# HOW DO CFOs MAKE CAPITAL BUDGETING AND CAPITAL STRUCTURE DECISIONS?

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We recently conducted a comprehensive survey that analyzed the current practice of corporate finance, with particular focus on the areas of capital budgeting and capital structure. The survey results enabled us to identify aspects of corporate practice that are consistent with finance theory, as well as aspects that are hard to reconcile with what we teach in our business schools today. In presenting these results, we hope that some practitioners will find it worthwhile to observe how other companies operate and perhaps modify their own practices. It may also be useful for finance academics to consider differences between theory and practice as a reason to revisit the theory.

We solicited responses from approximately 4,440 companies and received 392 completed surveys, representing a wide variety of firms and industries.[1] The survey contained nearly 100 questions and explored both capital budgeting and capital structure decisions in depth. The responses to these questions enabled us to explore whether and how these corporate policies are interrelated. For example, we investigated whether companies that made more aggressive use of debt financing also tended to use more sophisticated capital budgeting techniques, perhaps because of their greater need for discipline and precision in the corporate investment process.

More generally, the design of our survey allowed for a richer understanding of corporate decision-making by analyzing the CFOs' responses in the context of various company characteristics, such as size, P/E ratio, leverage, credit rating, dividend policy, and industry. We also looked for systematic relationships between corporate financial choices and managerial factors, such as the extent of top management's stock ownership, and the age, tenure, and education of the CEO. By testing whether the responses

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1. In the original *JFE* version of this paper, we show that our sample of respondents is representative of the overall population of 4,400 firms, is fairly representative of Compustat firms, and is not adversely affected by nonresponse bias. The next largest survey that we know of studies 298 large firms and is presented in J. Moore and A. Reichert, "An Analysis of the Financial Management Techniques Currently Employed by Large U.S. Corporations," *Journal of Business Finance and Accounting*, Vol. 10 (1983), pp. 623-645.

varied systematically with these characteristics, we were able to shed light on the implications of various corporate finance theories that focus on variables such as a company's size, risk, investment opportunities, and managerial incentives.

The results of our survey were reassuring in some respects and surprising in others. With respect to capital budgeting, most companies follow academic theory and use discounted cash flow (DCF) and net present value (NPV) techniques to evaluate new projects. But when it comes to making capital structure decisions, corporations appear to pay less attention to finance theory and rely instead on practical, informal rules of thumb. According to our survey, the main objective of CFOs in setting debt policy was not to minimize the firm's weighted average cost of capital, but rather to preserve "financial flexibility"—a goal that tended to be associated with maintaining a targeted credit rating. And consistent with the emphasis on flexibility, most CFOs also expressed considerable reluctance to issue common equity unless their stock prices were at "high" levels, mainly because of their concern about dilution of EPS. (As we shall argue later, although such reluctance to issue equity is likely to be consistent with finance theory's emphasis on the costs associated with "information asymmetry," the extent of CFOs' preoccupation with EPS effects seems to contradict the theory.)

The survey also provided clear evidence that firm size significantly affects the practice of corporate finance. For example, large companies were much more likely to use net present value techniques, while small firms tended to rely on the payback criterion. And, providing some encouragement to proponents of academics' trade-off model of capital structure (discussed in more detail later), a majority of large companies said they had "strict" or "somewhat strict" target debt ratios, whereas only a third of small firms claimed to have such targets.

In the next section, we briefly discuss the design of the survey and our sampling techniques (with more details provided in the Appendix). Then we review our findings, first on capital budgeting policy and next on capital structure decisions.

## SURVEY TECHNIQUES AND SAMPLE CHARACTERISTICS

Perhaps the most important part of survey research is designing a survey instrument that asks clear and pertinent questions. We took several steps to achieve this end. After spending months developing a draft survey, we circulated the draft to a group of academics and practitioners and incorporated their suggestions into a revised version. Then, after getting the advice of marketing research experts on both the survey's design and execution, we made changes to the format of the questions and to the overall design in order to minimize biases induced by the questionnaire and maximize the response rate. The final survey was three pages long and took approximately 15 minutes to complete.

