Application of San Diego Gas & Electric Company (U902M) for Authority, Among Other Things, to Increase Rates and Charges for Electric and Gas Service Effective on January 1, 2012.	A.10-12-005 (Filed December 15, 2010)
Application of Southern California Gas Company (U904G) for authority to update its gas revenue requirement and base rates effective on January 1, 2012.	A.10-12-006 (Filed December 15, 2010)

Application: A.10-12-005/A.10-12-006
Exhibit No.: SDG&E-254/SCG-244

PREPARED REBUTTAL TESTIMONY OF GARY H. HAYES ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY AND SOUTHERN CALIFORNIA GAS COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

OCTOBER 2011

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PREPARED REBUTTAL TESTIMONY OF

GARY H. HAYES

ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY AND

SOUTHERN CALIFORNIA GAS COMPANY

I. INTRODUCTION

The following rebuttal testimony regarding Allowance for Funds Used During Construction ("AFUDC") addresses intervenor testimony dated September 2011 of the Division of Ratepayer Advocates ("DRA"). More specifically, this testimony addresses DRA's interpretation of the FERC AFUDC formula, its perception of SDG&E's and SCG's (jointly, "Applicants") short-term debt authority, and its ideas about the use of short-term debt to fund capital investments. Please refer to the rate base rebuttal testimony of Garry G. Yee for discussion regarding DRA's recommendation to apply their proposed rates over the GRC period, the easy arithmetic used to derive the proposed disallowance and the rate base adjustment methodology to effectuate the change. The Commission should reject DRA's AFUDC proposal for the reasons explained herein. SCG and SDG&E respectfully request the Commission find reasonable use of the currently authorized rates of return of 8.68% and 8.40% for the 2012 test year AFUDC.

In Chapter 3 of Exhibit DRA-50, "Report on the Results of Examination for San Diego Gas & Electric Company/Southern California Gas Company General Rate Case," DRA addresses Applicants' forecasted AFUDC rates, and makes the recommendation that "the Commission adopt the 3-month commercial paper rates (i.e., short-term rates) forecast

by Global Insight…for the purposes of calculating the utilities' AFUDC rate."[1] DRA proposes using a rate of 0.23% for 2010, 0.34% for 2011, and 1.76% for 2012, compared to the SDG&E and SCG authorized rates of return of 8.40% and 8.68%, respectively. DRA represents use of short-term rates results in a "dollar savings over the period 2010 through 2012 [that] will total approximately $50.6 million and $44.3 million for SCG and SDG&E, respectively."[2]

This testimony rebuts DRA's AFUDC recommendation, addressing DRA's mistaken understanding of Federal Energy Regulatory Commission ("FERC") regulations, its misinterpretation of Applicants' financing authority, and its general misunderstanding of financial theory and management.

II. REBUTTAL TO DRA

A. DRA Misinterprets FERC Guidance

The AFUDC rate computation is set forth in the FERC Code of Federal Regulations, Subchapter C, Part 101, Section 3.[3] To ensure Applicants were referencing the same calculation formula, they requested DRA provide its source for the AFUDC computation via discovery. The DRA response is provided in Attachment 1, and is consistent with the Applicants source determining the AFUDC formula. Applicants represent to the Commission they have consistently followed FERC guidance set by statute on AFUDC, and have never been ordered to apply the short-term rate to its calculation in the radical manner prescribed in DRA's testimony. DRA hones in on short-term debt (presumably because

[1] Exhibit DRA-50, p. 50-17, lines 20–22 (September 1, 2011).
[2] Id. at 50-20, lines 7–9.
[3] Title 18, CFR Subchapter C, Part 101, Section 3.A.17, Order 218, 25 FR 5014, June 7, 1960. See Attachment 1 for DRA's response to SDG&E/SCG Data Request 14, Question 1, and associated attachment.

short-term debt rates are currently low) and proceeds to misinterpret the FERC directive regarding its use in the computation of the AFUDC rate, stating: "The FERC formula for calculating AFUDC rates shows that average Construction Work In Progress (CWIP) is to be financed 100% by average short-term debt forecasted."[4]

DRA's interpretation is factually incorrect. The FERC's AFUDC formula instructs that short-term debt is merely one component and not the entirety of the formula, and the aspect of the calculation attributed to short-term debt balances and related costs shall be estimated for the current year and should be adjusted as actual data becomes available. Specifically, subsequent to providing the formula, the instruction directs:

> The rates shall be determined annually. The balances for long-term debt, preferred stock and common equity shall be the actual book balances as of the end of the prior year. The cost rates for long-term debt and preferred stock shall be the weighted average cost determined in the manner indicated in §35.13 of the Commission's Regulations under the Federal Power Act. The cost rate for common equity shall be the rate granted common equity in the last rate proceeding before the ratemaking body having primary rate jurisdictions. If such cost rate is not available, the average rate actually earned during the preceding three years shall be used. The short-term debt balances and related cost and the average balance for construction work in progress plus nuclear fuel in process of refinement, conversion, enrichment,

[4] Supra at 50-16, lines 27–29.

and fabrication shall be estimated for the current year with appropriate adjustments as actual data becomes available.[5]

FERC makes it clear above that the AFUDC rate should reflect the cost of long-term capital funding, with adjustments for current-year estimates of short-term working capital. Nowhere does the formula impute or have the utilities finance 100% of their construction using short-term financing, as DRA suggests. Indeed, both identities in Section 3.A.17(a) – A_i and A_e – contain the variable *S/W*, i.e., average short term debt divided by the sum of average CWIP balance, nuclear fuel, less retirement costs related to plant under construction. It is critical to note that nothing in Section 3.A.17 subjects either A_i or A_e to the constraint *S* must equal *W* – as implied by DRA's testimony.

In November 1982, FERC granted SDG&E's request to use a monthly rate using prior-month balances and costs for long-term debt and equity capital and current-month estimates of short-term debt and CWIP balances (see Attachment 2, November 1, 1982 letter from FERC to SDG&E). Nowhere in this guidance did FERC direct a 100% imputation of the short-term debt cost into the AFUDC rate. FERC's specific direction to SDG&E in this instance further discredits DRA's interpretation of the agency's guidance on this issue.

The DRA proposal not only misinterprets the formula as shown above, but also provides no information in support of its 100% estimate of short-term debt for the AFUDC calculation. For the reasons described below, Applicants provide information why a 100% estimate of the AFUDC rate based on short-term debt is not prudent or credible.

[5] Supra, FERC CFR, Section 3.A.17(b).

1 **B. DRA Ignores Purpose and Intent of Short-Term Financing Authority**

2 DRA justifies its AFUDC proposal by pointing to an SDG&E application seeking
3 short-term financing authority from the Commission. If this is a key DRA argument, its
4 AFUDC proposal should automatically exclude SoCalGas, since DRA cannot point to a
5 similar SoCalGas financing application. In any case, DRA states, "[t]he utilities' ROR
6 calculations do not include any short-term debt whatsoever. Commission decision D. 06-05-
7 029 authorized SDG&E, the sister company to SCG, to incur short-term debt of up to $550
8 million…[the] utilities have the authority…to issue short-term debt sufficient to finance all
9 of their CWIP."[6] D.06-05-029 (which incidentally expired on December 31, 2010) does not
10 support DRA's position that Applicants should use 100% financing for all its construction
11 projects. That decision neither orders SDG&E to issue large amounts of short-term debt,
12 nor requires SDG&E to finance capital expenditures with short-term funding. In discussing
13 SDG&E's application, the Commission observed that short-term debt is a stop-gap measure:

14 During times when market conditions make long-term financing unattractive,
15 it may be necessary for a utility to issue short-term debt to finance its
16 construction expenditures and cash requirements…[h]owever, short-term
17 borrowing should be reduced when practicable.[7]

18 The Commission further emphasized that utilities shall manage their capital
19 structures towards their authorized target capital structures:

20 We also remind SDG&E that in exercising its authorized financings…as well
21 as the current short-term debt authority, it shall endeavor to rebalance its

[6] Supra at 50-17, lines 6–9 and 12–13.
[7] D.06-05-029 (mimeo), p. 6 (May 25, 2006).

1 capital structure to authorized levels…in compliance with its most currently
2 authorized capital structure.[8]

3 Applicants note that SDG&E's currently authorized capital structure, which was approved in
4 2007, does not include a short-term debt component.[9] This is also true for SCG.[10]

5 Finally, D.06-05-029 clarified that the contemplated short-term debt authority was
6 not intended for a single purpose, as DRA's testimony implies. It instead enumerated the
7 following possible uses of funds:

8 …among other things, the temporary financing of capital improvements,
9 higher gas prices, certain measures the Commission has taken to mitigate the
10 impact on customers of higher gas prices…and to hedge gas costs for electric
11 generation.[11]

12 DRA's testimony asserts that SDG&E has $550 million of short-term debt authority
13 by which SDG&E can finance all of its CWIP. Unbeknownst to DRA, facts have changed
14 since the Commission authorized that level of borrowing in 2006. As explained in its
15 current short-term debt financing application (A.11-08-003, filed August 2, 2011, with
16 relevant pages included as Attachment 3),

17 The Commission previously authorized SDG&E to incur Five Hundred Fifty
18 Million Dollars ($550,000,000) of short-term debt in Decision (D.) 06-05-
19 029, dated May 25, 2006. However, that authorization expired on December
20 31, 2010. Currently, SDG&E has One Hundred Eighty-Nine Million Dollars

[8] Id. at 12.
[9] D.07-12-049 (December 20, 2007) established a ratemaking capital structure consisting of 49% common equity, 5.75% preferred stock, and 45.25% of long-term debt.
[10] See D.97-07-054.
[11] Id. (mimeo), p. 14.

1 ($189,000,000) of short-term debt authority, as authorized by P.U. Code
2 Section 823(c), which is 5% of SDG&E's capitalization as of March 31,
3 2011.

4 In A.11-08-003, SDG&E seeks an additional $400 million of new short-term debt
5 authority, and describes the purpose of that authority as follows:

6 SDG&E will be issuing new long-term financing in both the second half of
7 2011 and next year to provide the financing for these previously approved
8 capital projects. While long-term financing will be used to fund the
9 permanent financing of these projects, short-term debt capacity can be used
10 *as a back-up should long-term capital markets become difficult to access*.
11 Consequently, SDG&E seeks to mitigate these risk factors by requesting a
12 measured increase to SDG&E's short-term borrowing limit. (Emphasis
13 added.)

14 The Commission is in its early stages of reviewing SDG&E's application. However,
15 SDG&E's application plainly indicates the use of short-term debt financing as a prudent
16 measure to hedge against debt-market volatility. Suggesting that a utility deplete its short-
17 term authority to fund long-term capital projects would contradict the authority's stated
18 purpose and leave the utility exposed to the very risks it seeks to mitigate.

19 **C. DRA's Proposal Is Contrary to Prudent Financial Practice**

20 DRA's testimony states: "If the utilities were not regulated public utilities, the
21 utilities' managements would surely do all in their power to drive down the AFUDC rate."[12]
22 DRA's unsupported conjecture is neither accurate nor relevant. Prudent financial managers

[12] Supra at 50-17, lines 10–12.

would not drive down their AFUDC rate by "…issu[ing] short-term debt sufficient to finance all of their CWIP."[13] In fact, financial theory and practice suggest the opposite approach: the funding of long-lived assets with long-dated securities.

When properly employed, long-term assets (especially utility rate base) generate years of predictable cash flows. These cash flows can best service the payment of predictable equity dividends and long-term debt interest over many years. For this reason, financial managers will fund the construction of such assets with long-term sources of capital, namely equity and debt. Such funding is widely known as "maturity matching."

Similarly, working capital – the net of short-term assets and short-term liabilities – is characterized by significant fluctuation as a company's cash cycle takes its course. There can be times when these fluctuations require the financial manager to borrow varying sums of money on short notice and pay these sums back equally rapidly. Short-term debt in its many forms allows the firm to meet such requirements precisely.

Problems arise when a company finances permanent assets with short-term loans. The first is the continuing need to renegotiate or roll over short-term debt. Lenders may decide not to renew the financing at a time that operating cash flow is not forthcoming. Similarly, some lenders may require the borrower to completely pay down its short term borrowings once a year, which may not synchronize with long-term cash flows. Finally, unlike longer-term forms of capital, short-term debt is characterized by an unpredictable interest cost. This can spell trouble for a "mismatched" borrower during periods of rapidly

[13] Id. at 50-17, line 13.

rising interest rates. If adopted, DRA's proposal would place Applicants squarely in the "mismatched borrower" category – to the tune of $200 million[14].

Business research indicates that financial managers regularly put the matching concept into practice. The consultancy McKinsey & Company finds that industries with higher levels of fixed plant tend to carry higher levels of debt, with utilities carrying the highest median debt to market value ratio (47%) of eleven industries studied.[15] An extensive survey by Duke University researchers adds more detail to this picture: (1) the primary factor behind choosing short- or long-term debt is matching asset life, (2) one of the key factors in capital-structure decisions is maturity matching, and (3) many firms will issue short-term debt until the balance allows for efficient long-term borrowing.[16]

The Commission has historically demonstrated an understanding of this asset-matching relationship. As discussed earlier, SDG&E's short-term borrowing decisions have not directed the utility to incur large amounts of short-term debt, and in fact have cautioned against it. The Commission's stance is consistent with prudent financial management – which SDG&E (and SCG) observes and practices.

D. Negative Impacts under DRA's Proposal

1. Ability to Attract New Capital

DRA's proposal calls for substituting the cost of long-term capital with short-term interest rates in determining the rate of return to long-term investors. This denies investors a

[14] As portrayed by DRA in testimony Tables 3-3a and 3-3b (pp. 50-19 and 50-20).
[15] See Attachment 4. Koller, T., Goedhart, M., and Wessels, D., *Valuation: Measuring and Managing the Value of Companies* (Hoboken, NJ: John Wiley & Sons, 2005), p. 325, Exhibit 10.15.
[16] See Attachment 5. Graham, J. and Harvey, C., "The theory and practice of corporate finance: Evidence from the field," *Journal of Financial Economics* 61 (May 2001), pp. 187–243.

reasonable opportunity to earn a fair rate of return, which in turn damages Applicants' ability to attract new capital from the investment community.

Reasonable returns on capital are based on the standards established by the United States Supreme Court, particularly in two cases commonly referred to as "Hope and Bluefield."[17] These decisions establish that a utility's rates must, among other things, reflect a return to the investor that is commensurate with returns on investments in other enterprises having similar risks. By providing such commensurate returns, proper ratemaking allows a utility to remain financially solid and creditworthy; this in turn enables the utility to attract new capital in the markets.

In the most recent Cost of Capital proceeding decision for SDG&E, the Commission recognized the need for a capital structure that supports a utility's ability to attract new capital:

> Because the level of financial risk that utilities face is determined in part by the proportion of their debt to permanent capital, or leverage, we must ensure that the utilities' adopted equity ratios are sufficient to maintain reasonable credit ratings and to attract capital.[18]

DRA's suggestion that providers of long-term capital to utilities deserve no more than a short-term rate of interest, rather than a commensurate return for similar investments elsewhere, runs afoul of this regulatory precept. It's very likely the investment community will react negatively to DRA's AFUDC proposal, if adopted.

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[17] *Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679 (1923) and *Federal Power Commission v. Hope Natural Gas Company*, 320 U.S. 391 (1944).
[18] D.07-12-049 (mimeo), p. 4.

1 2. Potential Adverse Effects

2 DRA quantifies ratepayer savings under its proposal in Tables 3-3a (for SoCalGas)
3 and 3-3b (for SDG&E), and footnotes that the 2011 "forecasted interest bearing CWIP" of
4 roughly $200 million at each utility is "accessible" to Applicants as short-term debt, since
5 these amounts represent a small percentage of total assets.[19] A permanent short-term
6 borrowing of this size presents certain unintended side effects, namely: (1) rollover risk and
7 (2) negative reaction from credit agencies.

8 *a. Rollover Risk*

9 The most obvious problem is that of rollover risk. Short-term borrowings can
10 mature from a few days to several months after being arranged. This characteristic is not a
11 problem to the firm that borrows a small amount to bridge a temporary gap in working
12 capital and expects to pay it off as the cash cycle completes. It presents a much bigger
13 problem to a utility that borrows on the order of hundreds of millions of dollars to fund
14 capital expenditures over the course of several years. If interest rates rise precipitously, or if
15 lenders choose not to refinance maturing debt, a heavily borrowed utility may find itself
16 taking desperate – and probably expensive – steps to remedy the situation.

17 There exists an additional, second-order rollover effect. Lenders whose claims
18 mature in the near future are keenly interested in a borrower's short-term liquidity, i.e., the
19 "nearness to cash" of their loans. Should the short-term capital markets recognize that a
20 utility's multiple-hundred-million borrowing supports CWIP – which will produce no cash
21 flow for a protracted period – they will likely reduce availability and drive up the cost of
22 borrowing funds.

[19] Supra at 50-19 and 50-20, fns. 6 and 7.

b. Negative Reaction by Credit Agencies

DRA's testimony does not anticipate the reaction of credit-rating agencies (companies like Standard and Poor's or Moody's Investor Services that assess the utilities' creditworthiness). It is most likely that these agencies would react negatively were DRA's proposal adopted. Their first reaction will be mathematical: if the utilities begin to rely strictly on debt to fund CWIP (in contrast to a mix of debt and equity), the agencies' capital-ratio computations will reflect the corresponding increase in leverage. Their second reaction will be qualitative: the agencies are not likely to bless such unorthodox financing behavior and they will likely question the regulatory environment that mandates such financing. Altogether, the agencies will not construe DRA's recommendation as credit-enhancing.

III. SUMMARY AND CONCLUSION

DRA's testimony fails to show that its proposal to slash Applicants' AFUDC rates is in any way reasonable. Contrary to DRA's assertions, (1) the FERC does not expect CWIP to be financed 100% by short-term debt, (2) Applicants have properly followed the FERC formula, (3) SDG&E's short-term debt authority does not contemplate funding CWIP entirely with short-term debt, and (4) maintaining large, short-term debt balances over long periods of time is not prudent financial management. The Commission should reject DRA's AFUDC proposal. SCG and SDG&E respectfully request the Commission find reasonable use of the currently authorized rates of return of 8.68% and 8.40% for the 2012 test year AFUDC.

This concludes my prepared rebuttal testimony.

IV. WITNESS QUALIFICATIONS

My name is Gary H. Hayes. My business address is 101 Ash Street, San Diego, California, 92101. I am employed by Sempra Energy's treasury department as a finance manager. My primary responsibility is the planning and execution of transactions involving securities, derivatives, and currencies. I also advise San Diego Gas & Electric Company ("SDG&E") and Southern California Gas Company ("SCG") on various financial matters.

I hold degrees from Wake Forest University and Dartmouth College, and have worked in the defense, automotive, oil, and banking industries. I joined SDG&E's financial-services department in 1995, and since the 1998 formation of Sempra Energy, have served primarily in the treasury department.

I have testified before the Commission on several topics, including financing authority and the cost of capital.

ATTACHMENT 1

DRA RESPONSE TO SDG&E/SCG-14 AND TITLE 18 CFR

Division of Ratepayer Advocates
California Public Utilities Commission
State of California

DRA DATA REQUEST RESPONSE

San Diego Gas & Electric Company
Southern California Gas Company
Test Year 2012 GRC
A.10-12-005/006

Origination Date: September 12, 2011
Due Date: September 26, 2011
Response Date: September 23, 2011

To: Ronald van der Leeden
RvanderLeeden@semprautilities.com
(213) 244-2009

From: James R. Wuehler, Project Coordinator SDG&E
Truman Burns, Project Coordinator SCG
Donna-Fay Bower, Assistant Project Coordinator
Division of Ratepayer Advocates
505 Van Ness Avenue, Room 4205
San Francisco, CA 94102

Response by: Grant Novack
Phone: (415) 703-2235
Email: gcn@cpuc.ca.gov

Data Request No: SDG&E/SCG Data Request 14

Exhibit Reference: DRA-50-Results of Examination

Subject: AFUDC Proposal

The following is DRA's response to SEMPRA's data request. If you have any questions, please contact the responder at the phone number and/or email address shown above.

Q.1 On pages 50-16 to 50-17, DRA states, "The FERC formula for calculating AFUDC rates shows that average Construction Work In Progress (CWIP) is to be first financed 100% by average short-term debt forecasted. The remainder of

CWIP not covered by average short-term debt forecasted is to be covered by an average of the prior year long-term debt, preferred stock, and common equity, weighted by their respective balances."

