating the project's impact on the firm's other assets' cash flows, that is through the cross-sectional links between projects, and (4) Estimating the project's impact on the firm's future investment opportunities. These are the time series links between projects.

The first three problems, difficult as they are, are not as serious for financial strategy as the fourth. However, I will review all four.

Estimating the Opportunity Cost of Capital

The opportunity cost of capital will always be difficult to measure, since it is an expected rate of return. We cannot commission the Gallup Poll to extract probability distributions from the minds of investors. However, we have extensive evidence on past average rates of return in capital markets [Ibbotson and Sinquefield 1982] and the corporate sector [Holland and Myers 1979]. No long-run trends in "normal" rates of return are evident. Reasonable, ballpark cost of capital estimates can be obtained if obvious traps (for example, improper adjustments for risk or inflation) are avoided. In my opinion, estimating cash flows properly is more important than fine-tuning the discount rate.

Forecasting Cash Flow

It's impossible to forecast most projects' actual cash flows accurately. DCF calculations do not call for accurate forecasts, however, but for accurate assessments of the mean of possible outcomes.

Operating managers can often make reasonable subjective forecasts of the operating variables they are responsible for — operating costs, market growth, market share, and so forth — at least for the future that they are actually worrying about. It is difficult for them to translate this knowledge into a cash flow forecast for, say, year seven. There are several reasons for this difficulty. First, the operating manager is asked to look into a far future he is not used to thinking about. Second, he is asked to express his forecast in accounting rather than operating variables. Third, incorporating forecasts of macroeconomic variables is difficult. As a result, long-run forecasts often end up as mechanical extrapolations of short-run trends. It is easy to overlook the long-run pressures of competition, inflation, and technical change.
It should be possible to provide a better framework for forecasting operating variables and translating them into cash flows and present value — a framework that makes it easier for the operating manager to apply his practical knowledge, and that explicitly incorporates information about macroeconomic trends. There is, however, no way around it: forecasting is intrinsically difficult, especially when your boss is watching you do it.

Estimating Cross-Sectional Relationships Between Cash Flows

Tracing “cross-sectional” relationships between project cash flows is also intrinsically difficult. The problem may be made more difficult by inappropriate project definitions or boundaries for lines of businesses. Defining business units properly is one of the tricks of successful strategic planning.

However, these inescapable problems in estimating profitability standards, future cash returns, and cross-sectional interactions are faced by strategic planners even if they use no financial theory. They do not reveal a flaw in existing theory. Any theory or approach encounters them. Therefore, they do not explain the gap between finance theory and strategic planning.

The Links Between Today’s Investments and Tomorrow’s Opportunities

The fourth problem — the link between today’s investments and tomorrow’s opportunities — is much more difficult.

Suppose a firm invests in a negative-NPV project in order to establish a foothold in an attractive market. Thus a valuable second-stage investment is used to justify the immediate project. The second-stage must depend on the first: if the firm could take the second project without having taken the first, then the future opportunity should have no impact on the immediate decision. However, if tomorrow’s opportunities depend on today’s decisions, there is a time-series link between projects.

At first glance, this may appear to be just another forecasting problem. Why not estimate cash flows for both stages, and use discounted cash flow to calculate the NPV for the two stages taken together?

You would not get the right answer. The second stage is an option, and conventional discounted cash flow does not value options properly. The second stage is an option because the firm is not committed to undertake it. It will go ahead if the first stage works and the market is still attractive. If the first stage fails, or if the market sours, the firm can stop after Stage 1 and cut its losses. Investing in Stage 1 purchases an intangible asset: a call option on Stage 2. If the option’s present value offsets the first stage’s negative NPV, the first stage is justified.