We mailed the survey to the CFOs of all (1998) Fortune 500 companies and also faxed surveys to 4,440 firms with officers who are members of the Financial Executives Institute (313 of the Fortune 500 CFOs are also FEI members).[2] The 392 returned surveys represented a response rate of nearly 9%. Given the length and scope of our survey, this response rate compared favorably to the response rate for other recent academic surveys.[3] We received responses from CFOs representing a wide variety of companies, ranging from very small (26% of the sample firms had sales of less than $100 million) to very large (42% had sales of at least $1 billion). Forty percent of the firms were manufacturers, and the remaining firms were evenly spread across other industries, including financial (15%), transportation and energy (13%), retail and wholesale sales (11%), and high-tech (9%). Sixty percent of the respondents had price-earnings ratios of 15 or greater (a group we refer to later as "growth firms" when we analyze the effect of investment opportunities on corporate behavior).

The distribution of debt levels was fairly uniform. Approximately one-third of the sample companies had debt-to-asset ratios (expressed in book values) below 20%, another third had debt ratios between 20% and 40%, and the remaining firms had debt ratios greater than 40. We refer to companies with debt ratios greater than 30% as "highly levered."

2. FEI has approximately 14,000 members that hold policy-making positions as CFOs, treasurers, and controllers at 8,000 companies throughout the U.S. and Canada. Every quarter, Duke University and FEI poll these financial officers with a one-page survey on important topical issues. See http://www.duke.edu/~jgraham under "FEI Survey." The usual response rate for the quarterly survey is 8-10%.

3. See, for example, E. Trahan and L. Gitman, "Bridging the Theory-Practice Gap in Corporate Finance: A Survey of Chief Financial Officers," *Quarterly Review of Economics and Finance*, Vol. 35 (1995), pp. 73-87; the authors obtained a 12% response rate in a survey mailed to 700 CFOs. The response rate also compared favorably to the response rate for the quarterly FEI-Duke survey, which usually runs around 8-10%.

The creditworthiness of the sample also showed broad variation. Twenty percent of the companies had credit ratings of AA or AAA, 32% had an A rating, and 27% were rated BBB. The remaining 21% had speculative debt with ratings of BB or lower.

Though our survey respondents were CFOs, we asked a number of questions about the characteristics of the chief executive officers. We assumed that CEOs are the ultimate decision-makers and that CFOs act as agents for the CEOs. Nearly half of the CEOs for the responding firms were between 50 and 59 years old. Another 23% were over age 59, and 28% were between the ages of 40 and 49. The survey revealed that executives change jobs frequently. Nearly 40% of the CEOs had been in their jobs less than four years, and another 26% had been in their jobs between four and nine years. We defined the 34% who had been in their jobs more than nine years as having "long tenure." Forty-one percent of the CEOs had an undergraduate degree as their highest level of education. Another 38% had MBAs and 8% had non-MBA masters degrees; 13% had gone beyond the masters level. Finally, the top three executives owned at least 5% of the common stock in 44% of the companies.

These CEO and firm characteristics allowed us to examine whether managerial incentives or entrenchment affected the survey responses. We also studied whether having an MBA affected the choices made by corporate executives. All in all, the variation in executive and company characteristics permitted a rich description of the practice of corporate finance, and allowed us to make a number of inferences about the extent to which corporate actions are consistent with academic theories. Our survey differed from previous work in several ways. The most obvious difference is that previous work has almost exclusively focused on the largest firms. Second, because our sample is larger than previous surveys, we were able to control for many different firm characteristics. As with all survey research, however, it's important to keep in mind that survey results represent CFO beliefs or opinions. We have no way of verifying that such beliefs account for (or are even consistent with) their actions. What's more, in some cases, corporate executives might be influenced by a theory without knowing it. In this sense, as Keynes once wrote, "practical men...are usually the slaves of some defunct economist."

## CAPITAL BUDGETING DECISIONS

It is a major tenet of modern finance theory that the value of an asset (or an entire company) equals the discounted present value of its expected future cash flows. Hence, companies contemplating investments in capital projects should use the net present value *rule*: that is, take the project if the NPV is positive (or zero); reject if NPV is negative.