(a) Please provide a full citation of the source of the referenced FERC formula, including publication, page number, and publication date.

(b) Please provide the referenced FERC formula, including copies of source documents.

A.1 (a) Source: Electronic Code of Federal Regulations. (Data is current as of September 16, 2011.) Title 18, Code of Federal Regulations, Subchapter C, Part 101, Section 3.A.17, Order 218, 25 FR 5014, June 7, 1960.

A.1 (b) The referenced FERC formula is included in the source document cited above and is included as a PDF document attached herein.

Q.2 Please provide the electronic file with working formulas of the calculations performed to arrive at the amounts shown in Exhibit DRA-50, Tables 3-3a and 3-3b, and workpaper page 5.2. Are there any assumptions behind these calculations that are not noted in testimony or workpapers? If so, what are they?

A.2 The workpaper page 5.2 was outdated and inadvertently provided to Sempra. The current/correct electronic file is attached herein as an Excel document. The correct figures that are different are bold with cells shaded. Some of the updated figures will result in some minor revisions to Exhibit DRA-50 and Tables 3-2a, 3-2b, 3-3a, and 3-3b. DRA will provide Errata to testimony along with the current/correct workpaper page 5.2. The minor revisions will affect neither DRA's R/O model nor DRA's conclusion that, "if the Commission adopts DRA's recommended AFUDC rates, the dollar savings over the period 2010 through 2012 will total approximately $50.6 million and $44.3 million for SCG and SDG&E, respectively." All assumptions behind DRA's calculations are noted in testimony or workpapers.

other taxes properly includible in construction costs before the facilities become available for service.

(17) *Allowance for funds used during construction* (Major and Nonmajor Utilities) includes the net cost for the period of construction of borrowed funds used for construction purposes and a reasonable rate on other funds when so used, not to exceed, without prior approval of the Commission, allowances computed in accordance with the formula prescribed in paragraph (a) of this subparagraph. No allowance for funds used during construction charges shall be included in these accounts upon expenditures for construction projects which have been abandoned.

(a) The formula and elements for the computation of the allowance for funds used during construction shall be:

$A_i = s(S/W) + d(D/D+P+C)(1-S/W)$

$A_e = [1-S/W][p(P/D+P+C) + c(C/D+P+C)]$

A_i=Gross allowance for borrowed funds used during construction rate.

A_e=Allowance for other funds used during construction rate.

S =Average short-term debt.

s =Short-term debt interest rate.

D =Long-term debt.

d =Long-term debt interest rate.

P =Preferred stock.

p =Preferred stock cost rate.

C =Common equity.

c =Common equity cost rate.

W = Average balance in construction work in progress plus nuclear fuel in process of refinement, conversion, enrichment and fabrication, less asset retirement costs (See General Instruction 25) related to plant under construction.

(b) The rates shall be determined annually. The balances for long-term debt, preferred stock and common equity shall be the actual book balances as of the end of the prior year. The cost rates for long-term debt and preferred stock shall be the weighted average cost determined in the manner indicated in §35.13 of the Commission's Regulations Under the Federal Power Act. The cost rate for common equity shall be the rate granted common equity in the last rate proceeding before the ratemaking body having primary rate jurisdictions. If such cost rate is not available, the average rate actually earned during the preceding three years shall be used. The short-term debt balances and related cost and the average balance for construction work in progress plus nuclear fuel in process of refinement, conversion, enrichment, and fabrication shall be estimated for the current year with appropriate adjustments as actual data becomes available.

Note: When a part only of a plant or project is placed in operation or is completed and ready for service but the construction work as a whole is incomplete, that part of the cost of the property placed in operation or ready for service, shall be treated as *Electric Plant in Service* and allowance for funds used during construction thereon as a charge to construction shall cease. Allowance for funds used during construction on that part of the cost of the plant which is incomplete may be continued as a charge to construction until such time as it is placed in operation or is ready for service, except as limited in item 17, above.

(18) *Earnings and expenses during construction.* The earnings and expenses during construction shall

ATTACHMENT 2

SDG&E'S FERC APPROVAL MONTHLY RATE

Len Viejo A8a
11-30-82 w/P's

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

In Reply Refer To:
OCA

R. E. Parsley, Controller
San Diego Gas & Electric
Company
Post Office Box 1831
San Diego, California 92112

NOV 1 1982

Dear Mr. Parsley:

This is in reply to your letter dated October 4, 1982, in which you requested that San Diego Gas & Electric Company be permitted to compute the AFUDC monthly using data as of each prior month regarding capitalization mix and cost of funds. You propose to make this change prospectively as of January 1, 1983.

Your request to use a monthly rate is approved provided that in determining the AFUDC rates the balances and cost rates for the long-term debt and equity capital components as of the end of the immediately preceding month are used and the short-term debt balances and cost rates and CWIP balances are estimated for the month that the AUFDC rate is to be applied.

Sincerely yours,

L. H. Drennan, Jr.
Chief Accountant

Per J. Woosley 11-29-82 ST Debt rate is to be computed monthly based on each individual month's avg balance & interest expense

CWIP - PG+E uses average of prior month + current month ending balances. J. Woosley 11/30/82 phone call to PG+E

RECEIVED
San Diego Gas & Electric Company
NOV 5 1982
CONTROLLER'S OFFICE

R. E. PARSLEY

October 4, 1982

FILE NO. ACB 600

Mr. Loren H. Drennan, Jr.
Chief Accountant
Federal Energy Regulatory Commission
825 North Capitol Street, N.W.
Washington, D.C. 20426

Re: Order 561 - Determination of Allowance for Funds Used During Construction

Dear Mr. Drennan:

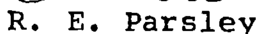
San Diego Gas & Electric Company hereby requests authorization to change the frequency of computing its Allowance for Funds Used During Construction (AFUDC) rate from once per year to monthly.

Under our current method, which has been applied consistently for many years, separate costs are determined for short and long-term debt and preferred and common stock. All short-term debt is assumed used to finance construction work in progress (CWIP) and a proportionate share of each element of permanent financing is assumed used to finance the excess of CWIP to short-term debt. The cost and weighting of the various types of financing is compiled once per year. A review of the computation to determine its continued appropriateness is done quarterly.

We are requesting authorization to recompute the AFUDC rate monthly using data as of each prior month regarding capitalization mix and cost of funds. We would like to make this change prospectively as of January 1, 1983. Monthly balances for long-term capitalization will be the balance as of the end of the prior month. Average short-term debt will be computed based on daily balances. Cost rates for long-term debt and preferred stock will include the effect of any new issues or reduction in balance of any old issues, computed pro-rata based on the number of days in the month of issue or liquidation. Changes in rate of return on common equity will be made as of the effective date of the change as established by the California Public Utilities Commission.

We appreciate your consideration of this request and will be pleased to discuss it further with you.

Sincerely,



R. E. Parsley

REP/pap

POST OFFICE BOX 1831 • SAN DIEGO, CALIFORNIA 92112 • TELEPHONE: 714/232-4252

2/2

ATTACHMENT 3

A.11-08-003 DEBT FINANCING APPLICATION

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

In the Matter of the Application of SAN DIEGO GAS & ELECTRIC COMPANY (U 902-M), for Authority to Increase its Short-Term Borrowing Authorization to an Aggregate Amount not to Exceed $400,000,000 in Addition to that Amount Otherwise Authorized by Public Utilities Code Section 823(c).	Application 11-08-___ (Filed August 2, 2011)

APPLICATION OF SAN DIEGO GAS & ELECTRIC COMPANY (U 902-M) FOR AUTHORITY TO INCREASE ITS SHORT-TERM BORROWING AUTHORITY

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August 2, 2011

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

In the Matter of the Application of SAN DIEGO GAS & ELECTRIC COMPANY (U 902-M), for Authority to Increase its Short-Term Borrowing Authorization to an Aggregate Amount not to Exceed $400,000,000 in Addition to that Amount Otherwise Authorized by Public Utilities Code Section 823(c).	Application 11-08-___ (Filed August 2, 2011)

APPLICATION OF SAN DIEGO GAS & ELECTRIC COMPANY (U 902-M) FOR AUTHORITY TO INCREASE ITS SHORT-TERM BORROWING AUTHORITY

I. SUMMARY OF AUTHORIZATION SOUGHT

Pursuant to California Public Utilities Code ("P.U. Code") Sections 816 through 830, inclusive, San Diego Gas and Electric Company ("SDG&E") requests that the California Public Utilities Commission ("Commission") authorize an increase of SDG&E's short-term debt authority to Four Hundred Million Dollars ($400,000,000). The Commission previously authorized SDG&E to incur Five Hundred Fifty Million Dollars ($550,000,000) of short-term debt in Decision (D.) 06-05-029, dated May 25, 2006. However, that authorization expired on December 31, 2010. Currently, SDG&E has One Hundred Eighty-Nine Million Dollars ($189,000,000) of short-term debt authority, as authorized by P.U. Code Section 823(c), which is 5% of SDG&E's capitalization as of March 31, 2011. The short-term debt authorization requested herein is in addition to the aggregate principal amount of notes otherwise authorized without Commission approval by P.U. Code Section 823(c), noted above.

II.
DESCRIPTION OF SDG&E'S CURRENT SHORT-TERM BORROWING AUTHORITY

SDG&E's most recent short-term borrowing authority was granted by the Commission on May 25, 2006 in D.06-05-029 (the "Decision"). The Decision: (1) granted SDG&E authority under P.U. Code Section 816 *et seq.* to issue $550 million of short-term debt through December 31, 2010; (2) eliminated the requirement for SDG&E to reduce its outstanding short-term debt to 5% of the par value of SDG&E's long-term capital outstanding at least once every twelve months; and (3) directed SDG&E to report on a quarterly basis the information required by General Order ("GO") 24-B related to short-term debt. The short-term debt authorized by D.06-05-029 was in addition to the short-term debt that SDG&E may issue without Commission authorization pursuant to P.U. Code Section 823(c), which as of March 31, 2011, is $189 million.

III.
SDG&E REQUESTS AUTHORIZATION TO INCREASE ITS PUBLIC UTILITY CODE SECTION 816 SHORT-TERM BORROWING AUTHORITY TO $400 MILLION

It is necessary that SDG&E provide an additional level of short-term borrowing authority in addition to SDG&E's Section 823(c) short-term debt authority, noted above. As in the past, SDG&E's short-term borrowing authorization will be used to maintain SDG&E's financial flexibility to obtain adequate temporary financing of: (1) additions and extensions of its utility plant, (2) undercollections of SDG&E's balancing accounts, (3) retirements, tenders, calls or other refunding of SDG&E's long-term debt, (4) financing of SDG&E's nuclear fuel inventories and customer commodity hedge cash requirements, and (5) to satisfy such other short-term cash needs that may arise from time to time. The Commission previously authorized SDG&E to incur up to $550 million of short-term debt. That authorization, however, expired at year-end 2010 (and during 2011 SDG&E has not issued any short-term debt). SDG&E is reaching its peak capital expenditures ramp-up spending level of about $1.9 billion for 2011 and is expecting to expend over $1.7 billion in 2012 to finish funding the Sunrise Powerlink Transmission Line, in addition to other capital expenditures. SDG&E will be issuing new long-term financing in both the second half of 2011 and next year to provide the financing for these previously approved capital projects. While long-term financing will be used to fund the permanent financing of

these projects, short-term debt capacity can be used as a back-up should long-term capital markets become difficult to access. Consequently, SDG&E seeks to mitigate these risk factors by requesting a measured increase to SDG&E's short-term borrowing limit.

Capital expenditures As indicated by Attachment D - Schedule I, SDG&E is investing over $4.5 billion during the 2011 – 2013 time period. Furthermore, SDG&E expects its annual capital expenditures to average over $1.3 billion during the 2011 – 2015 time period. This level of spending is substantially higher than SDG&E's historical spending pattern per annum.

In financing SDG&E's spending plan, SDG&E could at certain times require large amounts of short-term borrowing. As portrayed in Attachment D - Schedules II and IIIa, SDG&E plans to finance these expenditures with timely placements of long-term debt; however, it might be forced to fulfill its commitments with short-term borrowings should the capital markets be inaccessible when long-term funds are needed. A recent example of this was the 2008 Financial Crisis which temporarily injected high levels of investor uncertainty into the financial markets. Additionally, SDG&E may require short-term debt to fund collateral calls related to SDG&E's customer commodity hedging plan. The $400 million of additional short-term debt authority requested in this application has been reduced from the $550 million previously granted in D.06-05-029. This $150 million reduction is offset by a $109 million increase in Section 823(c) authorized short-term debt that has occurred since the issuance of D.06-05-029.

As the Commission recognized in D.05-05-047, short-term borrowing capacity provides the necessary financial flexibility required to efficiently manage the growth and structure of SDG&E's long-term capital investments.

Summary Based strictly on current capital-expenditure projections, SDG&E does not anticipate that its short-term debt needs prior to December 31, 2015 will exceed that amount of short-term debt otherwise authorized by P.U. Code Section 823(c), (approximately $189 million). However, due to uncertainty regarding unforeseen market factors, SDG&E believes that an increase of $400 million, in addition to SDG&E's Section 823(c) short-term borrowing authority, is prudent to address all potential contingencies during this five-year planning horizon.

IV.
USE OF PROCEEDS

As previously explained, SDG&E proposes to use the proceeds from the issuance of short-term debt for the temporary financing of additions and extensions to SDG&E's utility plant; undercollections of SDG&E's balancing accounts; retirements of SDG&E's long-term debt and financing of SDG&E's nuclear fuel inventories and customer commodity hedge programs; and such other short-term cash needs that may arise from time to time. As discussed in Section III above, the total requested authorization of $400 million provides the flexibility to finance large, one-time capital expenditures at a time when capital-market access becomes unexpectedly limited while also allowing for the funding of potentially significant amounts of collateral calls related to SDG&E's customer commodity hedging plan.

V.
FEE

Based on the fact that this Application requests to increase total short-term borrowing authorization by $400,000,000, SDG&E proposes to pay a fee of $206,000[1] as prescribed by P.U. Code Section 1904(b).

VI.
STATUTORY AND PROCEDURAL REQUIREMENTS

This Application is made pursuant to P.U. Code Sections 701, 702, 816, 817, 818, 821, 823(c), 830 and 851, the Commission's Rules of Practice and Procedure, and prior decisions, orders and resolutions of the Commission.

A. Rule 2.1 (a) – (c)

In accordance with Rule 2.1 (a) – (c) of the Commission's Rules of Practice and Procedure, SDG&E provides the following information.

1. Rule 2.1 (a) - Legal Name

SDG&E is a corporation organized and existing under the laws of the State of California. SDG&E is engaged in the business of providing electric service in a portion of Orange County

[1] ($1 million ÷ $1,000 x $2.00) + ($9 million ÷ $1,000 x $1.00) + ($390 million ÷ $1,000 x $0.50) = $206,000.00. See also Attachment D, Schedule X.

and electric and gas service in San Diego County. SDG&E's principal place of business is 8330 Century Park Court, San Diego, California 92123. SDG&E's attorney in this matter is Paul A. Szymanski.

2. Rule 2.1 (b) - Correspondence

Correspondence or communications regarding this Application should be addressed to:

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3. Rule 2.1 (c)

a. Proposed Category of Proceeding

In accordance with Rule 7.1, SDG&E requests that this Application be categorized as ratesetting.

b. Need for Hearings

SDG&E believes that approval of this Application will not require hearings. SDG&E has provided ample supporting testimony, analysis and documentation that provide the Commission

with a sufficient record upon which to grant the relief requested. Furthermore, applications for financing authority have historically been treated on an *ex parte* basis.

c. Issues to be Considered

The issues to be considered are described in this Application and the accompanying testimony and attachments.

d. Proposed Schedule

SDG&E proposes the following procedural schedule for resolving the issues raised in this Application:

PROPOSED SCHEDULE - NO HEARINGS	
ACTION	**DATE**
Application filed	August 2, 2011
Responses/Protests, if any	September 1, 2011
Reply to Responses/Protests	September 12, 2011
Draft Commission Decision	November 2011

B. Rule 2.2 – Articles of Incorporation

A copy of SDG&E’s Restated Articles of Incorporation as last amended, presently in effect and certified by the California Secretary of State, was filed with the Commission on August 31, 2009 in connection with SDG&E's Application No. 09-08-019, and is incorporated herein by reference.

C. Financial Information

A copy of SDG&E's most recent proxy statement, dated April 27, 2011, as sent to all shareholders of SDG&E's parent company, Sempra Energy, was provided to the California Public Utilities Commission on May 4, 2011, and is incorporated herein by reference.

A general description of SDG&E's property and equipment was filed with the Commission on October 5, 2001, in connection with Application 01-10-005, and is incorporated herein by reference. A statement of Original Cost and Depreciation Reserve is attached as Attachment A.

SDG&E's financial statement, balance sheet and income statement for the three month period ending March 31, 2011 are included with this Application as Attachment B.

SDG&E's adjusted capitalization at March 31, 2011 is attached as Attachment C.

In support of this Application, the testimony of Mr. Jack S. Lewis and accompanying schedules are attached as Attachment D.

VII.
REQUESTED AUTHORIZATIONS

WHEREFORE, Applicant respectfully requests that the Commission issue its Decision herein, providing specifically[2] for the following:

1. An increase of $400 million pursuant to the provisions of P.U. Code Sections 816 through 830, inclusive, to issue short-term debt at any time and from time to time through December 31, 2015, in a revised aggregate principal amount outstanding at any one time not to exceed Four Hundred Million Dollars ($400,000,000), on the terms and conditions and for purposes consistent with those contemplated by this Application.

[2] Assuming the Commission approves the authorizations requested in this Application, it is extremely important that the language in the Commission's Order mirror the language set forth in this section. It will be the Ordering Paragraphs that the financial institutions and their representatives will scrutinize for confirmation that Applicant has sufficient regulatory authority for issuance of the Securities addressed herein.

2. A determination that such authorization is in addition to SDG&E's current authority to issue short-term debt pursuant to P.U. Code Section 823(c).
3. A determination that the effective date of such authorization shall be the date of the Commission's Decision.
4. A finding that a public hearing on this Application is not required.
5. A determination that payment of $206,000 as a fee pursuant to P.U. Code Section 1904(b) is appropriate.
6. Such further relief as may be proper.

VIII.
CONCLUSION

WHEREFORE, SDG&E requests that the Commission grant SDG&E's Application as described herein.

Respectfully submitted,

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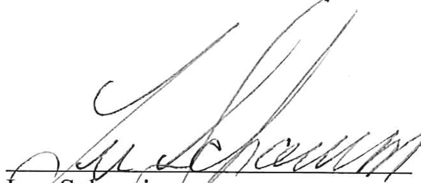

Lee Schavrien
Senior Vice President
Finance, Regulatory and Legislative Affairs
SAN DIEGO GAS & ELECTRIC COMPANY

August 2, 2011

ATTACHMENT 4

KOLLER GOEDHART WESSELS ARTICLE

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VALUATION

MEASURING AND MANAGING THE VALUE OF COMPANIES

FOURTH EDITION

McKinsey & Company

Tim Koller
Marc Goedhart
David Wessels

JOHN WILEY & SONS, INC.

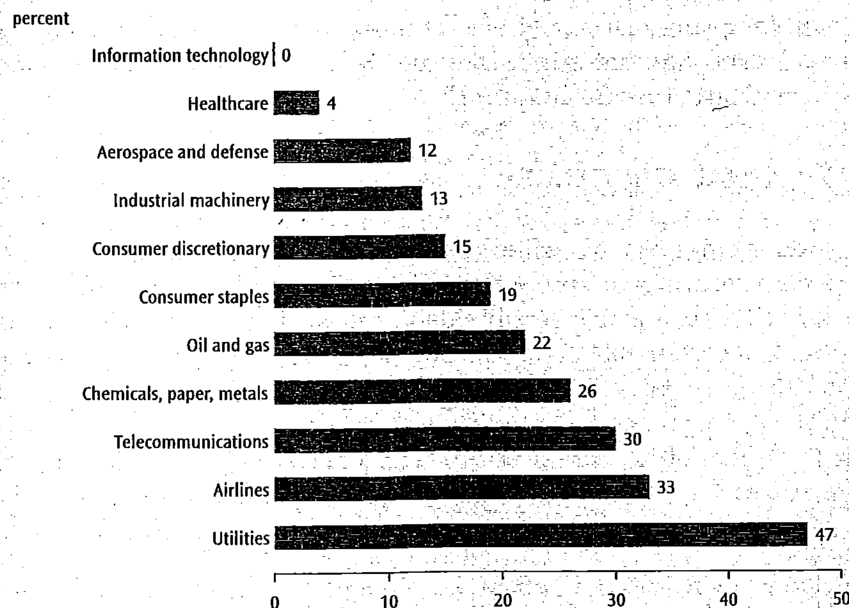
multiples approach or through DCF iteratively. To perform an iterative valuation, assume a reasonable capital structure, and value the enterprise using DCF. Using the estimate of debt to enterprise value, repeat the valuation. Continue this process until the valuation no longer materially changes.