The Limits of Discounted Cash Flow

The limits of DCF need further explanation. Think first of its application to four types of securities:

1. DCF is standard for valuing bonds, preferred stocks and other fixed-income securities.
2. DCF is sensible, and widely used, for valuing relatively safe stocks paying regular dividends.
3. DCF is not as helpful in valuing companies with significant growth opportunities. The DCF model can be
stretched to say that Apple Computer's stock price equals the present value of the dividends the firm may eventually pay. It is more helpful to think of Apple's price, $P_o$, as:

$$P_o = \frac{EPS}{r} = PVGO,$$

where

$EPS = \text{normalized current earnings}$

$r = \text{the opportunity cost of capital}$

$PVGO = \text{the net present value of future growth opportunities.}$

Note that $PVGO$ is the present value of a portfolio of options — the firm's options to invest in second-stage, third-stage, or even later projects.

(4) DCF is no help at all for pure research and development. The value of R&D is almost all option value. Intangible assets' value is usually option value.

The theory of option valuation has been worked out in detail for securities — not only puts and calls, but warrants, convertibles, bond call options, and so forth. The solution techniques should be applicable to the real options held by firms. Several preliminary applications have already been worked out, for example:

(1) Calculations of the value of a Federal lease for offshore exploration for oil or gas. Here the option value comes from the lessee's right to delay the decisions to drill and develop, and to make these decisions after observing the extent of reserves and the future level of oil prices [Paddock, Siegel, and Smith 1982].

(2) Calculating an asset's abandonment or salvage value: an active second-hand market increases an asset's value, other things equal. The second-hand market gives the asset owner a put option which increases the value of the option to bail out of a poorly performing project [Myers and Majd 1983].

The option "contract" in each of these cases is fairly clear: a series of calls in the first case and a put in the second. However, these real options last longer and are more complex than traded calls and puts. The terms of real options have to be extracted from the economics of the problem at hand. Realistic descriptions usually lead to a complex implied "contract," requiring numerical methods for valuation.

Nevertheless, option pricing methods hold great promise for strategic analysis.

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The time-series links between projects are the most important part of financial strategy. A mixture of DCF and option valuation models can, in principle, describe these links and give a better understanding of how they work. It may also be possible to estimate the value of particular strategic options, thus eliminating one reason for the gap between finance theory and strategic planning.

**Lessons for Corporate Strategy**

The task of strategic analysis is more than laying out a plan or plans. When time-series links between projects are important, it's better to think of strategy as managing the firm's portfolio of real options [Kestler 1982]. The process of financial planning may be thought of as:

1. Acquiring options, either by investing directly in R&D, product design, cost or quality improvements, and so forth, or as a by-product of direct capital investment (for example, investing in a Stage 1 project with negative NPV in order to open the door for Stage 2).

2. Abandoning options that are too far "out of the money" to pay to keep.

3. Exercising valuable options at the right time — that is, buying the cash producing assets that ultimately produce positive net present value.

There is also a lesson for current applications of finance theory to strategic issues. Several new approaches to financial strategy use a simple, traditional DCF model of the firm, [For example, Fruhan 1979, Ch. 2]. These approaches are likely to be more useful for cash cows than for growth businesses with substantial risk and intangible assets.

The option value of growth and intangibles is not ignored by good managers even when conventional financial techniques miss them. These values may be brought in as "strategic factors," dressed in non-financial clothes. Dealing with the time series links between capital investments, and with the option value these links create, is often left to strategic planners. But new developments in finance theory promise to help.

**Bridging the Gap**

We can summarize by asking how the present gap between finance theory and strategic planning might be bridged.

Strategic planning needs finance. Present value calculations are needed as a check on strategic analysis and vice versa. However, the standard discounted cash flow techniques will tend to understate the option value attached to growing, profitable lines of business. Corporate finance theory requires extension to deal with real options. Therefore, to bridge the gap we on the financial side need to:

1. Apply existing finance theory correctly.

2. Extend the theory. I believe the most promising line of research is to try to use option pricing theory to model the time-series interactions between investments.

Both sides could make a conscious effort to reconcile financial and strategic analysis. Although complete reconciliation will rarely be possible, the attempt should uncover hidden assumptions and bring a generally deeper understanding of strategic choices. The gap may remain, but with better analysis on either side of it.
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References