But if NPV has been the dominant method taught in business schools, past surveys have suggested that internal rate of return (IRR) was for long the primary corporate criterion for evaluating investment projects. For example, a 1977 survey of 103 large companies reported that fewer than 10% of the firms relied on NPV as their primary method, while over 50% said they relied mainly on IRR.[4] Although the two measures are similar in several respects (and will lead to the same "go-no go" decision if the same hurdle rates are used), the critical difference is that IRR is a ratio while NPV is a dollar measure of value added. The main problem with using the former is that, in some cases, managers intent on maximizing IRR may actually reduce value by rejecting positive-NPV projects.

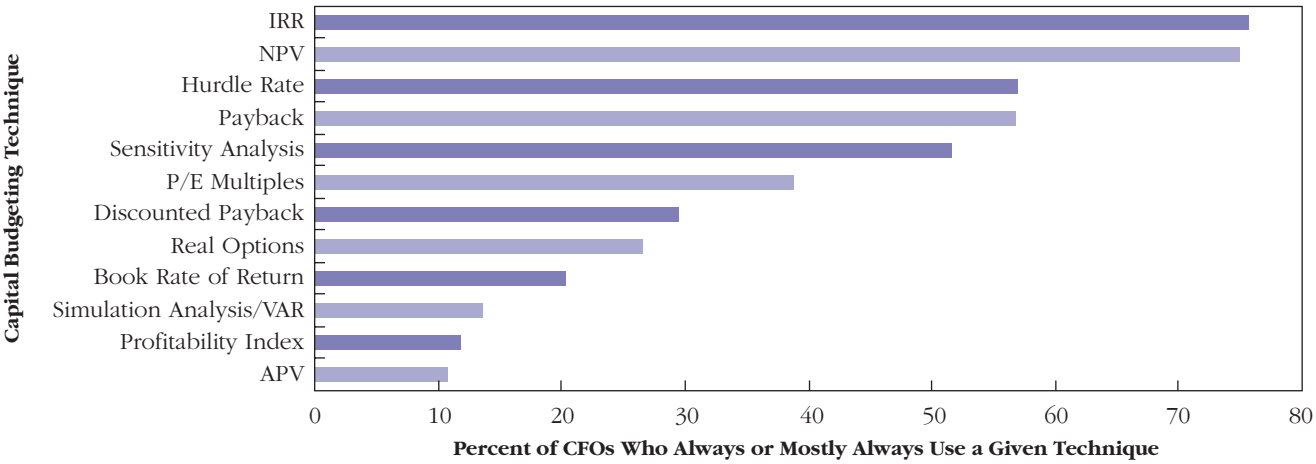
Our survey went beyond NPV vs. IRR analysis and asked whether companies used any or all of the following evaluation techniques: adjusted present value, payback period, discounted payback period, profitability index, and accounting rate of return. We inquired whether firms ignore discounting techniques and simply use earnings multiples. (A price-earnings multiple can be thought of as measuring the number of years it takes for the investment to be paid for by earnings, and so can be interpreted as a version of the payback method.) We were also interested in whether companies use other kinds of analysis that are taught in many MBA programs, including value at risk (VaR) and real options.

We asked CFOs to rate how frequently they used different capital budgeting techniques on a scale of 0 to 4 (with 0 meaning "never," 1 "almost never," 2 "sometimes," 3 "almost always," and 4 "always"). We report the results (see Figure 1) by summarizing the percentage of CFOs who said that they always or almost always used a particular evaluation technique (that is, the percentage who answered either "3" or "4").

4. L. Gitman and J. Forrester, Jr., "A Survey of Capital Budgeting Techniques Used by Major U.S. Firms," *Financial Management*, Vol. 6 (1977), pp. 66-71.

**By testing whether the survey responses varied systematically with company characteristics such as size, P/E ratio, leverage, credit rating, dividend policy, and industry, we were able to shed light on the implications of various corporate finance theories and provide a richer understanding of corporate financial decision-making.**

**FIGURE 1** ■ SURVEY EVIDENCE ON THE POPULARITY OF DIFFERENT CAPITAL BUDGETING METHODS*




*We report the percentage of CFOs who always or almost always use a particular technique. IRR represents Internal Rate of Return, NPV is Net Present Value, P/E is the Price to Earnings ratio,VAR is Value At Risk, and APV is Adjusted Present Value. The survey is based on the responses of 392 CFOs, as are the rest of the figures in this paper.