Minority interest If minority interest—claims by outside shareholders on a portion of a company's business (often a subsidiary acquired by the company)—is publicly traded, then you can determine their approximate value directly from the market price for the shares. When the minority interest is not publicly traded, you must estimate its current value. To do this, apply a company-specific or industry price-to-earnings ratio directly to the income generated for minority interest.

Review Capital Structure of Comparable Companies

To place the company's current capital structure in the proper context, compare its capital structure with those of similar companies. Exhibit 10.15 presents the median debt-to-value levels for 11 industries. As the exhibit shows, industries with heavy fixed investment in tangible assets tend to have higher debt levels. High-growth industries, especially those

Exhibit 10.15 Median Debt-to-Market Value by Industry, 2003



Note: Market value of debt proxied by book value. Enterprise value proxied by book value of debt plus market value of equity.

ATTACHMENT 5

GRAHAM HARVEY ARTICLE

Version: May 2, 2000

The theory and practice of corporate finance: Evidence from the field[1]

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We survey 392 CFOs about the cost of capital, capital budgeting, and capital structure. Large firms rely heavily on present value techniques and the capital asset pricing model, while small firms are relatively likely to use the payback criterion. We find that a surprising number of firms use their firm risk rather than project risk in evaluating new investments. Firms are concerned about maintaining financial flexibility and a good credit rating when issuing debt, and earnings per share dilution and recent stock price appreciation when issuing equity. We find some support for the pecking-order and trade-off capital structure hypotheses but little evidence that executives are concerned about asset substitution, asymmetric information, transactions costs, free cash flows, or personal taxes.

Key words: capital structure, cost of capital, cost of equity, capital budgeting, discount rates, project valuation, survey.

[1] We thank Franklin Allen for his detailed comments on the survey instrument and the overall project. We appreciate the input of Chris Allen, J.B. Heaton, Craig Lewis, Cliff Smith, Jeremy Stein, Robert Taggart, and Sheridan Titman on the survey questions and design. We received expert survey advice from Lisa Abendroth, John Lynch, and Greg Stewart. We thank Carol Bass, Frank Ryan and Fuqua MBA students for help in gathering the data; and Kathy Benton, Steve Fink, Anne Higgs, Ken Rona, and Ge Zhang for computer assistance. The paper has benefited from comments made by an anonymous referee, the editor (Bill Schwert), as well as Michael Bradley, Alon Brav, Susan Chaplinsky, Magnus Dahlquist, Gene Fama, Paul Gompers, Ravi Jagannathan, Tim Opler, Todd Pulvino, Nathalie Rossiensky, Rick Ruback, David Smith, and seminar participants at the Harvard Business School/Journal of Financial Economics Conference on the interplay between theoretical, empirical, and field research in finance and the 2000 Utah Winter Finance Conference. Finally, we thank the executives who took the time to fill out the survey. This research is partially sponsored by the Financial Executives Institute (FEI). The opinions expressed in the paper do not necessarily represent the views of FEI. Graham acknowledges financial support from the Alfred P. Sloan Research Foundation. Some supplementary research results are available at http://www.duke.edu/~charvey/Research/indexr.htm.

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1. Introduction

In this paper, we analyze a comprehensive survey that describes the current practice of corporate finance. Perhaps the best-known field study in this area is John Lintner's (1956) path-breaking analysis of dividend policy. The results of that study are still quoted today and have deeply affected the way that dividend policy research is conducted.

In many respects, our goals are similar to Lintner's. Our survey describes the current practice of corporate finance. We hope that researchers will use our results to develop new theories -- and potentially modify or abandon existing views. We also hope that practitioners will learn from our analysis, by noting how other firms operate and by identifying areas where academic recommendations have not been fully implemented.

Our survey is distinguished from previous surveys in a number of dimensions.[2] First, the scope of our survey is broad. We examine capital budgeting, cost of capital and capital structure. This allows us to link responses across areas. For example, we investigate whether firms that consider financial flexibility a capital structure priority also are likely to value real options in capital budgeting decisions. We explore each category in depth, asking more than 100 total questions.

Second, we sample a large cross-section of approximately 4,440 firms. In total, 392 Chief Financial Officers responded to the survey, for a response rate of 9%. The next largest survey that we know of is Moore and Reichert (1983) who study 298 large firms. We investigate for possible nonresponse bias and conclude that our sample is representative of the population.

Third, we analyze the responses conditional on firm characteristics. We examine the relation between the executives' responses and firm size, P/E ratio, leverage, credit rating, dividend policy, industry, management ownership, CEO age, CEO tenure and the education of the CEO. By testing whether responses differ across these characteristics, we shed light on the implications of various corporate finance theories related to firm size, risk, investment opportunities, transaction costs, informational asymmetry, and managerial incentives.

Survey-based analysis complements research based on large samples and clinical studies. Large sample studies are the most common type of empirical analysis, and have several advantages over other approaches. Most large sample studies offer, among other things, statistical power and cross-sectional variation. However, large sample studies often have weaknesses related to variable specification and the inability to ask qualitative questions. Clinical studies are less common but offer excellent detail and are unlikely to "average away" unique aspects of corporate behavior. However, clinical studies use small samples and their results are often sample-specific.

The survey approach offers a balance between large sample analyses and clinical studies. Our survey analysis is based on a moderately large sample and a broad cross-section of firms. At the same time, we are able to ask very specific and qualitative questions. The survey approach is not without potential problems, however. Surveys measure beliefs and not necessarily actions. Survey analysis faces the risk that the respondents are not representative of

[2] See, for example, Lintner (1956), Gitman and Forrester (1977), Moore and Reichert (1983), Stanley and Block (1984), Baker, Farrelly, and Edelman (1985), Pinegar and Wilbricht (1989), Wansley, Lane, and Sarkar (1989), Sangster (1993), Donaldson (1994), Epps and Mitchem (1994), Poterba and Summers (1995), Billingsley and Smith (1996), Shao and Shao (1996), Bodnar, Hayt, and Marston (1998), Bruner, Eades, Harris, and Higgins (1998) and Block (1999).

the population of firms, or that the survey questions are misunderstood. Overall, survey analysis is seldom used in corporate financial research, so we feel that our paper provides unique information to aid our understanding of how firms operate.

The results of our survey are both reassuring and surprising. On one hand, most firms use present value techniques to evaluate new projects. On the other hand, a large number of firms use company-wide discount rates to evaluate these projects – rather than a project-specific discount rate.

Interestingly, the survey indicates that firm size significantly affects the practice of corporate finance. For example, large firms are significantly more likely to use net present value techniques and the Capital Asset Pricing Model for project evaluation than are small firms, while small firms are more likely to use the payback criterion. A majority of large firms have a tight or somewhat tight target debt ratio, in contrast to only one-third of small firms.

Executives rely heavily on practical, informal rules when choosing capital structure. The most important factors affecting debt policy are maintaining financial flexibility and having a good credit rating. When issuing equity, respondents are concerned about earnings per share dilution and recent stock price appreciation. We find very little evidence that executives are concerned about asset substitution, asymmetric information, transactions costs, free cash flows, or personal taxes. If respondents behave according to these deeper hypotheses, they apparently do so unknowingly. We acknowledge but do not investigate the possibility that these deeper implications are, for example, impounded into prices and credit ratings, and so executives react to them indirectly.

The paper is organized as follows. In the second section, we present the survey design, the sampling methodology, and discuss some caveats of survey research. In the third section we study capital budgeting. We analyze the cost of capital in the fourth section. In the fifth section we examine capital structure. We offer some concluding remarks in the final section.

2. Methodology

2.1 Design

Our survey focuses on three areas: capital budgeting, cost of capital and capital structure. Based on a careful review of the existing literature, we developed a draft survey that was circulated to a group of prominent academics for feedback. We incorporated their suggestions and revised the survey. We then sought the advice of marketing research experts on the survey design and execution. We made changes to the format of the questions and overall survey design with the goal of minimizing biases induced by the questionnaire and maximizing the response rate.

The survey project is a joint effort with the Financial Executives Institute (FEI). FEI has approximately 14,000 members that hold policy-making positions as CFOs, Treasurers and Controllers at 8,000 companies throughout the United States and Canada. Every quarter, Duke University and the FEI poll these financial officers with a one-page survey on important topical issues (Graham, 1999). The usual response rate for the quarterly survey is between 8-10%.

Using the penultimate version of the survey, we conducted beta tests at both FEI and Duke University. This involved having graduating MBA students and financial executives fill out the

survey, note the required time, and provide feedback. Our beta testers took, on average, 17 minutes to complete the survey. Based on this and other feedback, we made final changes to the wording on some questions. The final version of the survey contained 15 questions, most with subparts, and was three pages long. One section collected demographic information about the sample firms. (The survey instrument appears on the Internet at the address http://www.duke.edu/~charvey/Research/indexr.htm)

We sent out two different versions of the survey, with the questions reordered on each version. There are no significant differences based on the ordering of the questions.[3]

2.2 Delivery and response

We used two mechanisms to deliver the survey. We sent a mailing from Duke University on February 10, 1999 to each CFO in the 1998 Fortune 500 list. Independently, the FEI faxed out 4,440 surveys to their member firms on February 16, 1999. Three hundred thirteen of the Fortune 500 CFOs belong to the FEI, so these firms received both a fax and a mailed version. We requested that the surveys be returned by February 23, 1999. To encourage the executives to respond, we offered an advanced copy of the results to interested parties.

We employed a team of 10 MBA students to follow up on the mailing to the Fortune 500 firms with a phone call and possible faxing of a second copy of the survey. On February 23, FEI refaxed the survey to the 4,440 FEI corporations, and we remailed to the Fortune 500 firms, with a new due date of February 26, 1999. This second stage was planned in advance and designed to maximize the response rate.

The executives returned their completed surveys by fax to a third party data vendor. Using a third party ensures that the survey responses are anonymous. We feel that anonymity is important to obtain frank answers to some of the questions. Although we do not know the identity of the survey respondents, we do know a number of firm-specific characteristics, as discussed below.

Three hundred ninety-two completed surveys were returned, for a response rate of nearly 9%. Given the length (three pages) and depth (over 100 total questions) of our survey, this response rate compares favorably to the response rate for the quarterly FEI-Duke survey.[4]

2.3 Summary statistics and data issues

Figure 1 presents summary information about the firms in our sample. The companies range from very small (26% of the sample firms have sales less than $100 million) to very large (42% have sales of at least $1 billion) (see Fig. 1A). In subsequent analysis, we refer to firms with revenues greater than $1 billion as "large". Forty percent of the firms are manufacturers (Fig.

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[3] Internet Appendix A contains a copy of the version B of the survey. Version A was similar except that questions 11-14 and questions 1-4 were interchanged. We were concerned that the respondents might fill in the first page or two of the survey but leave the last page blank. If this were the case, we would expect to see a higher proportion of respondents answering the questions that appear at the beginning of either version of the survey. We find no evidence that the response rate differs depending on whether the questions are at beginning or the end of the survey.

[4] The rate is also comparable to other recent academic surveys. For example, Trahan and Gitman (1995) obtain a 12% response rate in a survey mailed to 700 CFOs. The response rate is higher, 34%, in Block (1999) but he targets CFAs -- not senior officers of particular firms.

1C). The nonmanufacturing firms are evenly spread across other industries, including financial (15%), transportation and energy (13%), retail and wholesale sales (11%) and high-tech (9%). In Appendix A, we show that the responding firms are representative of the corporate population for size, industry, and other characteristics.

The median price-earnings ratio is 15. Sixty percent of the respondents have price-earnings ratios of 15 or greater (Fig. 1D). We refer to these firms as growth firms when we analyze how investment opportunities affect corporate behavior. We refer to the remaining 40% of the respondents as non-growth firms.

The distribution of debt levels is fairly uniform (Fig. 1E). Approximately one-third of the sample firms have debt-to-asset ratios below 20%, another third have debt ratios between 20% and 40%, and the remaining firms have debt ratios greater than 40%. We refer to firms with debt ratios greater than 30% as highly levered. The credit-worthiness of the sample is also dispersed (Fig. 1F). Twenty percent of the companies have credit ratings of AA or AAA, 32% have an A credit rating, and 27% have a BBB rating. The remaining 21% have speculative debt with ratings of BB or lower.

Though our survey respondents are CFOs, we ask a number of questions about the characteristics of their superiors – the Chief Executive Officers. We assume that the CFOs act as agents for the CEOs. Nearly half of the CEOs for the responding firms are between 50 and 59 years old (Fig. 1I). Another 23% are over age 59, a group we refer to as “mature”. Twenty-eight percent of the CEOs are between the ages of 40 and 49. The survey reveals that executives change jobs frequently. Nearly 40% of the CEOs have been in their jobs less than four years, and another 26% have been in their jobs between four and nine years (Fig. 1J). We define the 34% who have been in their jobs longer than nine years as having "long tenure". Forty-one percent of the CEOs have an undergraduate degree as their highest level of educational attainment (Fig. 1K). Another 38% have an MBA and 8% have a non-MBA Masters degree. Finally, the top three executives own at least 5% of the common stock of their firm in 44% of the sample. These CEO characteristics allow us to examine whether managerial incentives or entrenchment affect the survey responses. We also study whether having an MBA affects the choices made by corporate executives.

Fig. 1M shows that 36% of the sample firms seriously considered issuing common equity, 20% considered issuing convertible debt, and 31% thought about issuing debt in foreign markets. Among responding firms, 64% calculate the cost of equity, 63% have publicly traded common stock, 53% issue dividends, and 7% are regulated utilities (Fig. 1N). If issuing dividends is an indication of a reduced informational disadvantage for investors relative to managers (Sharpe and Nyguen, 1995), the dividend issuance dichotomy allows us to examine whether the data support corporate theories based on informational asymmetry.

[Insert Table 1]

Table 1 presents correlations for the demographic variables. Not surprisingly, small companies have lower credit ratings, a higher proportion of management ownership, a lower incidence of paying dividends, a higher chance of being privately owned, and a lower proportion of foreign revenue. Growth firms are likely to be small, have lower credit ratings, and a higher degree of management ownership. Firms that do not pay dividends have low credit ratings.

Below, we perform univariate analyses on the survey responses conditional on each separate firm characteristic. However, because size is correlated with a number of different factors, we

perform a robustness check for the non-size characteristics. We split the sample in two, large firms versus small firms. On each size subsample, we repeat the analysis of the responses conditional on firm characteristics other than size. We generally report the findings with respect to non-size characteristics in the text only if they hold on the full sample and the two size subsamples. We also perform a separate robustness check relative to public versus private firms and only report the characteristic-based results in the text if they hold for the full and public samples. The tables contain the full set of results, including those that do not pass these robustness checks.

All in all, the variation in executive and firm characteristics permits a rich description of the practice of corporate finance, and allows us to infer whether corporate actions are consistent with academic theories. We show in Appendix A that our sample is representative of the population from which it was drawn, fairly representative of Compustat firms, and not adversely affected by nonresponse bias.

3. Capital budgeting methods

3.1 Design

This section studies how firms evaluate projects. Previous surveys mainly focus on large firms and suggest that internal rate of return (IRR) is the primary method for evaluation. For example, Gitman and Forrester (1977), in their survey of 103 large firms, find that only 9.8% of firms use net present value as their primary method and 53.6% report IRR as primary method. Stanley and Block (1984) find that 65% of respondents report IRR as their primary capital budgeting technique. Moore and Reichert (1983) survey 298 Fortune 500 firms and find that 86% use some type of discounted cash flow analysis. Bierman (1993) finds that 73 of 74 Fortune 100 firms use some type of discounted cash flow analysis. These results are similar to the findings in Trahan and Gitman (1995), who survey 84 Fortune 500 and Forbes 200 best small companies, and Bruner, Eades, Harris and Higgins (1998), who interview 27 highly regarded corporations.[5]

Our survey is distinguished from previous work in several ways. The most obvious difference is that previous work has almost exclusively focused on the largest firms. Second, given that our sample is larger than all previous surveys, we are able to control for many different firm characteristics. Finally, we go beyond NPV vs. IRR analysis and ask whether firms use the following evaluation techniques: Adjusted present value (see Brealey and Myers, 1996), payback period, discounted payback period, profitability index, and accounting rate of return. We also inquire whether firms by-pass discounting techniques and simply use earnings multiples.[6] We are also interested in whether firms use other types of analyses that are taught in many MBA programs, such as simulation analysis and Value at Risk (VaR). Finally, we are interested in the importance of real options in project evaluation (see Myers, 1977).

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[5] See http://www.duke.edu/~charvey/Research/indexr.htm for a review of the capital budgeting literature.
[6] A price-earnings approach can be thought of as measuring the number of years it takes for the stock price to be paid for by earnings, and therefore can be interpreted as a version of the payback method.

3.2 Results

Respondents are asked to score how frequently they use the different capital budgeting techniques on a scale of 0 to 4 (0 meaning "never", 4 meaning "always"). In many respects, the results differ from previous surveys, perhaps because we have a more diverse sample. An important caveat here, and throughout the survey, is that the responses represent beliefs. We have no way of verifying that the beliefs coincide with actions.

Most respondents select net present value and internal rate of return as their most frequently used capital budgeting techniques (see Table 2). 74.9% of CFOs always or almost always (responses of 4 and 3) use net present value (rating of 3.08). 75.7% always or almost always use internal rate of return (rating of 3.09). The hurdle rate is also popular. These results are summarized in Figure 2.

[Insert Fig. 2]

The most interesting results come from examining the responses conditional on firm and executive characteristics. Large firms are significantly more likely to use NPV than small firms (rating of 3.42 versus 2.83). There is no difference in techniques used by growth and non-growth firms. Highly levered firms are significantly more likely to use NPV and IRR than firms with small debt ratios. This is not just an artifact of firm size. In unreported analysis, we find a significant difference between high and low leverage small firms as well as high and low leverage large firms. Interestingly, highly levered firms are also more likely to use sensitivity and simulation analysis. Perhaps because they are required in the regulatory process, utilities are more likely to use IRR and NPV and perform sensitivity and simulation analyses. We also find that CEOs with MBAs are more likely than non-MBA CEOs to use net present value - but the difference is only significant at the 10% level.

[Insert Table 2]

Firms that pay dividends are significantly more likely to use NPV and IRR than are firms that do not pay dividends. This result is also robust to our analysis by size. Public companies are significantly more likely to use NPV and IRR than are private corporations. As the correlation analysis indicates in Table 1, many of these attributes are correlated. For example, private corporations are also smaller firms.

Other than NPV and IRR, the payback period is the most frequently used capital budgeting technique (rating of 2.53). This is surprising because financial textbooks have lamented the shortcomings of the payback criteria for decades. (Payback ignores the time value of money and cash flows beyond the cutoff date; the cutoff is usually arbitrary.) Small firms use the payback period (rating of 2.72) almost as frequently as they use NPV or IRR. In untabulated analysis, we find that among small firms, CEOs without MBAs are more likely to use the payback criterion. The payback is most popular among mature CEOs (rating of 2.83). For both small and large firms, we find that mature CEOs use payback significantly more often than younger CEOs in separate examinations. Payback is also frequently used by CEOs with long tenure (rating of 2.80). Few firms use the discounted payback (rating of 1.56), a method that eliminates one of the payback criteria's deficiencies by accounting for the time value of money.

It is sometime argued that the payback approach is rational for severely capital constrained firms: if an investment project does not pay positive cash flows early on, the firm will cease operations and therefore not receive positive cash flows that occur in the distant future, or else

will not have the resources to pursue other investments during the next few years (p. 405, Weston and Brigham, 1981). We do not find any evidence to support this claim because we find no relation between the use of payback and leverage, credit ratings, or dividend policy. Our finding that payback is used by older, longer tenure CEOs without MBAs instead suggests that lack of sophistication is a driving factor behind the popularity of the payback criterion.