As shown in Figure 1, most respondents cited net present value and internal rate of return as their most frequently used capital budgeting techniques; 74.9% of CFOs always or almost always used NPV and 75.7% always or almost always used IRR. As noted earlier, however, large companies were significantly more likely to use NPV than were small firms.[5] Moreover, highly leveraged firms were significantly more likely (across all size categories) to use NPV and IRR than firms with low debt ratios—a finding that is consistent with Michael Jensen's argument that debt financing exerts a discipline on corporate investment decisions that is often lacking in underleveraged companies with substantial "free cash flow."[6] And as in the case of highly leveraged companies, companies that pay dividends (which tend to have higher leverage ratios than non-dividend payers) were also significantly more likely to use NPV and IRR than firms that do not pay dividends, again regardless of firm size. At the same time, the lesser use of NPV by non-dividend-paying companies may reflect the fact that many are high-growth firms whose investment opportunities tend to be more difficult to quantify with NPV—in part because the expected cash inflows from their investments are often not expected to materialize for years.

Highly levered firms were also more likely to use sensitivity and simulation analysis, in part to assess (and limit to acceptable levels) the probability of financial distress. Utilities, too, perhaps because of regulatory requirements, were also more likely to use IRR and NPV and to perform sensitivity and simulation analyses. We also found that companies whose CEOs had MBAs were more likely to use NPV than firms whose CEOs did not. Finally, public companies were significantly more likely to use NPV and IRR than were private corporations.

Other than NPV and IRR (and the hurdle rate), the payback period was the most frequently used capital budgeting technique (56.7% always or almost always used it). This result is surprising in the sense that financial textbooks have stressed the shortcomings of the payback criterion for decades: it ignores the time value of money and the value of cash flows beyond the cutoff date, and the cutoff is usually arbitrary. Small firms used

5. Here and throughout the paper, when we refer to results conditional on firm or CEO characteristic, to save space and keep the text flowing, we do not present percentages. Also, we only report these results when they are statistically significant. Interested readers can consult the *Journal of Financial Economics* version of the paper for details (cite information in first footnote).

6. "Free cash flow," as defined by Jensen, is a company's operating cash flow in excess of the amount that can be profitably reinvested in the business. In Jensen's theory, mature companies with substantial free cash flow can often add significant value for shareholders by increasing their leverage. The pressure to make periodic interest and principal payments strengthens managers' commitment to invest only in positive-NPV projects. And the same effect can be achieved by increasing dividends or buying back stock.

the payback period almost as frequently as they used NPV or IRR. We also found that, among small firms, older CEOs with long tenures and without MBAs were more likely to use the payback criterion. Few companies used the discounted payback, a method that accounts for the time value of money and thereby eliminates one of the payback criterion's deficiencies.

How do we explain the persistence of the payback method? The simplicity of the method, combined in some cases with top management's lack of familiarity with more sophisticated techniques, undoubtedly plays some role in the popularity of the payback criterion. But it's also important to recognize that the payback approach may provide useful information, especially for severely capital-constrained firms. If an investment project does not pay positive cash flows early on, the company may go out of business before the expected future cash flows materialize. And even if the firm survives, it may not have the resources to pursue other promising investments during the next few years.[7] Moreover, as a number of finance scholars have pointed out, the answers provided by crude rules of thumb such as payback often resemble the solutions produced by optimal decision rules that account for the option-like features of many investments, particularly in the evaluation of highly uncertain investments. And, to the extent small firms have more unpredictable projects than do large companies, this could explain why small firms tend to favor ad hoc decision rules.[8]

Reflecting companies' preoccupation with reported earnings (a theme we return to later), a sizeable percentage of companies (38%) said they always or almost always used the earnings multiple approach (which, again, is essentially another variant of the payback method) for project evaluation. But the other capital budgeting techniques were used less frequently. For example, only about 20% of the companies said they used accounting rate of return; 14% always or almost always used value at risk or some other form of simulation, 12% used a profitability index, and 11% used adjusted present value (APV).