McDonald (1998) notes that rules of thumb such as payback and hurdle rates can approximate optimal decision rules that account for option-like features of many investments, especially in the evaluation of very uncertain investments. If small firms have more volatile projects than do large firms, this could explain why small firms use these ad hoc decision rules. It is even possible that small firms use these rules not because they realize that they approximate the optimal rule but simply because the rules have worked in the past.

A number of firms use the earnings multiple approach for project evaluation. There is weak evidence that large firms are more likely to employ this approach than are small firms. We find that a firm is significantly more likely to use earnings multiples if it is highly levered. The influence of leverage on the earnings multiple approach is also robust across size (i.e., highly levered firms, whether they are large or small, frequently use earnings multiples).

In summary, compared to previous research, our results suggest increased prominence of net present value as an evaluation technique. In addition, the likelihood of using specific evaluation techniques is linked to firm size, firm leverage and CEO characteristics. In particular, small firms are significantly less likely to use net present value. They are also less likely to use supplementary sensitivity and VaR analyses. The next section takes this analysis one step further by detailing the specific methods firms use to obtain the cost of capital, the most important risk factors, and a specific capital budgeting scenario.

4. Cost of capital

[Insert Table 3]

4.1 Methodology

Our first task is to determine how firms calculate the cost of equity capital. We explore whether firms use the capital asset pricing model (CAPM), a multibeta CAPM (with extra risk factors in addition to the market beta), average historical returns, or a dividend discount model. The results in Table 3 and summarized in Figure 3 indicate that the CAPM is by far the most popular method of estimating the cost of equity capital: 73.5% of respondents always or almost always use the CAPM (rating of 2.92; see also Fig. 1H).[7] The second and third most popular methods are average stock returns and a multibeta CAPM, respectively. Few firms back the cost of equity out from a dividend discount model (rating of 0.91). This sharply contrasts with the findings of Gitman and Mercurio (1982) who find that 31.2% of the participants in their survey used a version of the dividend discount model to establish their cost of capital. While the CAPM is popular, we show later that it is not clear that the model is applied properly in

[7] Gitman and Mercurio (1982) in a survey of 177 Fortune 1000 firms find that only 29.9% of respondents use the CAPM "in some fashion". More recently, Bruner, Eades, Harris and Higgins (1998) find that 85% of their 27 best practice firms use the CAPM or a modified CAPM.

practice. Of course, even if it is applied properly, it is not clear that the CAPM is a very good model [see Fama and French (1992)].

[Insert Fig. 3]

The cross-sectional analysis is particularly illuminating. Large firms are much more likely to use the CAPM than are small firms (rating of 3.27 versus 2.49, respectively). Smaller firms are more inclined to use a cost of equity capital that is determined by "what investors tell us they require." CEOs with MBAs are more likely to use the single factor CAPM or CAPM with extra risk factors than are non-MBA CEOs; but the difference is only significant for the single-factor CAPM.

We also find that firms with low leverage, or small management ownership, are significantly more likely to use the CAPM. We find significant differences for private versus public firms (public more likely to use the CAPM). This is perhaps expected given that the beta of the private firm could only be calculated via analysis of comparable publicly traded firms. Finally, we find that firms with high foreign sales are more likely to use the CAPM.

Given the sharp difference between large and small firms, it is important to check whether some of these control effects just proxy for size. It is, indeed, the case, that foreign sales proxy for size. Table 1 shows that that there is a significant correlation between percent of foreign sales and size. When we analyze the use of the CAPM by foreign sales controlling for size, we find no significant differences. However, this is not true for some of the other control variables. There is a significant difference in use of the CAPM across leverage that is robust to size. The public/private effect is also robust to size. Finally, the difference in the use of the CAPM based on management ownership holds for small firms but not for large firms. That is, among small firms, CAPM use is inversely related to managerial ownership. There is no significant relation for larger firms.

4.2 Specific risk factors

[Insert Table 4]

Table 4 investigates sources of risk other than market risk, and how they are treated in project evaluation. The list of risk factors includes the fundamental factors in Fama and French (1992), momentum as defined in Jegadeesh and Titman (1993), as well as the macroeconomic factors in Chen, Roll and Ross (1986) and Ferson and Harvey (1991).

The format of Table 4 is different from the others. We ask whether, in response to these risk factors, the firm modifies its discount rate, cash flows, both or neither. We report the percentage of respondents for each category. In the cross-tabulations across each of the demographic factors, we test whether the 'neither' category is significantly different conditional on firm characteristics.

Overall, the most important additional risk factors are: interest rate risk, exchange rate risk, business cycle risk, and inflation risk (see Figure 4). For the calculation of discount rates, the most important factors are interest rate risk, size, inflation risk, and foreign exchange rate risk. For the calculation of cash flows, many firms incorporate the effects of commodity prices, GDP growth, inflation, and foreign exchange risk.

[Insert Fig. 4]

Interestingly, few firms adjust either discount rates or cash flows for book-to-market, distress, or momentum risks. Only 13.1% of respondents consider the book-to-market ratio in either the cash flow or discount rate calculations. Momentum is only considered important by 11.1% of the respondents.

Small and large firms have different priorities when adjusting for risk. For large firms, the most important risk factors (in addition to market risk) are foreign exchange risk, business cycle risk, commodity price risk, and interest rate risk. This closely corresponds to the set of factors detailed in Ferson and Harvey (1993) in their large-sample study of multi-beta international asset pricing models. Ferson and Harvey find that the most important additional factor is foreign exchange risk. Table 4 shows that foreign exchange risk is by far the most important nonmarket risk factor for large firms (61.7% of the large firms adjust for foreign exchange risk; the next closest is 51.4% adjusting for business cycle risk).

The ordering is different for small firms. Small firms are more affected by interest rate risk than they are by foreign exchange risk. This asymmetry in risk exposure is consistent with the analysis of Jagannathan and Wang (1996) and Jagannathan, Kubota and Takehara (1998). They argue that small firms are more likely exposed to labor income risk and, as a result, we should expect to find these firms relying on a different set of risk factors, and using the CAPM less frequently, when estimating their cost of capital.

As might be expected, firms with considerable foreign sales are sensitive to unexpected exchange rate fluctuations. Fourteen percent of firms with substantial foreign exposure adjust discount rates for foreign exchange risk, 22% adjust cash flows, and 32% adjust both. These figures represent the highest incidence of "adjusting something" for any type of risk for any demographic.

There are some interesting observations for the other control variables. Highly levered firms are more likely to consider business cycle risk important; however, surprisingly, indebtedness does not affect whether firms adjust for interest rate risk, term structure risk, or distress risk. Growth firms are much more sensitive to foreign exchange risk than are non-growth firms.[8]

4.3 Project versus firm risk

[Insert Table 5]

Finally, we explore how these models are used. In particular, we consider an example of how a firm evaluates a new project in an overseas market. We are most interested in whether corporations consider the company-wide risk or the project risk to be important in evaluating the project.

Table 5 contains some surprising results. Remarkably, most firms would use a single company-wide discount rate to evaluate the project. 58.8% of the respondents would always or almost always use the company-wide discount rate, even though the hypothetical project would

[8] Table 4 only reports the results for four control variables. A full version of Table 4 is available on the Internet at http://www.duke.edu/~charvey/Research/indexr.htm.

most likely have different risk characteristics.[9] A close second, 51% of the firms said they would always or almost always use a risk-matched discount rate to evaluate this project.

The reliance of many firms on a company-wide discount rate might make sense if these same firms adjust cash flows for FX risk when considering risk factors (i.e., in Table 4). However in untablulated results, we find the opposite: firms that do not adjust cash flows for FX risk are also relatively less likely (compared to firms that adjust for FX risk) to use a risk-matched discount rate when evaluating an overseas project.

Large firms are significantly more likely to use the risk-matched discount rate than are small firms (rating of 2.34 versus 1.86). This is also confirmed in our analysis of Fortune 500 firms, which are much more likely to use the risk-matched discount rate than the firm-wide discount rate to evaluate the foreign project (rating of 2.61 versus 1.97). Very few firms use a different discount rate to separately value different cash flows within the same project (rating of 0.66), as Brealey and Myers (1996) suggest they should for cash flows such as depreciation.

The analysis across firm characteristics reveals some interesting patterns. Growth firms are more likely to use a company-wide discount rate to evaluate projects. Surprisingly, firms with foreign exposure are significantly more likely to use the company-wide discount rate to value an overseas project. Public corporations are more likely to use a risk-matched discount rate than are private corporations; however, this result is not robust to controlling for size. CEOs with short tenures are more likely to use a company-wide discount rate (significant at the 5% level for both large and small firms).

5. Capital structure

Our survey has separate questions about debt, equity, debt maturity, convertible debt, foreign debt, target debt ratios, credit ratings, and actual debt ratios. Instead of stepping through the responses security-by-security, this section distills the most important findings from the capital structure questions and presents the results grouped by theoretical hypothesis or concept. These groupings are neither mutually exclusive nor all encompassing; they are intended primarily to organize the exposition. Table 12 summarizes the capital structure findings.

5.1 Trade-off theory of capital structure choice

5.1.a Target debt ratios and the costs and benefits of debt

One of the longest-standing questions about capital structure is whether firms have target debt ratios. The trade-off theory says that firms have optimal debt-equity ratios, which they determine by trading off the benefits of debt with the costs (e.g., Scott, 1976). In traditional trade-off models, the chief benefit of debt is the tax advantage of interest deductibility (Modigliani and Miller, 1963). The primary costs are those associated with financial distress

[9] These results are related to Bierman (1993) who finds that 93% of the Fortune 100 industrial firms use the company-wide weighted average cost of capital for discounting. 72% used the rate applicable to the project based on the risk or the nature of the project. 35% used a rate based on the division's risk.

and the personal tax expense bondholders incur when they receive interest income (Miller, 1977).[10]

[Insert Table 6]

[Insert Fig. 5]

Table 6 and Figure 5 show that factors that determine the appropriate amount of debt for the firm. The CFOs tell us that the corporate tax advantage of debt is moderately important in capital structure decisions: Row a of Table 6 shows that the mean response is 2.07 on a scale from 0 to 4 (0 meaning not important, 4 meaning very important). The tax advantage is most important for large, regulated, and dividend-paying firms – companies that probably have high corporate tax rates and therefore large tax incentives to use debt. Desai (1998) shows that firms issue foreign debt in response to relative tax incentives, so we investigate whether firms issue debt when foreign tax treatment is favorable. We find that favorable foreign tax treatment relative to the U.S. is relatively important (overall rating of 2.26 in Table 7). Big firms (2.41) with large foreign exposure (2.50) are relatively likely to indicate that foreign tax treatment is an important factor. This could indicate that firms need a certain level of sophistication and exposure to perform international tax planning.

[Insert Table 7]

In contrast, we find very little evidence that firms directly consider personal taxes when deciding on debt policy (rating of 0.68 in Table 6) or equity policy (rating of 0.82 in Table 8, the least popular equity issuance factor). Therefore, it seems unlikely that firms target investors in certain tax clienteles (although we can not rule out the possibility that investors choose to invest in firms based on payout policy, or that executives respond to personal tax considerations to the extent that they are reflected in market prices).

[Insert Table 8]

When we ask firms directly about whether potential costs of distress affect their debt decisions, we find they are not very important (rating of 1.24 in Table 6), although they are relatively important among speculative-grade firms. However, firms are very concerned about their credit ratings (rating of 2.46, the second most important debt factor), which can be viewed as an indication of concern about distress. Among firms that have rated debt and for utilities, credit ratings are a very important determinant of debt policy. Credit ratings are also important for large firms (3.14) that are in the Fortune 500 (3.31). Finally, CFOs are also concerned about earnings volatility when making debt decisions (rating of 2.32), which is consistent with reducing debt usage when the probability of bankruptcy is high (Castanias, 1983).

We ask directly whether firms have an optimal or "target" debt-equity ratio. Nineteen percent of the firms do not have a target debt ratio or target range (see Figure 1G). Another 37% have a flexible target, and 34% have a somewhat tight target or range. The remaining 10% have a strict target debt ratio (see Fig. 6). These overall numbers provide mixed support for the notion that companies trade off costs and benefits to derive an optimal debt ratio. However, untabulated analysis shows that large firms are more likely to target debt ratios: 55% of large firms have at least somewhat strict target ratios, compared to 36% of small firms. Targets that are tight or somewhat strict are more common among investment grade (64%) than speculative

[10] In this section we discuss the traditional factors in the trade-off theory: distress costs and tax costs and benefits. Many additional factors (e.g., informational asymmetry, agency costs) can be modeled in a trade-off framework. We discuss these alternative costs and benefits in separate sections below.

firms (41%), and among regulated (67%) than unregulated firms. Targets are important if the CEO has short tenure or is young, and when the top three officers own less than 5% of the firm.

[Insert Fig. 6]

Finally, the CFOs tell us that their companies issue equity to maintain a target debt-equity ratio (rating of 2.26; row e of Table 8), especially if their firm is highly levered (2.68), firm ownership is widely dispersed (2.64), or the CEO is young (2.41).

5.1.b Deviations from target debt ratios

Actual debt ratios vary across firms and through time. Such variability might occur if debt intensity is measured relative to the market value of equity, and yet firms do not rebalance their debt lock-step with changes in equity prices. Our evidence supports this hypothesis: the mean response of 1.08 indicates that firms do not rebalance in response to market equity movements (row g in Table 9). Further, among firms targeting their debt ratio, few firms (rating of 0.99) state that changes in the price of equity affect their debt policy. In their large-sample study of Compustat firms, Opler and Titman (1998) also find that firms issue equity after stock price increases, which they note is inconsistent with target debt ratios because it moves firms further from any such target.

[Insert Table 9]

Fisher, Heinkel and Zechner (1989) propose an alternative explanation of why debt ratios vary over time, even if firms have a target. If there are fixed transactions costs to issuing or retiring debt, a firm only rebalances when its debt ratio crosses an upper or lower hurdle. We find moderate evidence that firms consider transactions costs when making debt issuance decisions (rating of 1.95 in row e of Table 6), especially among small firms (2.07) in which the CEO has been in office for at least ten years (2.22). Many papers (e.g., Titman and Wessels, 1988) interpret the finding that small firms use relatively little debt as evidence that transaction costs discourage debt usage among small firms; as far as we know, our analysis is the most direct examination of this hypothesis to date. However, when we ask whether they *delay* issuing (rating of 1.06 in Table 9) or retiring debt (1.04) because of transactions costs, which is a more direct test of the Fisher et al (1989) hypothesis, the support for the transactions cost hypothesis is weak.

5.2 Asymmetric information explanations of capital structure

5.2.a Pecking-order model of financing hierarchy

The pecking-order model of financing choice assumes that firms do not target a specific debt ratio, but instead use external financing only when internal funds are insufficient. External funds are less desirable because informational asymmetries between management and investors imply that external funds are undervalued in relation to the degree of asymmetry (Myers and Majluf, 1984; Myers, 1984). Therefore, if firms use external funds, they prefer to use debt, convertible securities, and, as a last resort, equity.

Myers and Majluf (1984) assume that firms seek to maintain financial slack to avoid the need for external funds. Therefore, if we find that firms value financial flexibility, this is

generally consistent with the pecking-order theory. However, flexibility is also important for reasons unrelated to the pecking-order model (e.g., Opler et al., 1999), so finding that CFOs value financial flexibility is not sufficient to prove that the pecking-order model is the true description of capital structure choice.

We ask several questions related to the pecking-order model. We ask if firms issue securities when internal funds are not sufficient to fund their activities, and separately ask if equity is used when debt, convertibles, or other sources of financing are not available. We also inquire whether executives consider equity undervaluation when deciding which security to use, and whether financial flexibility is important.

Flexibility: The most important item affecting corporate debt decisions is management's desire for "financial flexibility," with a mean rating of 2.59 (Table 6).[11] Fifty-nine percent of the respondents say that flexibility is important (rating of 3) or very important (rating of 4).[12] However, the importance of flexibility in the survey responses is not related to informational asymmetry (size or dividend payout) or growth options in the manner suggested by the pecking-order theory. In fact, flexibility is statistically more important for dividend-paying firms, opposite the theoretical prediction (if dividend-paying firms have relatively little informational asymmetry). Therefore, a deeper investigation indicates that the desire for financial flexibility is not driven by the factors behind the pecking-order theory.[13]

Internal funds deficit: Having insufficient internal funds is a moderately important influence on the decision to issue debt (rating of 2.13, row a in Table 9). This behavior is generally consistent with the pecking-order model. More small firms (rating of 2.30) than large firms (1.88) indicate that they use debt in the face of insufficient internal funds, which is consistent with the pecking-order if small firms suffer from larger asymmetric-information-related equity undervaluation. However, there is only modest evidence that firms issue equity because recent profits have been insufficient to fund activities (1.76 in Table 8), and even less indicating that firms issue equity after their ability to obtain funds from debt or convertibles is diminished (rating of 1.15 in Table 10).

[Insert Table 10]

Equity undervaluation: Firms are reluctant to issue common stock when they perceive that it is undervalued (rating of 2.69, the most important equity issuance factor in Table 8). In a separate survey conducted one month after ours, when the Dow Jones 30 was approaching a new record of 10,000, Graham (1999) finds that more than two-thirds of FEI executives feel

[11] Four firms wrote in explicitly that they remain flexible in the sense of minimizing interest obligations, so that they do not need to shrink their business in case an economic downturn occurs in the future (see Internet Appendix). In untabulated analysis, we find that firms that value financial flexibility are more likely to value real options in project evaluation but the difference is not significant.

[12] This finding is interesting because Graham (2000) shows that firms use their financial flexibility (i.e., preserve debt capacity) to make future expansions and acquisitions, but they appear to retain a lot of unused flexibility even after expanding.

[13] Pinegar and Wilbricht (1989) survey 176 unregulated, nonfinancial Fortune 500 firms. Like us, they find that flexibility is the most important factor affecting financing decisions, and that bankruptcy costs and personal tax considerations are among the least important. Our analysis, examining a broader cross-section of theoretical hypotheses and using information on firm and executive characteristics, shows that the relative importance of these factors is robust to a more general survey design.

that their common equity is undervalued by the market.[14] Taken together, these findings indicate that a large percentage of firms are hesitant to issue common equity because they feel their stock is undervalued. Rather than issuing equity when they feel it is undervalued, many firms issue convertible debt instead: Equity undervaluation is the second most popular factor affecting convertible debt policy (rating of 2.34 in Table 10), a response particularly popular among growth firms (2.72).

Finding that firms avoid equity when they perceive that it is undervalued is generally consistent with the pecking order. However, when we examine more carefully how equity undervaluation affects financing decisions, the support for the pecking-order model wanes. In debt decisions, large (rating of 1.76 in row d of Table 9), dividend-paying (1.65) firms are relatively more likely to say that equity undervaluation affects their debt policy (relative to ratings of 1.37 for both small and non-dividend-paying firms). In equity decisions, the relative importance of stock valuation on equity issuance is not related to informational asymmetry as indicated by small size and nondividend-paying status, though it is more important for firms with low executive ownership. In general, these findings are not consistent with the pecking-order idea that informationally-induced equity undervaluation causes firms to avoid equity financing.[15]

In sum, the importance of financial flexibility and equity undervaluation to security issuance decisions is generally consistent with the pecking-order model of financing hierarchy. However, asymmetric information does not appear to *cause* the importance of these factors, as it should if the pecking-order is the true model of capital structure choice.

5.2.b Recent increase in price of common stock

We investigate whether firms issue stock during a "window of opportunity" that arises because their stock price has recently increased, as argued by Loughran and Ritter (1995). Lucas and McDonald (1990) put an informational asymmetry spin on the desire to issue equity after stock price increases: If a firm's stock price is undervalued due to informational asymmetry, it delays issuing until after an informational release (of good news) and the ensuing increase in stock price.

Recent stock price performance is the third most popular factor affecting equity-issuance decisions (rating of 2.53 in Table 8), in support of the "window of opportunity." Consistent with Lucas and McDonald (1990), the window of opportunity is most important for firms suffering from informational asymmetries (i.e., not paying dividends).

5.2.c Signaling private information with debt and equity

Ross (1977) and Leland and Pyle (1977) argue that firms use capital structure to signal their quality or future prospects. However, very few firms indicate that their debt policy is affected by factors consistent with signaling (rating of 0.96 in Table 9). In addition to small absolute

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[14] Graham (1999) finds that only 3% of CFOs think their stock is overvalued. Finding that so many managers privately believe that their stock is undervalued, and so few believe that it is overvalued, suggests that the preference for pecking-order-like behavior might be driven by managerial optimism (Heaton and Rothman (2000)).