Somewhat surprisingly, more than one-fourth of the companies claimed to be using real options (RO) evaluation techniques. This was surprising not only because the RO methodology is fairly new, but because quantitative applications of RO models tend to become quite complicated (though the dominant corporate use of real options probably remains as a qualitative strategic planning tool rather than a valuation technique).[9] In comparison, it is also surprising that only 11% of firms used APV since the method is fairly easy to use while at the same time flexible enough to handle a wide variety of project evaluation situations.[10]

## Cost of Capital

Closely related to the question of the valuation method is the discount rate. Our results indicated that the Capital Asset Pricing Model (CAPM) was by far the most popular method of estimating the cost of equity capital: 73.5% of respondents always or almost always used it. The second and third most popular methods were average stock returns and a multi-factor CAPM, respectively. Few firms used a dividend discount model to back out the cost of equity. As we saw in the case of DCF and NPV analysis, large companies were much more likely to use the CAPM; small firms, by contrast, were more inclined to use a cost of equity determined by "what investors tell us they require." Consistent with this finding, public firms were more likely to use the CAPM than were private firms, which makes sense in light of the fact that "beta" is far more readily calculated by analyzing comparable publicly traded firms.

Finally, we asked more specific questions about how the cost of equity models were used. A majority (in fact, nearly 60%) of the companies said they would use a single company-wide discount rate to evaluate a new investment project, even though different projects are likely to have different risk characteristics. Nevertheless, 51% said they would always or almost always use a risk-matched discount rate (suggesting that some companies evaluate projects with *both* company-wide and risk-matched

7. However, we find no direct evidence that companies are more likely to use payback when they are capital-constrained or financially distressed, so this logic does not appear to explain the widespread use of payback by our sample firms.

8. See, for example, R. McDonald, "Real Options and Rules of Thumb in Capital Budgeting," in *Innovation, Infrastructure, and Strategic Options*, edited by M. Brennan and L. Trigeorgis (London: Oxford University Press, 1998).

9. In his article in Vol. 14, No. 2 (Summer 2001) of this journal, "Real Options: State of the Practice," Alex Triantis's survey of some 35 companies that use real options suggests that only about a third of them have reached the point where they are attempting to use the models to achieve precise calculations of value.

10. For an account of the practical difficulties that arise in applying APV, see the article by Laurence Booth in this issue.

**The survey provided clear evidence that firm size significantly affects the practice of corporate finance—large companies were much more likely to use net present value techniques and to have "strict" or "somewhat strict" target debt ratios.**

rates)—and larger companies were significantly more likely to use a risk-matched discount rate than small firms.[11]

## CAPITAL STRUCTURE DECISIONS

There are two main theories of capital structure choice. The trade-off theory says that companies have optimal debt-equity ratios, which they determine by trading off the benefits of debt against its costs. In the original form of the model, the chief benefit of debt is the tax advantage of interest deductibility.[12] More recent versions of the model[13] also attempt to incorporate Jensen's "free cash flow" argument, in which debt plays a potentially valuable role in mature companies by curbing a managerial tendency to overinvest. The primary costs of debt financing are those associated with financial distress, particularly in the form of corporate underinvestment and defections by customers and suppliers.

According to the trade-off theory (at least in this expanded form), large, mature companies with stable cash flows and limited opportunities for investment should have higher leverage ratios, both to take advantage of the tax deductibility of debt and because of their lower financial distress costs. At the other end of the spectrum, smaller companies with significant growth opportunities should make limited use of debt to preserve their continuing ability to undertake positive-NPV projects. Indeed, high-tech or start-up firms often have "negative leverage," or cash balances that exceed any debt outstanding.

The main contender to the trade-off theory, which is known as the "pecking-order" theory, suggests that actual corporate leverage ratios typically do not reflect capital structure targets, but rather the widely observed corporate practice of financing new investments with internal funds when possible and issuing debt rather than equity if external funds are required.[14] In the pecking-order model, an equity offering is typically regarded as a very expensive last resort. The theory is based on the premise that managers avoid issuing securities, particularly equity, when the company is undervalued. And even if the company's stock is currently fairly valued, the market reaction to the announcement of a new equity offering is expected to cause the company's stock price to fall below fair value. What is the reason for the market's negative response? According to the pecking-order model, management is reluctant to issue underpriced equity (though often willing to issue fairly priced or overpriced equity). Investors thus rationally interpret most management decisions to raise equity as a sign that the firm is overvalued—at least based on management's view of the future—and the stock price falls. For those companies that are in fact overvalued when the new equity issue is announced, the drop in price (provided it is not too large) is more of a correction in value than a real economic cost to shareholders. But for those companies that are fairly valued (or even undervalued) at the time of the announcement, the negative market reaction and resulting undervaluation will cause the existing shareholders to experience a dilution of value (as distinguished from the dilution of earnings per share we discuss later) that we henceforth refer to as "information costs." As we also discuss later, such negative market reactions and the associated information costs are likely to be largest when the "information gap" between management and investors is greatest—that is, in circumstances when investors have the greatest uncertainty about either the firm's prospects and, perhaps even more important, what management intends to do with the capital.