[15] Helwege and Liang (1996) find that "asymmetric information variables have no power to predict the relative use of public bonds over equity."

importance, companies more likely to suffer from informational asymmetries, such as small private (0.51) firms, are relatively unlikely to use debt to signal future prospects (see row b in Table 9). We also find little evidence that firms issue equity to give the market a positive impression of their prospects (rating of 1.31 in Table 8). Sending a positive signal via equity issuance is relatively more popular among speculative, nondividend-paying firms.

5.2.d Private information and convertible stock issuance

Private information about asset risk: Brennan and Kraus (1987) and Brennan and Schwartz (1988) argue that the call or conversion feature makes convertible debt relatively insensitive to asymmetric information (between management and investors) about the risk of the firm. We find moderate support for this argument: Firms use convertible debt to attract investors unsure about the riskiness of the company (rating of 2.07 in Table 10). This response is relatively more popular among firms for which outside investors are likely to know less than management about firm risk: small firms (2.35) with large managerial ownership (2.47).

Private information about stock price: Stein (1992) argues that if firms privately know that their stock is undervalued, they prefer to avoid issuing equity. At the same time, they want to minimize the distress costs that come with debt issuance. Convertible debt is "delayed" common stock that has lower distress costs than debt and smaller undervaluation than equity. We find strong evidence consistent with Stein's (1992) argument that convertibles are "back-door equity." Among firms that issue convertible debt, the most popular factor is that convertibles are an inexpensive way to issue delayed common stock (rating of 2.49 in Table 10).[16]

5.2.e Anticipating improvement in credit ratings

Having private information about credit quality can affect a firm's optimal debt maturity. In theory, if firms privately know they are high-quality but are currently assigned a low credit rating, they issue short-term debt because they expect their rating to improve (Flannery, 1986; and Kale and Noe, 1990). In practice, the evidence that firms time their credit-worthiness is weak. The mean response is only 0.85 (row e, Table 11) that companies borrow short-term because they expect their credit rating to improve. This response receives more support from companies with speculative grade debt (1.18), and that do not pay dividends (0.99). Though not of large absolute magnitude, this last answer is consistent with firms timing their credit ratings when they are subject to large informational asymmetries.

[Insert Table 11]

5.2.f Timing market interest rates

Although relatively few executives time changes in their credit ratings (something about which they might reasonably have private information), we find surprising indications that they try to time the market in other ways. We inquire whether executives attempt to time interest rates by issuing debt when they feel that market interest rates are particularly low. The rating of 2.22 in Table 6 provides moderately strong evidence that firms try to time the market in this sense. Market timing is especially important for large firms (2.40), which implies that

[16]CFOs assign a mean rating of 2.18 to using convertibles to avoid equity dilution in the short-term.

companies are more likely to time interest rates when they have a large or sophisticated treasury department.

We also find evidence that firms issue short-term debt in an effort to time market interest rates. CFOs issue short-term when they feel that short rates are low relative to long rates (1.89 in Table 11) or when they expect long-term rates to decline (1.78). Finally, we check if firms use foreign debt because foreign interest rates are lower than domestic rates. There is moderate evidence that relatively low foreign interest rates affect the decision to issue abroad (rating of 2.19). Though insignificant, small (2.33), growth (2.27) firms are more likely to make this claim. If covered interest rate parity holds, it is not clear to us why firms pursue this strategy.

5.3 Agency costs

5.3.a Conflicts between bondholders and equityholders

Underinvestment: Myers (1977) argues that investment decisions can be affected by the presence of long-term debt in a firm's capital structure. Shareholders may "underinvest" and pass up positive NPV projects if they perceive that the profits will be used to pay off existing debtholders. This cost is most acute among growth firms. Myers (1977) argues that firms may want to limit total debt, or use short-term debt, to minimize underinvestment costs. (Froot, Scharfstein, and Stein (1993) argue that firms may want to hedge or otherwise maintain financial flexibility to avoid these costs of underinvestment.)

We ask firms if their choice between short- and long-term debt, or overall debt policy, is related to their desire to pay long-term profits to shareholders, not debtholders. The absolute number of firms indicating that their debt policy is affected by underinvestment concerns is small (rating of 1.01 in Table 6). However, more growth (1.09) than nongrowth firms (0.69) are likely to indicate that underinvestment problems are a concern, which is consistent with the theory. We find little support for the idea that short-term debt is used to alleviate the underinvestment problem. The mean response is only 0.94 (row d in Table 11) that short-term borrowing is used to allow returns from new projects to be captured by long-term shareholders, and there is no statistical difference in the response between growth and nongrowth firms.

Overall, support for the underinvestment argument is weak. This is interesting because it contrasts with the finding in many large sample studies that debt usage is inversely related to growth options (i.e., market-to-book ratios), which those studies interpret as evidence that underinvestment costs affects debt policy (e.g., Graham (1996)).

Asset substitution: Stockholders capture investment returns above those required to service debt payments and other liabilities, and at the same time have limited liability when returns are insufficient to fully pay debtholders. Therefore, stockholders prefer high-risk projects, in conflict with bondholder preferences. Leland and Toft (1996) argue that using short-term debt reduces this agency conflict (see also Barnea, Haugen, and Senbet (1980)). In contrast to this hypothesis, however, we find little evidence that executives issue short-term debt to minimize asset substitution problems. The mean response is only 0.53 (Table 11) that executives feel that short-term borrowing reduces the chance that shareholders will want to take on risky projects.

Green (1984) argues that convertible debt can circumvent the asset-substitution problem that arises when firms accept projects that are riskier than bondholders would prefer. However, we find little evidence that firms use convertibles to protect bondholders against unfavorable actions by managers or stockholders (rating 0.62 in Table 10).

5.3.b Conflicts between managers and equityholders

Jensen (1986) and others argue that when a firm has ample free cash flow, its managers may squander the cash by consuming perquisites or making inefficient investment decisions. We inquire whether firms use debt to commit to pay out free cash flows and thereby discipline management into working efficiently along the lines suggested by Jensen (1986). We find very little evidence that firms discipline managers in this way (mean rating of 0.33, the second lowest rating among all factors affecting debt policy in Table 6).

5.4. Product market and industry factors

Bradley, Jarrell, and Kim (1984) find that debt ratios differ markedly across industries. One explanation for this pattern is that the product market environment or nature of competition varies across industries in a way that affects optimal debt policy. For example, Titman (1984) suggests that customers avoid purchasing a firm's products if they think that the firm may go out of business, and therefore not stand behind its products, especially if the products are unique; consequently, firms that produce unique products may avoid using debt.

Brander and Lewis (1986) model another way that production and financing decisions can be intertwined. Brander and Lewis hypothesize that, by using substantial debt, a firm can provide a credible threat to rivals that it will not reduce production.

We find little evidence that product market factors affect debt decisions. Executives assign a mean rating of 1.24 to the proposition that debt should be limited so that a firm's customers or suppliers do not become concerned that the firm may go out of business (Table 6). Moreover, high-tech firms (which we assume produce unique products) are *less* likely than other firms to limit debt for this reason, contrary to Titman's prediction. We do find that, in comparison to nongrowth firms (1.00), relatively many growth firms (1.43) claim that customers might not purchase their products if they are worried that debt usage might cause the firm to go out of business. This is consistent with Titman's theory if growth firms produce unique products. Finally, there is no evidence supporting the Brander and Lewis hypothesis that debt provides a credible production threat (rating of 0.40).

Though we do not find much evidence that product market factors drive industry differences in debt ratios, we ask executives whether their capital structure decisions are affected by the financing policy of other firms in their industries. This is important because some papers define a firm's target debt ratio as the industry-wide ratio (e.g., Opler and Titman, 1998; and Gilson, 1997).

We find only modest evidence that managers are concerned about the debt levels of their competitors (rating of 1.49 in Table 6). (Recall, however, that credit ratings are important to debt decisions and note that industry debt ratios are an important input for bond ratings.) Rival debt ratios are relatively important for regulated companies (2.32), Fortune 500 firms (1.86), public firms (rating of 1.63 versus 1.27 for private firms), and firms that target their debt ratio (1.60). Moreover, equity issuance decisions are not influenced greatly by the equity policies of other firms in a given industry (rating of 1.45 in Table 8). Finally, we find even less evidence that firms use convertibles because other firms in their industry do so (1.10 in Table 10).

5.5 Control contests

Capital structure can be used to influence, or can be affected by, corporate control contests and managerial share ownership (e.g., Harris and Raviv (1988) and Stulz (1988)). We find moderate evidence that firms issue equity to dilute the stock holdings of certain shareholders (rating of 2.14 in Table 8). This tactic is popular among speculative-grade companies (2.24); however, it is not related to the number of shares held by managers. We also ask if firms use debt to reduce the likelihood that the firm will become a takeover target. We find little support for this hypothesis (rating of 0.73 in Table 6).

5.6 Risk management

Capital structure can be used to manage risk. Gèczy, Minton, and Schrand (1997) note that "foreign denominated debt can act as a natural hedge of foreign revenues" and displace the need to hedge with currency derivatives. We ask whether firms use foreign debt because it acts as a natural hedge, and separately how important it is to keep the source close to the use of funds. Among the 31% of respondents who seriously considered issuing foreign debt, the most popular reason they did so is to provide a natural hedge against foreign currency devaluation (mean rating of 3.15 in Table 7). Providing a natural hedge is most important for public firms (3.21) with large foreign exposure (3.34). The second most important factor affecting the use of foreign debt is keeping the source close to the use of funds (rating of 2.67), especially for small (3.09), manufacturing firms (2.92).

Risk-management practices can also explain why firms match the maturity of assets and liabilities. If asset and liability duration are not aligned, interest rate fluctuations can affect the amount of funds available for investment and day-to-day operations. We ask firms how they choose debt maturity. The most popular explanation of how firms choose between short- and long-term debt is that they match debt maturity with asset life (rating of 2.60 in Table 11). Maturity-matching is most important for small (2.69), private (2.85) firms.

5.7 Practical, cash management considerations

Liquidity and cash management concerns affect corporate financial decisions, often in ways that are not as "deep" as the factors driving academic models. For example, many companies issue long-term so that they do not have to refinance in "bad times" (rating of 2.15 in Table 11). This is especially important for highly-levered (2.55), manufacturing (2.37) firms. The CFOs also say that equity is often issued simply to provide shares to bonus/option plans (2.34 in Table 8), particularly among investment grade firms (2.77) with a young CEO (2.65).

The hand-written responses indicate that practical considerations affect the maturity structure of borrowing (see B.7 in Internet Appendix B). Four firms explicitly say that they tie their scheduled principal repayments to their projected ability to repay. Another six diversify debt maturity to limit the magnitude of their refinancing activity in any given year. Other firms borrow for the length of time they think they will need funds, or borrow short-term until sufficient debt has accumulated to justify borrowing long-term.

5.8. Other factors affecting capital structure

5.8.a. Debt

We ask if having debt allows firms to bargain for concessions from employees (Chang, 1992; and Hanka, 1998). We find no indication that this is the case (mean rating of 0.16 in Table 6, the lowest rating for any question on the survey). Not a single respondent said that debt is important or very important bargaining device (rating of 3 or 4). We also check if firms issue debt after recently accumulating substantial profits (Opler and Titman (1998)). The executives do not recognize this as an important factor affecting debt policy (rating 0.53 in Table 9).

Fourteen firms write that they choose debt to minimize their WACC (see B.5 in Internet Appendix B). Ten write, essentially, that they borrow to fund projects or growth, but only as needed. Five indicate that bond or bank covenants affect their debt policy.

5.8.b Common stock

EPS dilution: We investigate whether concern about earnings dilution affects equity issuance decisions. The textbook view is that earnings are not diluted if a firm earns the required return on the new equity.[17] And yet, Brealey and Myers (1996) indicate that there is a common belief among executives that share issuance dilutes earnings per share (on page 396, Brealey and Myers call this view a "fallacy"). To investigate this issue, we ask if earnings per share concerns affect decisions about issuing common stock.

Among the 38% of firms that seriously considered issuing common equity during the sample period, earnings dilution is the most important concern affecting their decision (mean rating of 2.84 in Table 8).[18] The popularity of this response is intriguing (see Fig. 7). It either indicates that executives focus more than they should on earnings dilution (if the standard textbook view is correct), or that the standard textbook treatment misses an important aspect of earnings dilution. EPS dilution is a big concern among regulated companies (3.60), even though in many cases the regulatory process ensures that utilities earn their required cost of capital, implying that EPS dilution should not affect share price. Concern about EPS dilution is strong among large (3.12), dividend-paying firms (3.06). EPS dilution is less important when the CEO has an MBA (2.62) than when he or she does not (2.95), perhaps because the executive has read Brealey and Myers!

[Insert Fig. 7]

Low cost or low risk: We inquire whether common stock is a firm's least risky or cheapest source of funds. (Williamson (1988) argues that equity is a cheap source of funds with which to finance low-specificity assets.) A modest number of the executives state that they use equity because it is the least risky source of funds (rating of 1.76 in Table 8). The idea that equity is low risk is more popular among firms with the characteristics of a new or start-up firm: small (1.93) with growth options (2.07). The idea that common stock is the cheapest source of funds is less popular (rating of 1.10), although firms with start-up characteristics are more likely to

[17] Conversely, if funds are obtained by issuing debt, the number of shares remains constant and so EPS may increase. However, the equity is levered and therefore more risky, so Modigliani and Miller's "conservation of value" tells us that the stock price will not increase due to higher EPS.

[18] If we consider public firms only, the mean response is 3.18. We consider any firm that seriously considered issuing common equity, rather than just public firms, to get a full representation of factors that discourage, as well as encourage, stock issuance.

have this belief. Unreported analysis indicates that there is a positive correlation between believing that equity is the cheapest and that it is the least risky source of funds.

Miscellaneous: Nine companies indicate that they issue common stock because it is the "preferred currency" for making acquisitions, especially for the pooling method of accounting (see B.9 in Internet Appendix B). Two firms write that they issue stock because it is the natural form of financing for them in their current stage of corporate development.

5.8.c Convertible debt

We ask the executives whether the ability to call or force conversion is an important feature affecting convertible debt policy. Among the one-in-five firms that seriously considered issuing convertible debt, there is moderate evidence that executives like convertibles because of the ability to call or force conversion (rating of 2.29 in Table 10). Though not a direct test, the popularity of the call/conversion feature is consistent with Mayers' (1998) hypothesis that convertible debt allows funding of profitable future projects but attenuates overinvestment incentives. The factors used in decisions to issue convertible debt are presented in Fig. 8.

[Insert Fig. 8]

Billingsley et al. (1985) document that convertibles cost on average 50 basis points less than straight debt. However, relatively few CFOs indicate that they use convertible debt because it is less expensive than straight debt (rating of 1.85). Companies run by mature executives are more likely to issue convertibles because they are less costly than straight debt (2.50).

Other survey evidence: Billingsley and Smith (1996) also find that convertibles are favored as delayed equity and because management feels that common equity is undervalued. Contrary to our results, Billingsley and Smith find fairly strong evidence that firms are influenced by the convertible use of other firms in their industry. Also, in contrast to our results, they find that the most important factor affecting the use of convertibles is the lower cash costs/coupon rate versus straight debt. One difference between our study and Billingsley and Smith is that they request a response relative to a specific offering among firms that actually issue convertible debt. We condition only on whether a firm seriously considered issuing convertibles.

5.8.d Foreign debt

Grinblatt and Titman (1998) note that capital markets have become increasingly global in recent decades and that U.S. firms frequently raise funds overseas. We indicate above that firms issue foreign debt in response to tax incentives, to keep the source close to the use of funds, and in an attempt to take advantage of low foreign interest rates. Five firms write that they borrow overseas to broaden their sources of financing (see B.8 in Internet Appendix B). Few firms indicate that foreign regulations require them to issue abroad (rating of 0.61 in Table 7).

5.9. Summary of capital structure results

We find moderate support for the trade-off and pecking-order theories of capital structure choice. The support weakens as we probe more deeply into the assumptions and implications of the theories. We find mixed or little evidence that signaling, transactions costs, underinvestment costs, asset substitution, bargaining with employees, free cash flow considerations, and product market concerns affect capital structure choice.

According to our survey, the most important factors affecting capital structure decisions are credit ratings, EPS dilution, the desire for financial flexibility, recent changes in stock price, maturity matching, hedging foreign operations, and practical cash management.

[Insert Table 12]

6. Conclusions

Our survey of the practice of corporate finance is both reassuring and puzzling. For example, it is reassuring that NPV is dramatically more important now as a project evaluation method than, as indicated in past surveys, it was ten or twenty years ago. The CAPM is also widely used. However, it is surprising that more than half of the respondents would use their firm's overall discount rate to evaluate a project in an overseas market, even though the project likely has different risk attributes than the overall firm. This indicates that practitioners might not apply the CAPM or NPV rule correctly. It is also interesting that CFOs pay very little attention to risk factors based on momentum and book-to-market-value.

We identify fundamental differences between small and large firms. Our research suggests that small firms are less sophisticated when it comes to evaluating risky projects. Small firms are significantly less likely to use the NPV criterion or the Capital Asset Pricing Model and its variants. Perhaps these and our other findings about the effect of firm size will help academics understand the pervasive relation between size and corporate practices. Further, the fact that the practice of corporate finance differs based on firm size could be an underlying cause of size-related asset pricing anomalies.

In our analysis of capital structure, we find that informal criteria such as financial flexibility and credit ratings are the most important debt policy factors. Other informal criteria such as EPS dilution and recent stock price appreciation are the most important factors influencing equity issuance. The degree of stock undervaluation is also important to equity issuance, and we know from other surveys that most executives feel their stock is undervalued.

We find moderate support that firms follow the trade-off theory and target their debt ratio. Other results, such as the importance of equity undervaluation and financial flexibility, are generally consistent with the pecking-order view. However, the evidence in favor of these theories does not hold up as well under closer scrutiny (e.g., the evidence is generally not consistent with informational asymmetry causing pecking-order-like behavior), and is weaker still for more subtle theories.

In summary, executives use the mainline techniques that business schools have taught for years, NPV and CAPM, to value projects and to estimate the cost of equity. Interestingly, financial executives are much less likely to follow the academically proscribed factors and theories when determining capital structure. This last finding raises possibilities that require additional thought and research. Perhaps the relatively weak support for many capital structure theories indicates that it is time to critically reevaluate the assumptions and implications of these mainline theories. Alternatively, perhaps the theories are valid descriptions of what firms should do -- but many corporations ignore the theoretical advice. One explanation for this last possibility is that business schools might be better at teaching capital budgeting and the cost of capital than at teaching capital structure. Moreover, perhaps the NPV and CAPM are more widely understood than capital structure theories because they make more precise predictions

and have been accepted as mainstream views for longer. Additional research is needed to investigate these issues.

APPENDIX A. Nonresponse bias and other issues related to survey data

We perform several experiments to investigate whether nonresponse bias might affect our results. The first experiment, suggested by Wallace and Mellor (1988), compares the responses for firms that returned the survey on time (i.e., by February 23) to those that did not return the survey until February 24, 1999, or later. The firms that did not respond on time can be thought of as a sample from the non-response group, in the sense that they did not return the survey until we pestered them further. We first test, for each question, whether the mean response for the early respondents differs from the mean for the late respondents. There are 88 questions not related to firm characteristics. The mean answers for the early and late respondents are statistically different for only 8 (13) of these 88 questions at a 5% (10%) level.

Because the answers are correlated across different questions, we also perform multivariate χ^2 tests comparing the early and late responses. We calculate multivariate test statistics for each set of subquestions, grouped by main question. (That is, one χ^2 is calculated for the twelve subquestions related to the first question on the survey, another χ^2 for the six subquestions related to the second survey question, etc.) Out of the ten multivariate χ^2s comparing the means for the early and late responses, none (two) are significantly different at a 5% (10%) level.[19] Finally, a single multivariate χ^2 across all 88 subquestions does not detect significant differences between the early and late responses (p-value of 0.254). The rationale of Wallace and Mellor suggests that because the responses for these two groups of firms are similar, non-response bias is not a major problem.

The second set of experiments, suggested by Moore and Reichert (1983), investigates possible non-response bias by comparing characteristics of responding firms to characteristics for the population at large. If the characteristics between the two groups match, then the sample can be thought of as representing the population. This task is somewhat challenging because we have only limited information about the FEI population of firms. (Given that most Fortune 500 firms are also in the FEI population, we focus on FEI characteristics. We ignore any differences in population characteristics that may be attributable to the 187 firms that are in the Fortune 500 but not in FEI.) We have reliable information on three characteristics for the population of firms that belong to FEI: general industry classification, public versus private ownership, and number of employees.

We first use χ^2 goodness-of-fit analysis to determine whether the responses represent the industry groupings in roughly the same proportion as that found in the FEI population. Sixty-three percent of FEI members are from heavy manufacturing industries (manufacturing, energy, and transportation), as are 62% of the respondents. These percentages are not significantly different at the 5% level. Therefore, the heavy manufacturing vs. non-manufacturing breakdown that we use in the tables is representative of the FEI population. We also examine public versus private ownership. Sixty percent of FEI firms are publicly owned, as are 64% of the sample firms. Again, these numbers are not statistically different, suggesting that our numbers represent the FEI population, and also that our public versus private analysis is appropriate.

[19] Following the order of the tables as they appear in the text, the multivariate analysis of variance p-values for each of the ten questions are 0.209, 0.063, 0.085, 0.892, 0.124, 0.705, 0.335, 0.922, 0.259 and 0.282. A low p-value indicates significant differences between the early and late responses.

Although we do not have reliable information about the dividend policies, P/E ratios, sales revenue, or debt ratios for the FEI population, our analysis relies heavily on these variables, so we perform Monte Carlo simulations to determine the representativeness of our sample. Specifically, we take a random sample of 392 firms from the Compustat database, stratifying on the number of employees in FEI firms. That is, we sample from Compustat so that 15.4% of the draws are from firms with at least 20,000 employees, 24.7% are from firms with between 5,000 and 19,999 employees, etc., because these are the percentages for the FEI population. We then calculate the mean debt ratio, sales revenue, and P/E ratio (ignoring firms with negative earnings), and the percentage of firms that pay dividends for the randomly drawn firms. We repeat this process 1,000 times to determine an empirical distribution of mean values for each variable. We then compare the mean values for our sample to the empirical distribution. If, for example, the mean debt ratio for the responding firms is larger than 950 of the mean debt ratios in the Monte Carlo simulation, we would conclude that there is statistical evidence that respondent firms are more highly levered than are firms in the overall population.

The sample values for sales revenue and debt ratios fall comfortably near the middle of the empirical distributions, indicating that the sample is representative for these two characteristics. The mean P/E ratio of 17 for the sample is statistically smaller than the mean for the Compustat sample (overall mean of approximately 20). Fifty-four percent of the sample firms pay dividends, compared to approximately 45% in the stratified Compustat sample.[20] Although the sample and population differ statistically for these last two traits, the economic differences are small enough to indicate that our sample is representative of the population from which it is drawn.

Finally, given that much corporate finance research analyzes Compustat firms, we repeat the Monte Carlo experiment without stratifying by number of employees. That is, we randomly draw 392 firms (1000 times) from Compustat without conditioning on the number of employees. This experiment tells us whether our sample firms adequately represent Compustat firms, to provide an indication of how directly our survey results can be compared to Compustat-based research. The mean debt ratio, sales revenue, and P/E ratios are not statistically different from the means in the Compustat data; however, the percentage of firms paying dividends is smaller than for the overall Compustat sample. Aside from dividend payout, the firms that responded to our survey are similar to Compustat firms.

If one accepts that nonresponse bias is small, there are still concerns about survey data. For one thing, the respondents might not answer truthfully. Given that the survey is anonymous, we feel this problem is minimal. Moreover, our assessment from the phone conversations is that the executives would not take the time to fill out a survey if their intent was to be untruthful.

Another potential problem with survey data is that the questions, no matter how carefully crafted, either might not be properly understood or may not elicit the appropriate information. For example, Stigler (1966) asks managers if their firms maximize profits. The general response is that, no, they take care of their employees, are responsible corporate citizens, etc. However, when Stigler asks whether the firms could increase profits by increasing or decreasing prices,

[20] There are at least three reasons why our Monte Carlo experiment might indicate statistical differences, even if our sample firms are actually representative of the FEI population: 1) systematic differences between the Compustat and FEI populations not controlled for with the stratification based on number of employees, 2) the stratification is based on FEI firms only, although the survey "oversamples" Fortune 500 firms, and 3) we deleted firms with negative P/E ratios in the Monte Carlo simulations, although survey respondents might have entered zero or something else if they had negative earnings.

the answer is again no. Observations such as these can be used to argue that there is some sort of "economic Darwinism," in which the firms that survive must be doing the proper things, even if unintentionally. Or, as Milton Friedman (1953) notes, a good pool player has the skill to knock the billiards balls into one another just right, even if he or she can not solve a differential equation. Finally, Cliff Smith tells about a chef who, after tasting the unfinished product, always knew exactly which ingredient to add to perfect the day's recipe, but could never write down the proper list of ingredients after the meal was complete. These examples suggest that managers might use the proper techniques, or at least take the correct actions, even if their answers to a survey do not indicate so. If other firms copy the actions of successful firms, then it is possible that many firms take appropriate actions without thinking within the box of an academic model.

This set of critiques is impossible to completely refute. We attempted to be very careful when designing the questions on the survey. We also feel that by contrasting the answers conditional on firm characteristics, we should be able to detect patterns in the responses that shed light on the importance of different theories, even if the questions are not perfect in every dimension. Ultimately, however, the analysis we perform and conclusions we reach must be interpreted keeping in mind that our data are from a survey. Having said this, we feel that these data are representative and provide much unique information that complements what we can learn from traditional large sample analysis and clinical studies.

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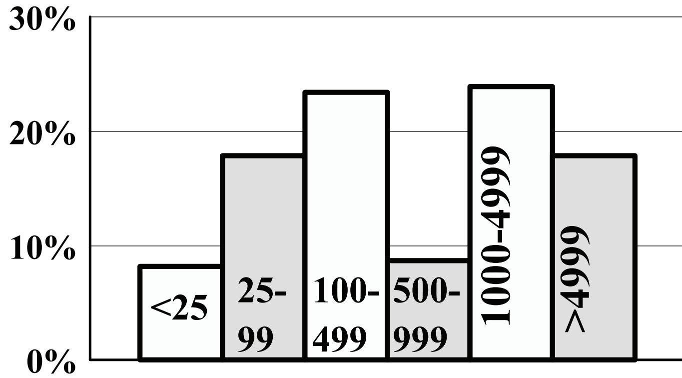
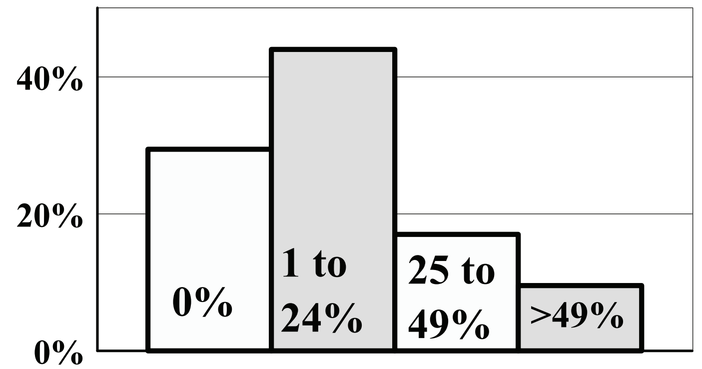
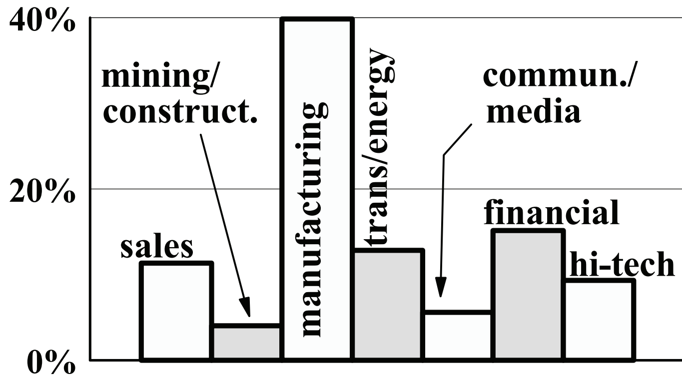
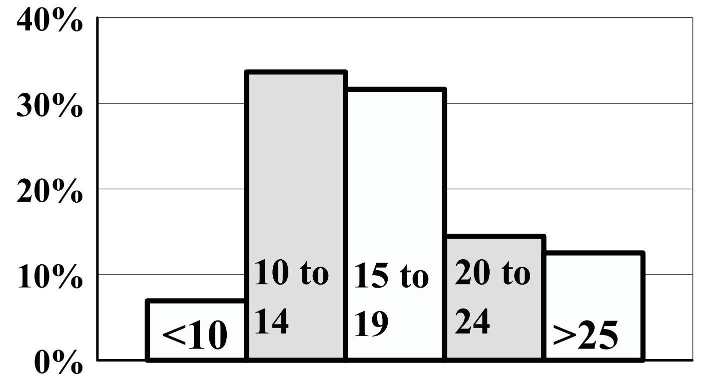
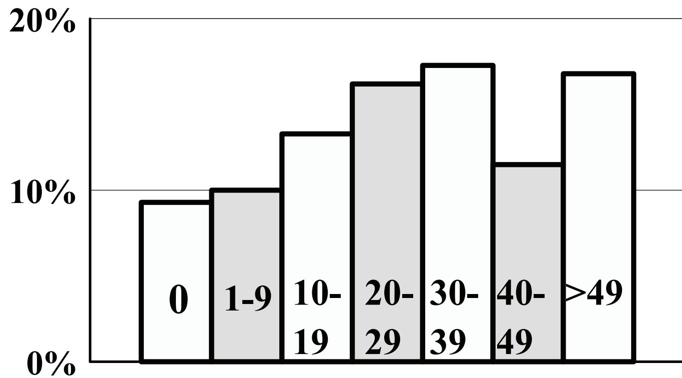
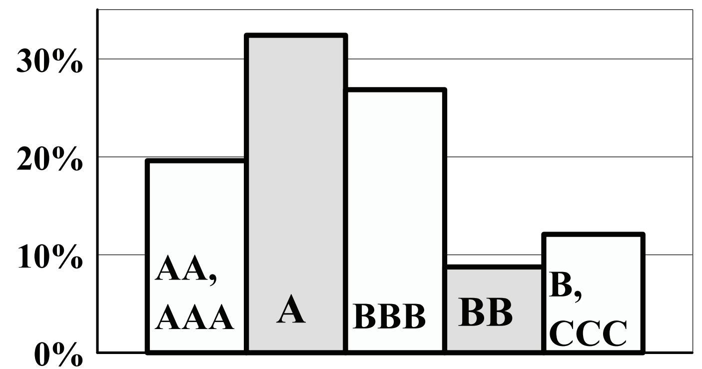


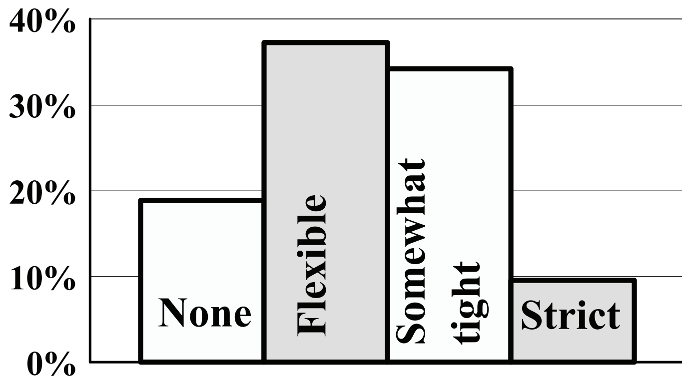












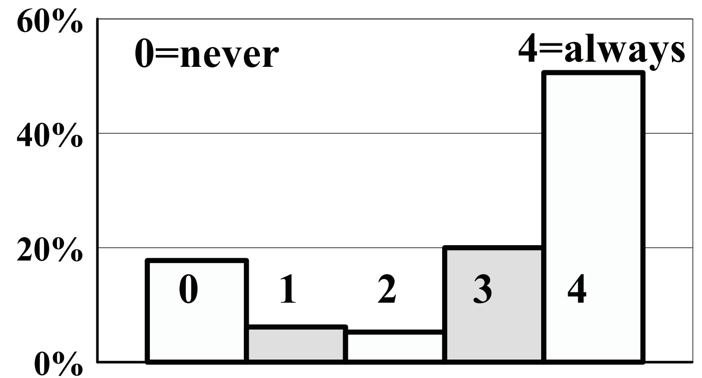
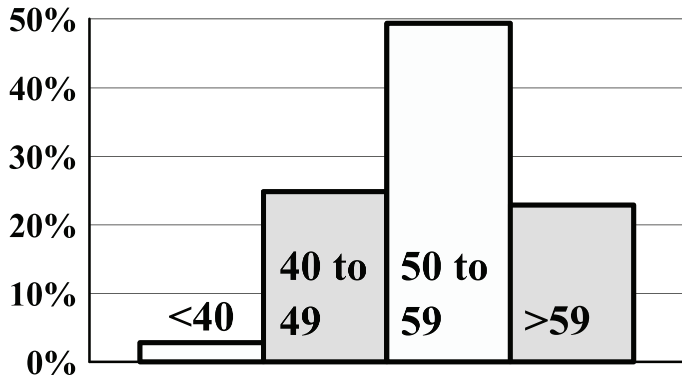
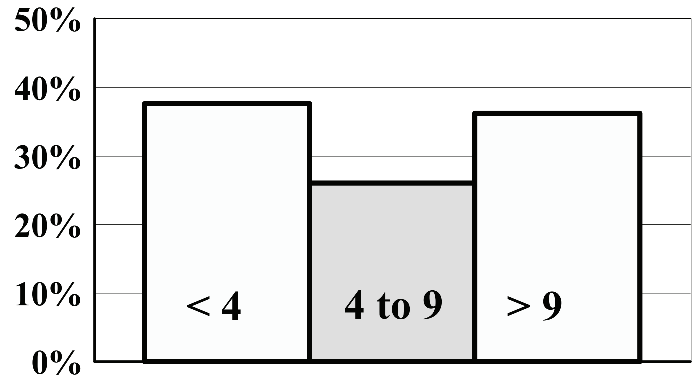
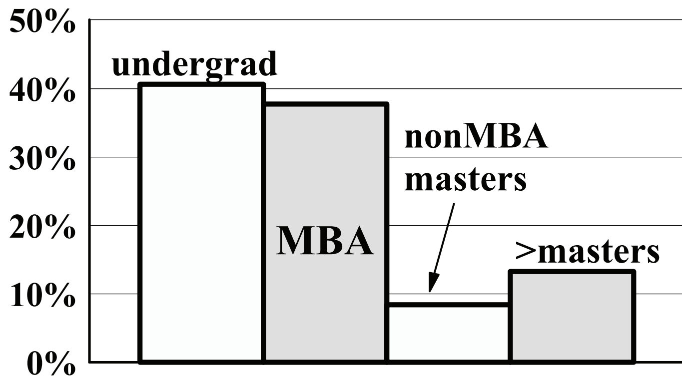
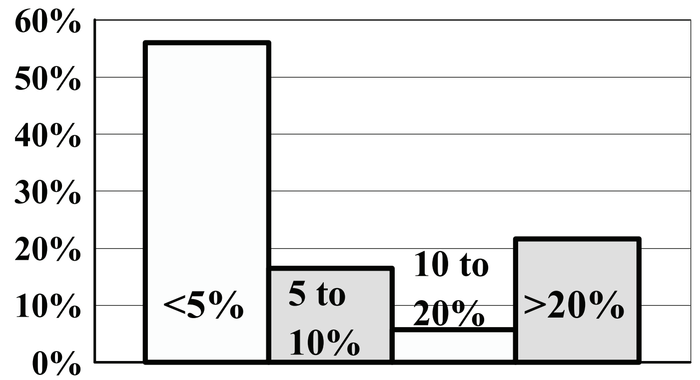


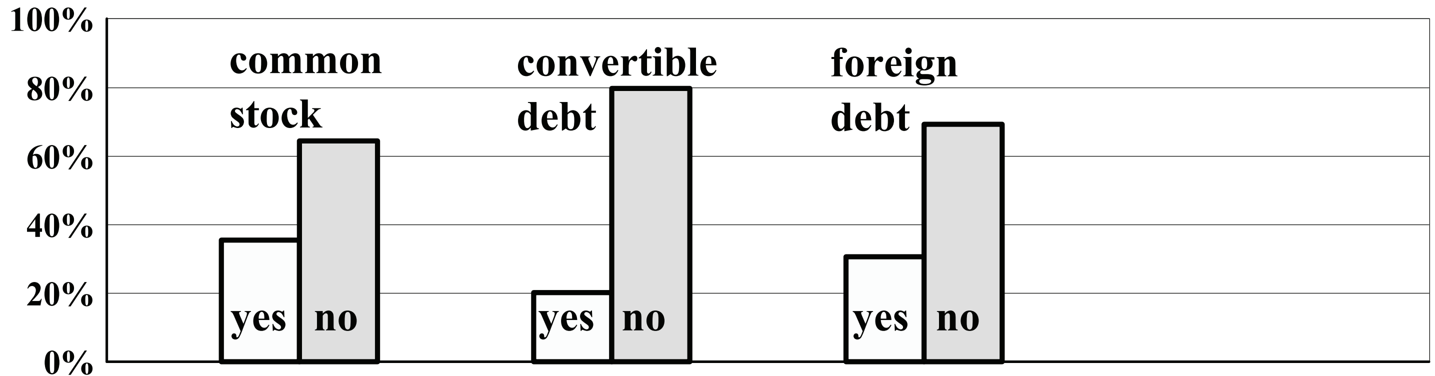
Figure 1: Sample Characterstics











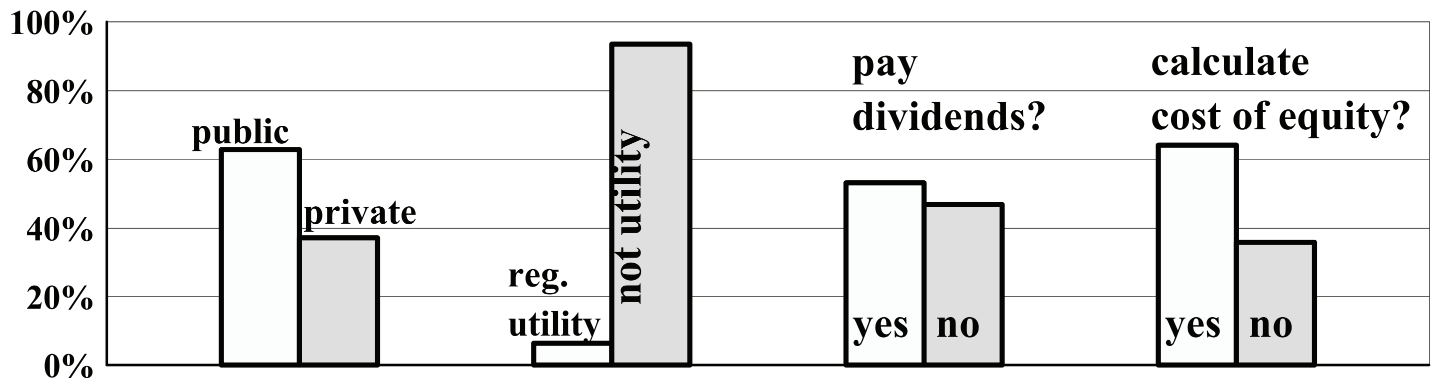


Figure 1, continued: Sample Characterstics

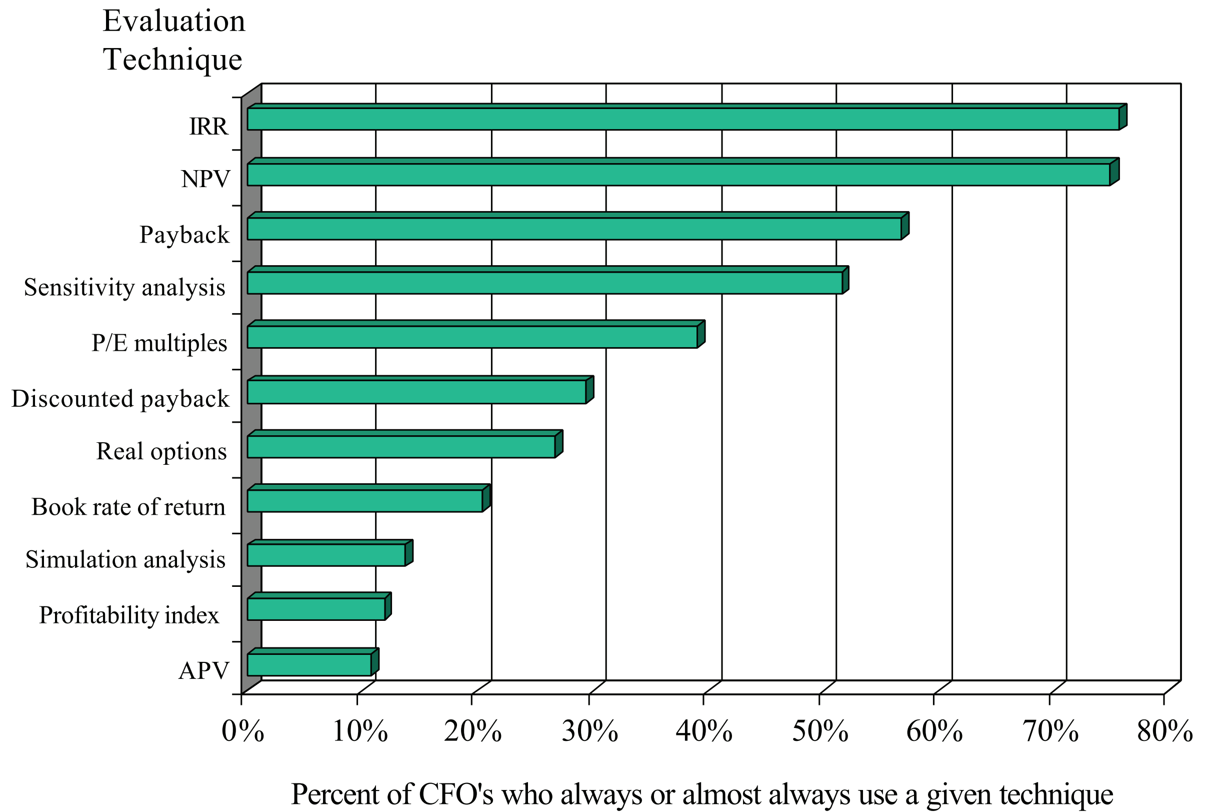


Fig. 2. Survey evidence on the popularity of different capital budgeting methods. We report the percentage of CFOs who always or almost always use a particular technique. IRR represents Internal Rate of Return, NPV is Net Present Value, P/E is the Price to Earnings ratio, and APV is Adjusted Present Value. The survey is based on the responses of 392 CFOs.