Our survey findings, as summarized in Figure 2, may shed some light on which theory, the trade-off model or the pecking order, plays a greater role in corporate decision-making. As in the case of our capital budgeting questions, we asked CFOs to rank—again, on a scale of 0 ("completely irrelevant") to 4 ("very important")—a number of factors that might affect how they choose the appropriate amount of debt for their companies.

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11. But very few companies of any size reported using different discount rates to evaluate different cash flows within the same project, as some academics suggest they should for cash flows such as depreciation. See, for example, R. Brealey and S. Myers, *Principles of Corporate Finance*, 5th edition (New York: McGraw-Hill, 1996).

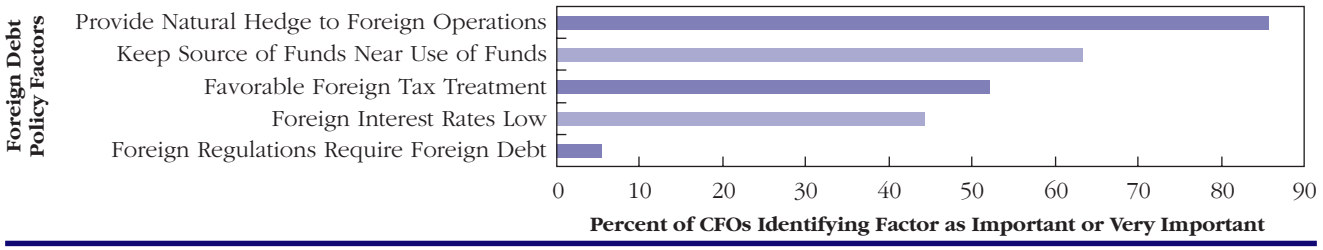
12. See, for example, F. Modigliani and M. Miller, "Corporate Income Taxes and the Cost of Capital: A Correction," *American Economic Review*, Vol. 53 (1963), pp. 433-443, and M. Miller, "Debt and Taxes," *Journal of Finance*, Vol. 32 (1977), pp. 261-275.

13. See, for example, M. Barclay and C. Smith, "Another Look at the Capital Structure Puzzle: Some New Evidence," *Journal of Applied Corporate Finance*, Vol. 13 No. 1 (Spring 2000).

14. See S. Myers, "The Capital Structure Puzzle," *Journal of Finance*, Vol. 39 (1984), pp. 575-592, and S. Myers and N. Majluf, "Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have," *Journal of Financial Economics*, Vol. 13 (1984), pp. 187-224.

**FIGURE 2** ■ SURVEY EVIDENCE ON SOME OF THE FACTORS THAT AFFECT THE DECISION TO ISSUE DEBT


**FIGURE 3** ■ SURVEY EVIDENCE ON SOME OF THE FACTORS THAT AFFECT THE DECISION TO ISSUE FOREIGN DEBT



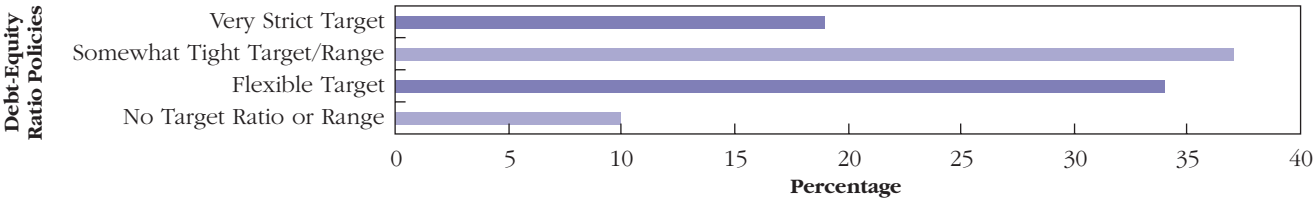

As shown in Figure 2, the corporate tax advantage of debt was moderately important in capital structure decisions, with almost 45% of the companies describing it as either "important" or "very important." As expected, the tax advantage was most important for large, higher-leveraged, lower-risk, manufacturing, regulated, and dividend-paying firms—in short, companies that are likely to have high marginal corporate tax rates and therefore stronger tax incentives to use debt.

When we also asked CFOs whether firms issued debt when foreign tax treatment is favorable relative to the U.S., 52.3% said favorable foreign tax treatment is important or very important (see Figure 3). And the fact that large companies with significant foreign exposures were more likely to identify foreign tax treatment as an important factor suggests that a certain level of sophistication (not to mention the exposure itself) is a requirement for international tax planning.

According to finance theory, the tax advantage of debt relative to equity depends on investor tax rates as well as effective corporate marginal tax rates. But we found very little evidence that firms directly consider investors' taxes when deciding on debt policy; only 4.5% said personal taxes were important or very

**The main objective of CFOs in setting debt policy was not to minimize the firm's weighted average cost of capital, but rather to preserve "financial flexibility"—a goal that tended to be associated with maintaining a targeted debt rating.**

**FIGURE 4** ■ SURVEY EVIDENCE ON WHETHER FIRMS HAVE OPTIMAL OR TARGET DEBT-EQUITY RATIOS




important in debt decisions, and only 5% said so for equity decisions (see Figure 2). So, from what the executives told us, they do not make capital structure decisions based on the perceived tax preferences of a "clientele" of investors who own the firm's securities. (But this finding does not seem all that surprising, since such tax preferences cannot be observed directly; and because such tax effects are effectively "embedded" in the company's stock prices and the interest rates on its debt, CFOs may in fact be responding to such tax preferences without knowing it.)

When we asked CFOs directly about whether potential costs of financial distress affected their debt decisions, only 21.4% indicated that distress costs were important or very important (see Figure 2). Nevertheless, the fact that almost 60% cited financial flexibility and credit ratings as important or very important suggests that avoiding distress is a major—and in fact possibly the *most* important—consideration in corporate debt policy. By maintaining flexibility, most companies mean preserving unused debt capacity. It's also interesting to note that although many companies say their excess debt capacity is intended mainly to finance possible future expansions and acquisitions, such firms also seem intent on retaining much of that unused debt capacity even after expanding.[15] And, as suggested earlier, such flexibility tends to be associated with maintaining a target credit rating. Among utilities and companies with investment-grade debt (a group that accounted for just under half of our sample), credit ratings were a very important determinant of debt policy. And given that size is a major factor in securing (at least) an investment-grade rating, we were not surprised to find that credit ratings are also especially important for large, Fortune 500 companies. Finally, a large number of CFOs (48%) said that earnings volatility was an important consideration in making debt decisions, which is consistent with the trade-off theory's prediction that companies use less debt when the probability of bankruptcy is higher.

We also asked CFOs whether their companies have an optimal or "target" debt-equity ratio. As shown in Figure 4, only 19% of the firms said they did not have a target debt ratio or target range. Another 37% said they had "flexible" targets, and 44% had "strict" or "somewhat strict" targets or ranges. Although these overall numbers provide mixed support for the argument that companies trade off costs and benefits to derive an optimal debt ratio, larger companies (55%) were considerably more likely than small firms (36%) to have at least somewhat strict target debt ratios. Moreover, such targets were more common among investment-grade (64%) than speculative companies (41%), and among regulated (67%) than unregulated firms (43%). And to the extent that large investment-grade companies represent the bulk of the U.S. economy, this indicates fairly strong support for the trade-off theory. Debt targets were also more important in companies where the CEO was younger or newer, and when the top three officers owned less than 5% of the firm.

Finally, providing some additional support for the trade-off theory, of the 40% of CFOs who said their companies would seriously consider issuing equity, a slight majority (52%, as shown in Figure 5) said their companies would do so to maintain a target debt-equity ratio. Among the companies whose CFOs said yes to this question were disproportionate numbers of both highly leveraged companies and firms with widely dispersed ownership.

15. See J. Graham, "Estimating the Tax Benefits of Debt," *Journal of Applied Corporate Finance*, Vol. 14 (Spring 2001), pp. 42-54.