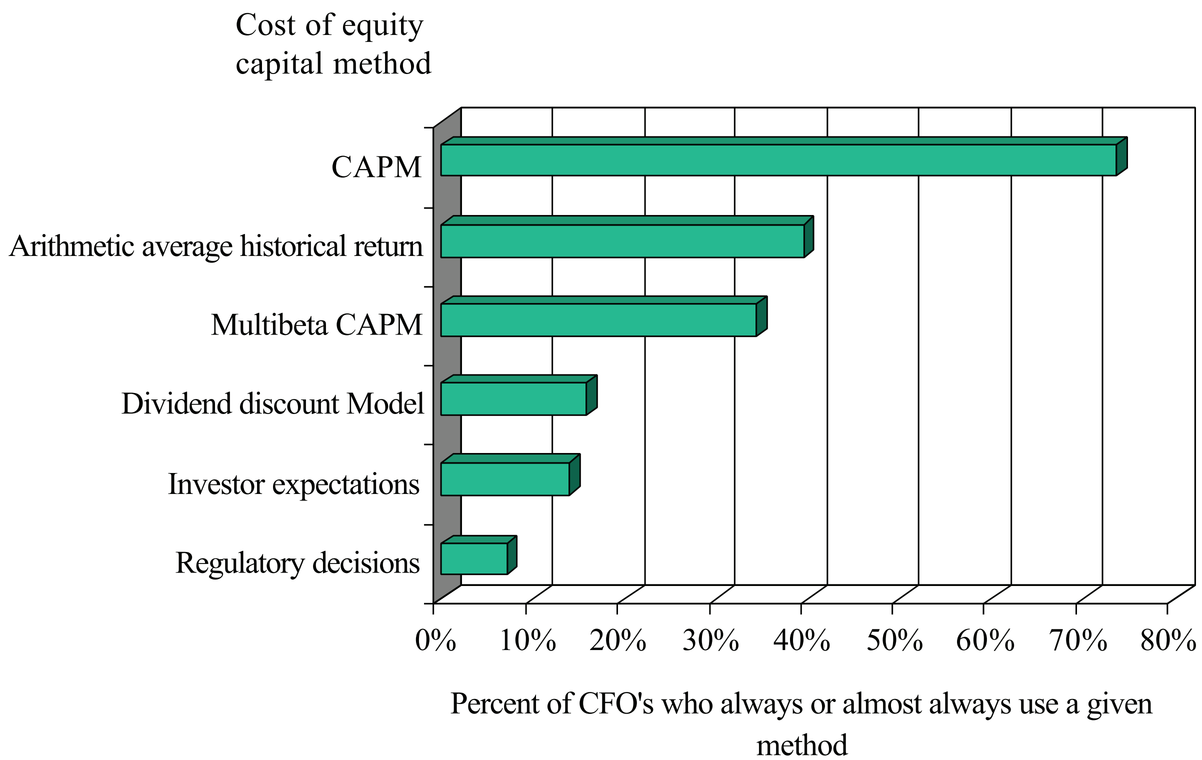


Fig. 3. Survey evidence on the popularity of different methods to calculate the cost of equity capital. We report the percentage of CFOs who always or almost always use a particular technique. CAPM represents the Capital Asset Pricing Model. The survey is based on the responses of 392 CFOs.

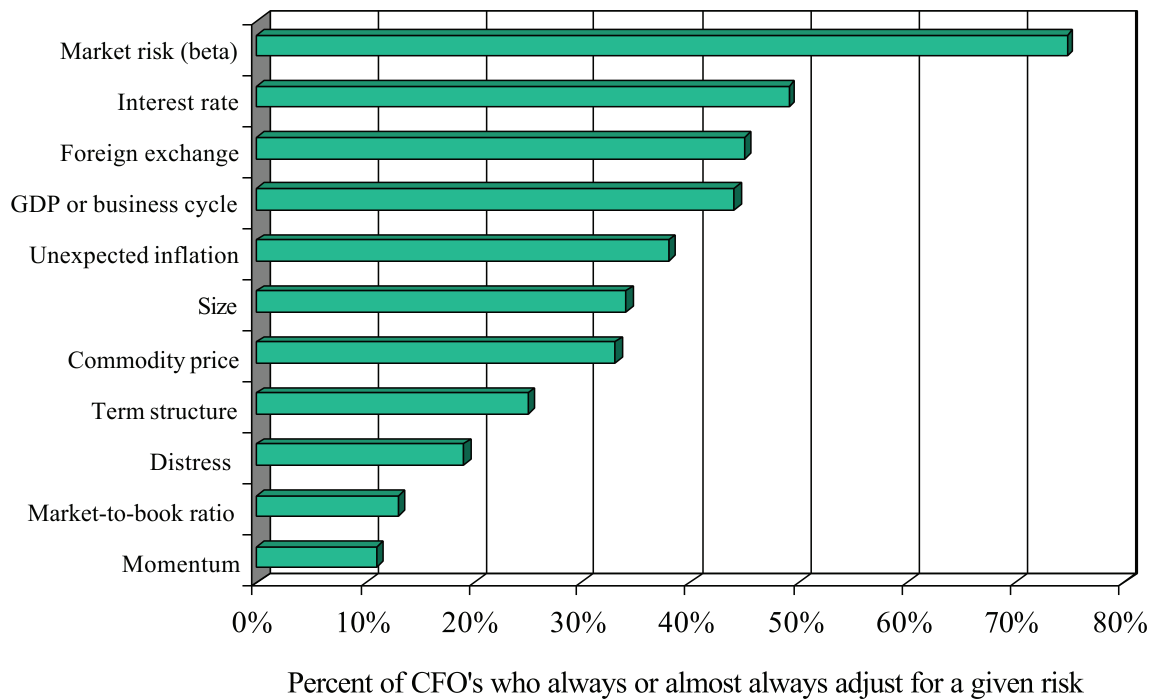


Fig. 4. Survey evidence on types of multibeta risk that are important for adjusting cash flows or discount rates. We report the percentage of CFOs who always or almost always adjust for a particular type of risk. The survey is based on the responses of 392 CFOs.

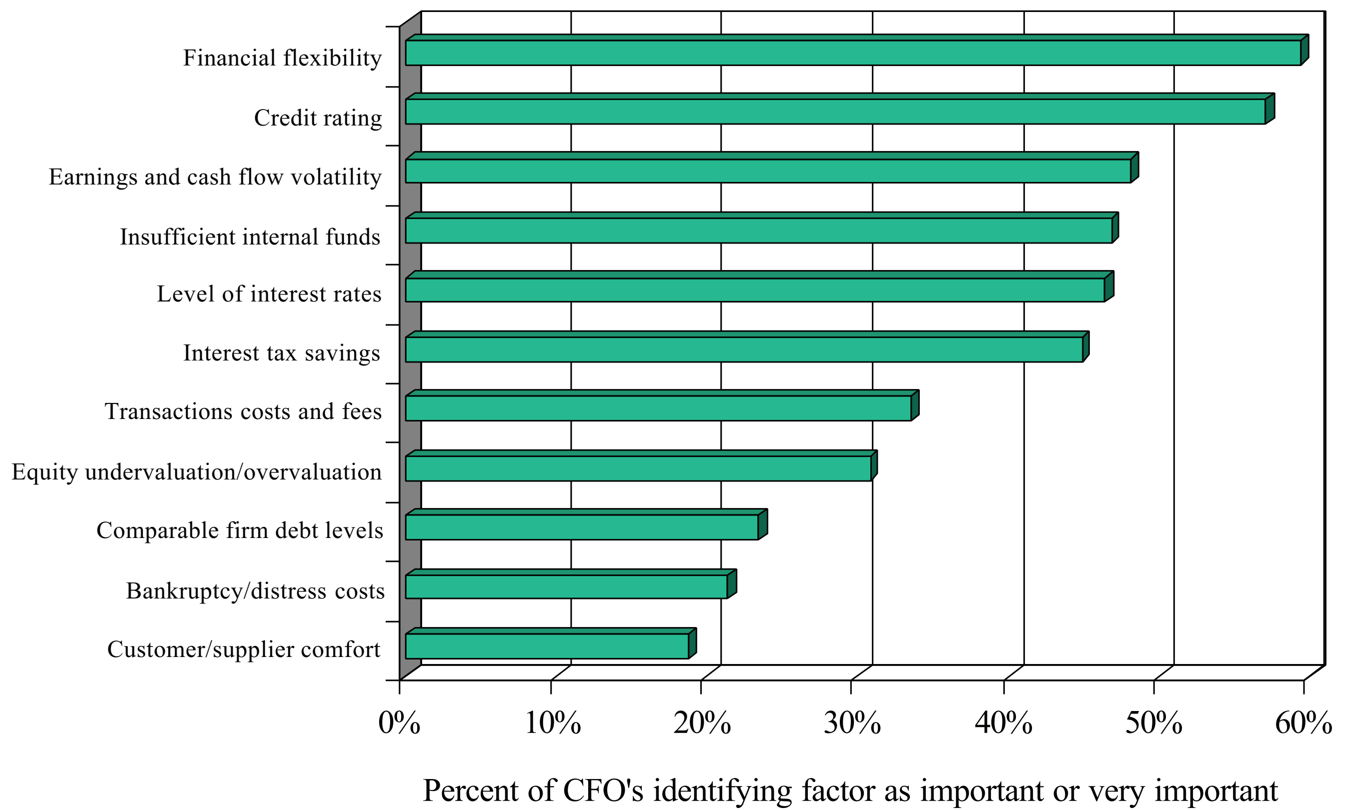


Fig. 5. Survey evidence on some of the factors that affect the decision to issue debt. The survey is based on the responses of 392 CFOs.

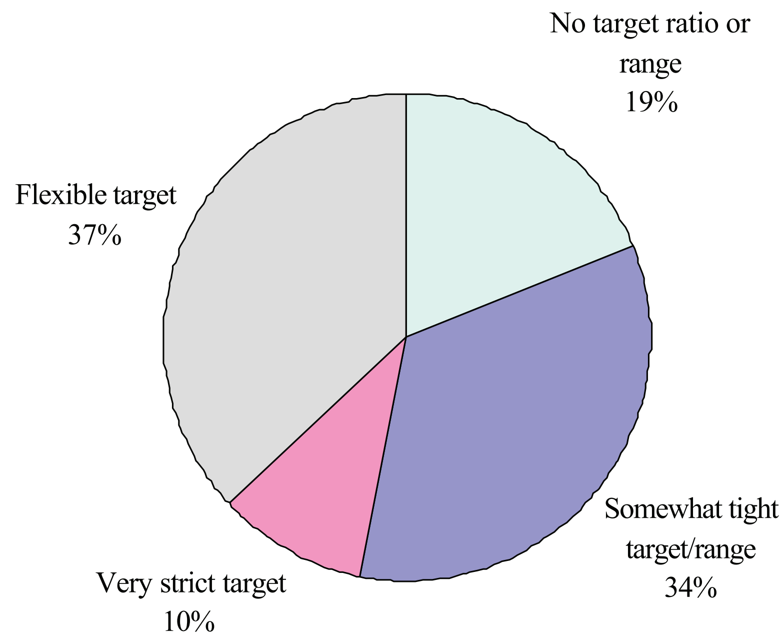


Fig. 6. Survey evidence on whether firms have optimal or target debt-equity ratios. The survey is based on the responses of 392 CFOs.

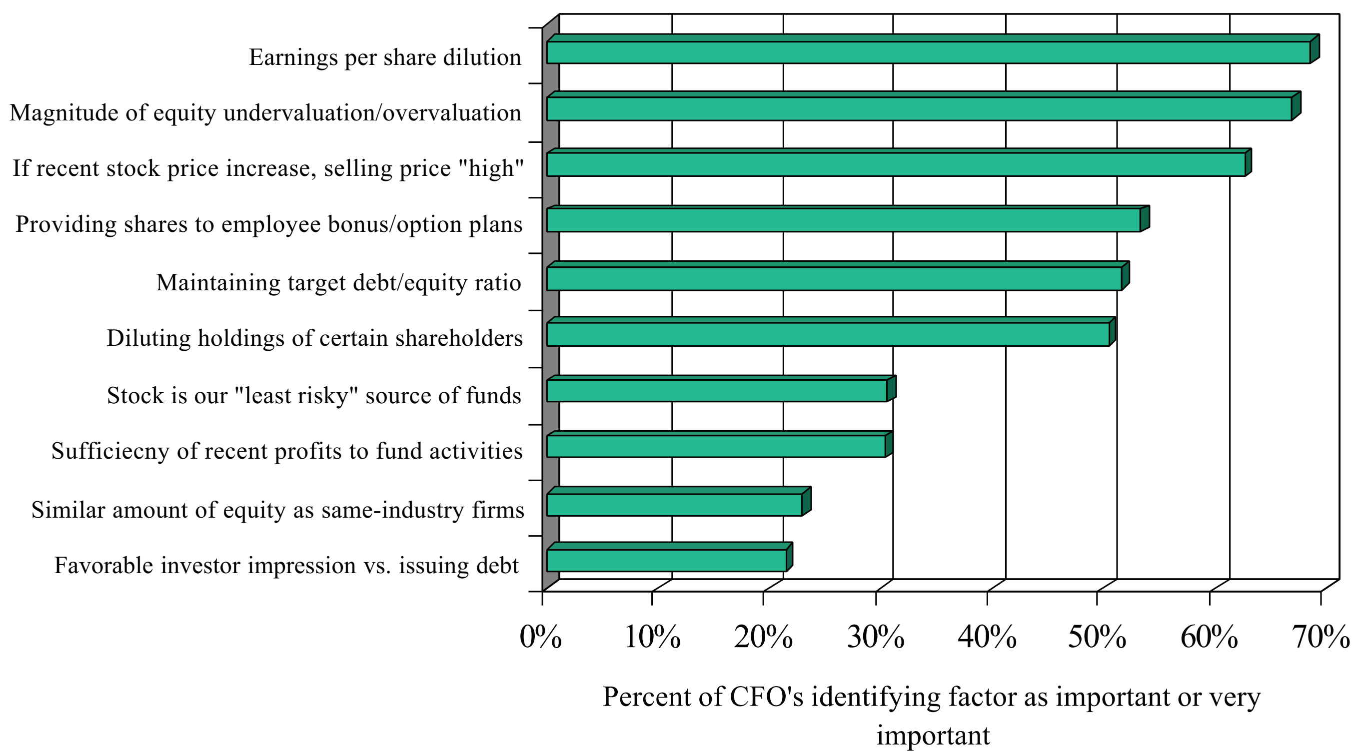


Fig. 7. Survey evidence on some of the factors that affect the decision to issue common stock. The survey is based on the responses of 392 CFOs.

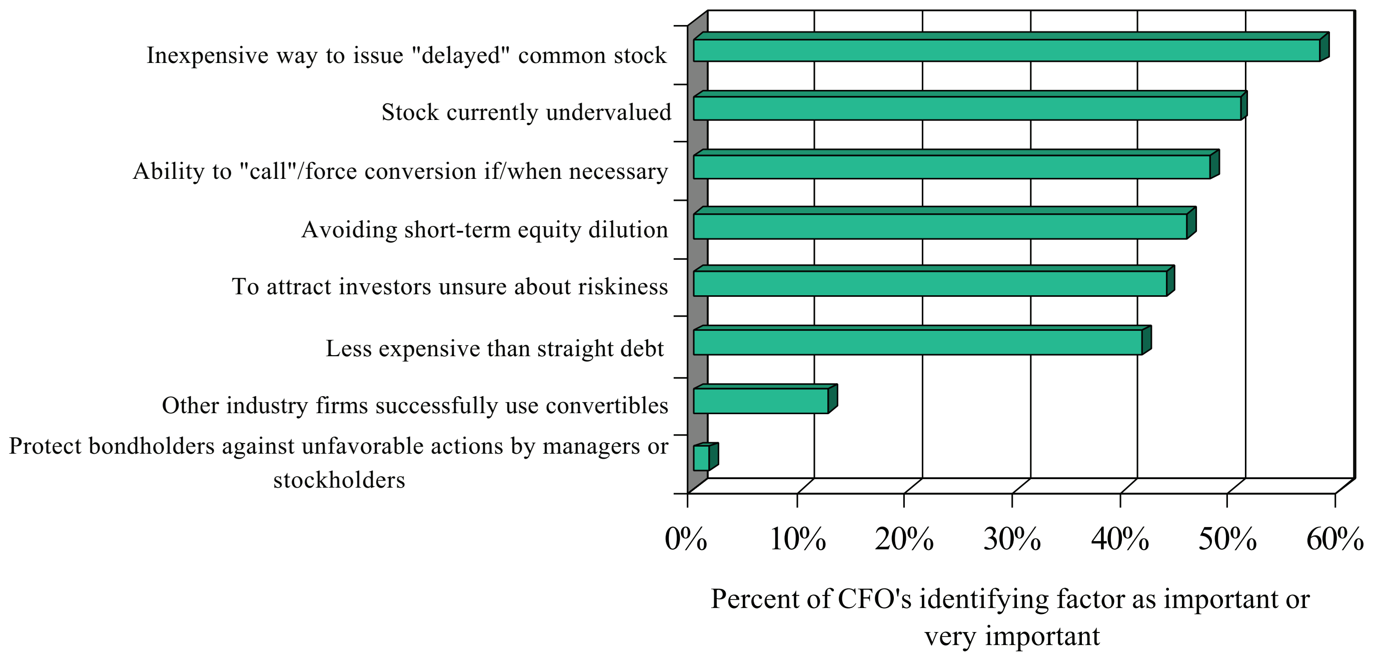


Fig. 8. Survey evidence on the factors that affect the decision to issue convertible debt. The survey is based on the responses of 392 CFOs.

Table 1
Demographic correlations of control variables from the survey*

	Size (small to large)	P/E (low to high)	D/E (low to high)	Dividends (yes to no)	Rating (high to low)	Industry (manu. to others)	Ownership (high to low)	Age (young to mature)	Tenure (short to long)	Education (MBA to others)	Regulated (yes to no)	Target D/E (no to yes)	Equity (public to private	For. Rev (high to low)
P/E	0.199***													
D/E	0.113**	-0.032												
Dividends	-0.401***	-0.128*	-0.066											
Rating	-0.249***	-0.291***	0.303***	0.333***										
Industry	0.004	0.258***	-0.259***	0.220	-0.077									
Ownership	-0.432***	-0.194***	0.077	0.315***	0.296***	0.028								
Age	-0.040	-0.082	0.092	0.055	0.064	0.180***	-0.066							
Tenure	0.150***	-0.055	-0.036	-0.001	0.007	0.033	-0.256***	0.259***						
Education	-0.083	-0.006	-0.096*	-0.014	0.024	-0.061	0.111*	-0.152***	-0.133**					
Regulated	-0.191***	0.066	-0.095*	0.181***	0.147*	0.136**	0.141**	-0.076	-0.114**	-0.095*				
Target D/E	0.190***	-0.030	0.145***	-0.189***	-0.250***	-0.093*	-0.075	0.053	0.072	-0.033	-0.116**			
Equity	-0.422***	-0.114*	-0.111**	0.307***	-0.083	0.079	0.304***	0.075	-0.099*	0.076	0.169***	-0.009		
Foreign Rev.	-0.238***	-0.071	-0.013	0.150***	0.038	0.176***	0.151***	0.038	-0.129***	0.061	-0.126**	-0.092*	0.255***	
Fortune 500	0.497***	0.144**	0.026	-0.260***	-0.158**	0.049	-0.255***	-0.020	0.036	-0.058	-0.257***	0.210***	-0.323***	-0.039

*Index of mean square contingency or ϕ is reported. This statistic measures the correlation of ordered groups of attributes. Cross tabulations are conducted by size (large firms have sales of at least $1 billion), growth (growth has P/E ratio greater than 14), leverage (high has debt equity greater than .3), investment grade (yes has debt rated BBB or above), whether the firm pays dividends, industry (manufacturing/energy/transportation versus all others), managerial stock ownership (high is greater than 5%), age (older than 59 versus younger than 60), CEO tenure (long is 9 or more years on the job), whether the CEO has an MBA, whether the firm is regulated, whether the firm reports a target debt ratio, public versus private corporations, whether foreign sales are greater than 25%, and whether the survey was from the mailing to the Fortune 500 firms rather than the fax to a broader group of firms.
***, **, * denotes a significant difference at the 1%, 5% and 10% level, respectively.

Table 2

Survey responses to the question: How frequently does your firm use the following techniques when deciding which projects or acquisitions to pursue? [a]

	%always or almost always	Mean	Size		P/E		Leverage		Investment grade		Pay dividends		Industry		Management own.	
			Small	Large	Growth	Non-G	Low	High	Yes	No	Yes	No	Manu.	Others	Low	High
b) Internal Rate of Return	75.61	3.09	2.87	3.41 ***	3.36	3.36 .	2.85	3.36 ***	3.52	3.35 .	3.43	2.68 ***	3.19	2.94 **	3.34	2.85 ***
a) Net Present Value	74.93	3.08	2.83	3.42 ***	3.30	3.27 .	2.84	3.39 ***	3.47	3.38 .	3.35	2.76 ***	3.23	2.82 ***	3.35	2.77 ***
f) Payback period	56.74	2.53	2.72	2.25 ***	2.55	2.41 .	2.58	2.46 .	2.48	2.36 .	2.46	2.63 .	2.68	2.33 ***	2.39	2.70 **
c) Hurdle Rate	56.94	2.48	2.13	2.95 ***	2.78	2.87 .	2.27	2.63 **	3.01	2.92 .	2.84	2.06 ***	2.60	2.29 **	2.70	2.12 ***
j) Sensitivity analysis (e.g., "good" vs. "fair" vs. "bad")	51.54	2.31	2.13	2.56 ***	2.35	2.41 .	2.10	2.56 ***	2.60	2.62 .	2.42	2.17 **	2.35	2.24 .	2.37	2.18 .
d) Earnings multiple approach	38.92	1.89	1.79	2.01 *	1.97	2.11 .	1.67	2.12 ***	1.90	2.22 *	1.88	1.88 .	1.85	2.00 .	1.85	2.04 .
g) Discounted payback period	29.45	1.56	1.58	1.55 .	1.52	1.67 .	1.49	1.64 .	1.84	1.49 *	1.54	1.62 .	1.61	1.50 .	1.49	1.76 *
l) We incorporate the "real options" of a project when evaluating it	26.59	1.47	1.40	1.57 .	1.31	1.55 .	1.50	1.41 .	1.34	1.61 .	1.37	1.52 .	1.49	1.45 .	1.40	1.52 .
i) Accounting Rate of Return (or Book Rate of Return on Assets)	20.29	1.34	1.41	1.25 .	1.43	1.19 .	1.34	1.32 .	1.22	1.21 .	1.40	1.27 .	1.36	1.34 .	1.30	1.44 .
k) Value-at-Risk or other simulation analysis	13.66	0.95	0.76	1.22 ***	0.84	0.86 .	0.78	1.10 ***	1.09	1.04 .	1.04	0.82 **	0.95	0.92 .	0.95	0.86 .
e) Adjusted Present Value	10.78	0.85	0.93	0.72 **	0.97	0.69 **	0.87	0.80 .	0.80	0.79 .	0.80	0.91 .	0.78	0.92 .	0.79	0.99 *
h) Profitability index	11.87	0.83	0.88	0.75 .	0.73	0.81 .	0.74	0.96 *	0.66	0.67 .	0.81	0.83 .	0.90	0.76 .	0.81	0.98 .

	%always or almost always	Mean	CEO age		CEO tenure		CEO MBA		Regulated		Target debt ratio		Public corp.		Foreign sales		Fortune 500 mail	
			>59	Ynger	Long	Short	Yes	No	Yes	No	No	Yes	Yes	No	Yes	No	No	Yes
b) Internal Rate of Return	75.61	3.09	3.21	3.06 .	2.97	3.16 *	3.17	3.03 .	3.76	3.04 ***	3.03	3.18 .	3.27	2.77 ***	3.31	3.01 **	3.00	3.57 ***
a) Net Present Value	74.93	3.08	3.08	3.09 .	2.90	3.17 **	3.17	3.00 *	3.50	3.07 **	2.99	3.23 **	3.24	2.78 ***	3.38	2.95 ***	2.97	3.60 ***
f) Payback period	56.74	2.53	2.83	2.43 ***	2.80	2.37 ***	2.48	2.55 .	2.05	2.56 **	2.65	2.43 *	2.45	2.67 *	2.62	2.49 .	2.57	2.35 .
c) Hurdle Rate	56.94	2.48	2.88	2.38 ***	2.39	2.51 .	2.57	2.42 .	3.18	2.42 **	2.33	2.64 **	2.70	2.10 ***	2.56	2.43 .	2.30	3.28 ***
j) Sensitivity analysis (e.g., "good" vs. "fair" vs. "bad")	51.54	2.31	2.20	2.36 .	2.20	2.37 .	2.41	2.25 .	3.14	2.26 ***	2.24	2.43 .	2.37	2.18 .	2.36	2.28 .	2.22	2.76 ***
d) Earnings multiple approach	38.92	1.89	2.25	1.79 **	1.93	1.86 .	1.98	1.86 .	1.62	1.90 .	1.85	1.96 .	2.08	1.56 ***	1.98	1.84 .	1.83	2.15 *
g) Discounted payback period	29.45	1.56	1.94	1.48 ***	1.72	1.46 *	1.68	1.49 .	1.52	1.60 .	1.57	1.61 .	1.56	1.60 .	1.62	1.53 .	1.51	1.84 *
l) We incorporate the "real options" of a project when evaluating it	26.59	1.47	1.68	1.40 *	1.56	1.36 .	1.49	1.39 .	0.95	1.48 *	1.44	1.46 .	1.40	1.59 .	1.53	1.43 .	1.44	1.57 .
i) Accounting Rate of Return (or Book Rate of Return on Assets)	20.29	1.34	1.49	1.33 .	1.39	1.34 .	1.42	1.29 .	1.76	1.30 *	1.30	1.39 .	1.31	1.43 .	1.27	1.38 .	1.36	1.26 .
k) Value-at-Risk or other simulation analysis	13.66	0.95	1.07	0.90 .	0.92	0.93 .	0.99	0.88 .	1.76	0.89 ***	0.77	1.12 ***	0.89	1.01 .	0.90	0.96 .	0.86	1.36 ***
e) Adjusted Present Value	10.78	0.85	1.18	0.75 ***	0.88	0.80 .	0.74	0.91 *	0.67	0.86 .	0.88	0.81 .	0.83	0.90 .	0.74	0.89 .	0.86	0.80 .
h) Profitability index	11.87	0.83	0.87	0.83 .	0.95	0.77 *	0.83	0.85 .	0.57	0.85 .	0.75	0.99 **	0.76	1.00 **	0.81	0.83 .	0.85	0.75 .

[a] Respondents are asked to rate on a scale of 0 (never) to 4 (always). We report the overall mean as well as the % of respondents that answered 3 (almost always) or 4 (always).

***, **, * denotes a significant difference at the 1%, 5% and 10% level, respectively. All table columns are defined in Table 1.

Table 3

Survey responses to the question: Does your firm estimate the cost of equity capital? (if “no”, please go to next question). If "yes", how do you determine your firm's cost of equity capital? [a]

	%always or almost always	Mean	Size		P/E		Leverage		Investment grade		Pay dividends		Industry		Management own.	
			Small	Large	Growth	Non-G	Low	High	Yes	No	Yes	No	Manu.	Others	Low	High
b) using the Capital Asset Pricing Model (CAPM, the "beta" approach)	73.49	2.92	2.49	3.27 ***	3.19	3.03 .	2.57	3.23 ***	3.13	3.34 .	3.00	2.76 .	3.02	2.87 .	3.26	2.36 ***
a) with average historical returns on common stock	39.41	1.72	1.80	1.65 .	1.65	1.78 .	1.80	1.56 .	1.67	1.48 .	1.77	1.63 .	1.60	1.84 .	1.66	1.87 .
c) using the CAPM but including some extra “risk factors”	34.29	1.56	1.39	1.70 *	1.62	1.48 .	1.57	1.45 .	1.71	1.76 .	1.51	1.54 .	1.69	1.49 .	1.59	1.44 .
f) back out from discounted dividend/earnings model, e.g.,Price=Div./(cost of cap. – growth)	15.74	0.91	0.96	0.87 .	0.90	1.02 .	0.72	1.05 **	0.92	0.98 .	0.90	0.95 .	0.98	0.80 .	0.97	1.10 .
d) whatever our investors tell us they require	13.93	0.86	1.22	0.54 ***	0.76	0.44 **	0.92	0.88 .	0.48	0.79 *	0.70	1.12 **	0.80	0.97 .	0.65	1.23 ***
e) by regulatory decisions	7.04	0.44	0.37	0.50 .	0.56	0.32 *	0.48	0.36 .	0.51	0.44 .	0.54	0.24 **	0.44	0.44 .	0.51	0.41 .

	%always or almost always	Mean	CEO age		CEO tenure		CEO MBA		Regulated		Target debt ratio		Public corp.		Foreign sales		Fortune 500 mail	
			>59	Ynger	Long	Short	Yes	No	Yes	No	No	Yes	Yes	No	Yes	No	No	Yes
b) using the Capital Asset Pricing Model (CAPM, the "beta" approach)	73.49	2.92	2.85	2.93 .	2.83	2.96 .	3.08	2.77 *	3.00	2.87 .	2.83	3.03 .	3.13	2.13 ***	3.23	2.75 **	2.78	3.46 ***
a) with average historical returns on common stock	39.41	1.72	2.43	1.54 ***	1.70	1.73 .	1.53	1.90 *	1.60	1.70 .	1.64	1.80 .	1.65	1.91 .	1.62	1.78 .	1.80	1.38 *
c) using the CAPM but including some extra “risk factors”	34.29	1.56	1.91	1.48 *	1.66	1.49 .	1.62	1.48 .	2.17	1.41 **	1.53	1.49 .	1.56	1.53 .	1.57	1.52 .	1.38	2.17 ***
f) back out from discounted dividend/earnings model, e.g.,Price=Div./(cost of cap. – growth)	15.74	0.91	1.21	0.82 **	1.05	0.83 .	0.78	1.02 *	1.20	0.88 .	0.93	0.92 .	0.99	0.68 *	0.81	0.97 .	0.90	0.95 .
d) whatever our investors tell us they require	13.93	0.86	0.76	0.87 .	1.02	0.79 .	0.72	0.99 *	0.69	0.87 .	0.94	0.81 .	0.67	1.53 ***	0.65	0.97 **	0.96	0.46 **
e) by regulatory decisions	7.04	0.44	0.32	0.47 .	0.39	0.43 .	0.41	0.47 .	2.19	0.28 ***	0.49	0.43 .	0.49	0.27 *	0.20	0.55 ***	0.37	0.71 **

[a] Respondents are asked to rate on a scale of 0 (never) to 4 (always). We report the overall mean as well as the % of respondents that answered 3 (almost always) and 4 (always).

***, **, * denotes a significant difference at the 1%, 5% and 10% level, respectively. All table columns are defined in Table 1.

Table 4

Survey responses to the question: When valuing a project, do you adjust either the discount rate or cash flows for the following risk factors? (Check the most appropriate box for each factor).

Percentage of respondents choosing each category is reported[a]

	Overall				Size								P/E							
					Discount rate		Cash Flow		Both		Neither		Discount rate		Cash Flow		Both		Neither	
	Disc. rate	Cash flow	Both	Neither	Small	Large	Small	Large	Small	Large	Small	Large	Growth	Non-G	Growth	Non-G	Growth	Non-G	Growth	Non-G
b) interest rate risk (change in general level of interest rates)	15.30	8.78	24.65	51.27	17.33	12.67	7.43	10.67	29.70	17.33	45.54	59.33 **	13.39	7.06	7.09	16.47	22.83	18.82	56.69	57.65
f) foreign exchange risk	10.80	15.34	18.75	55.11	7.43	15.44	9.90	22.82	15.35	23.49	67.33	38.26 ***	10.24	18.75	14.96	22.50	22.83	23.75	51.97	35.00 **
d) GDP or business cycle risk	6.84	18.80	18.80	55.56	6.93	6.76	12.87	27.03	19.80	17.57	60.40	48.65 **	6.98	7.41	24.03	18.52	22.48	14.81	46.51	59.26 *
a) risk of unexpected inflation	11.90	14.45	11.90	61.76	13.43	9.93	9.95	20.53	14.93	7.95	61.69	61.59	12.40	9.64	14.73	16.87	10.08	12.05	62.79	61.45
h) size (small firms being riskier)	14.57	6.00	13.43	66.00	14.43	14.67	7.46	4.00	16.92	8.67	61.19	71.33 **	14.84	15.66	7.03	3.61	17.19	9.64	60.94	68.67
e) commodity price risk	2.86	18.86	10.86	67.43	2.49	3.38	12.94	27.03	9.45	12.84	75.12	56.76 ***	3.12	4.94	20.31	24.69	12.50	7.41	64.06	62.96
c) term structure risk (change in the long-term vs. short term interest rate)	8.57	3.71	12.57	75.14	10.45	6.08	2.99	4.73	14.93	9.46	71.64	79.73 *	7.03	6.10	3.12	6.10	10.94	17.07	78.91	70.73
g) distress risk (probability of bankruptcy)	7.41	6.27	4.84	81.48	5.94	9.40	4.95	8.05	6.93	2.01	82.18	79.87	6.98	15.85	6.98	6.10	6.98	n/a	79.07	76.83
i) "market-to-book" ratio (ratio of market value of firm to book value of assets)	3.98	1.99	7.10	86.93	4.46	3.36	1.49	2.68	8.91	4.70	85.15	89.26	2.38	8.43	3.17	1.20	5.56	6.02	88.89	84.34
j) momentum (recent stock price performance).	3.43	2.86	4.86	88.86	3.98	2.70	2.99	2.70	6.47	2.70	86.57	91.89	3.15	4.94	2.36	4.94	4.72	1.23	89.76	88.89

	Leverage								Foreign sales							
	Discount rate		Cash Flow		Both		Neither		Discount rate		Cash Flow		Both		Neither	
	Low	High	Low	High	Low	High	Low	High	Yes	No	Yes	No	Yes	No	Yes	No
b) interest rate risk (change in general level of interest rates)	14.29	18.12	10.71	6.52	24.40	23.19	50.60	52.17	13.54	15.94	8.33	8.76	19.79	26.29	58.33	49.00
f) foreign exchange risk	12.88	7.09	12.88	18.44	17.18	21.99	57.06	52.48	13.83	9.52	22.34	12.30	31.91	13.49	31.91	64.68 ***
d) GDP or business cycle risk	6.83	4.96	13.66	28.37	16.15	24.82	63.35	41.84 ***	6.45	7.14	26.88	15.87	16.13	19.44	50.54	57.54
a) risk of unexpected inflation	13.94	10.71	10.91	16.43	8.48	13.57	66.67	59.29	7.29	13.55	19.79	12.75	13.54	11.55	59.38	62.15
h) size (small firms being riskier)	10.37	15.60	6.71	5.67	17.68	9.93	65.24	68.09	12.77	15.02	7.45	5.53	11.70	14.23	68.09	64.43
e) commodity price risk	1.24	4.32	14.29	26.62	12.42	8.63	72.05	60.43 **	3.23	2.79	26.88	15.14	10.75	10.76	59.14	71.31 **
c) term structure risk (change in the long-term vs. short term interest rate)	6.17	11.43	6.17	2.14	10.49	15.71	77.16	70.71	6.45	9.52	4.30	3.57	13.98	12.30	75.27	74.60
g) distress risk (probability of bankruptcy)	4.82	8.45	6.63	6.34	4.82	4.23	83.73	80.99	9.38	6.75	7.29	5.95	2.08	5.95	81.25	80.95
i) "market-to-book" ratio (ratio of market value of firm to book value of assets)	3.61	4.32	3.61	0.72	6.63	7.19	86.14	87.77	4.26	3.95	5.32	0.79	5.32	7.91	85.11	87.35
j) momentum (recent stock price performance).	3.68	3.55	2.45	3.55	4.91	4.26	88.96	88.65	4.26	3.19	3.19	2.79	4.26	5.18	88.30	88.84

[a] Percentage of respondents choosing each category is reported. The percentages for discount rate, cash flow, both and neither should sum to 100.

***, **, * denotes a significant difference at the 1%, 5% and 10% level, respectively. All table columns are defined in Table 1.

Table 5

Survey responses to the question: How frequently would your company use the following discount rates when evaluating a new project in an overseas market? To evaluate this project we would use

	%always or almost always	Mean	Size		P/E		Leverage		Investment grade		Pay dividends		Industry		Management own.	
			Small	Large	Growth	Non-G	Low	High	Yes	No	Yes	No	Manu.	Others	Low	High
a) The discount rate for our entire company	58.79	2.50	2.50	2.50 .	2.76	2.37 **	2.45	2.58 .	2.41	2.83 **	2.46	2.53 .	2.56	2.32 *	2.61	2.41 .
d) A risk matched discount rate for this particular project (considering both country and industry)	50.95	2.09	1.86	2.36 ***	2.20	2.26 .	1.99	2.30 **	2.43	2.25 .	2.31	1.82 ***	2.22	2.01 .	2.22	2.01 .
b) The discount rate for the overseas market (country discount rate)	34.52	1.65	1.49	1.82 **	1.84	1.69 .	1.54	1.81 *	1.82	2.01 .	1.75	1.52 *	1.86	1.42 ***	1.70	1.52 .
c) A divisional discount rate (if the project line of business matches a domestic division)	15.61	0.95	0.82	1.09 **	1.12	1.04 .	0.88	1.08 *	1.17	1.05 .	1.05	0.84 *	1.01	0.90 .	0.96	1.08 .
e) A different discount rate for each component cashflow that has a different risk characteristic (e.g. depreciation vs. operating cash flows)	9.87	0.66	0.68	0.64 .	0.49	0.85 ***	0.61	0.68 .	0.75	0.58 .	0.68	0.64 .	0.68	0.65 .	0.56	0.85 **

	%always or almost always	Mean	CEO age		CEO tenure		CEO MBA		Regulated		Target debt ratio		Public corp.		Foreign sales		Fortune 500 mail	
			>59	Ynger	Long	Short	Yes	No	Yes	No	No	Yes	Yes	No	Yes	No	No	Yes
a) The discount rate for our entire company	58.79	2.50	2.54	2.49 .	2.18	2.64 ***	2.49	2.51 .	2.00	2.52 *	2.39	2.64 *	2.55	2.42 .	2.87	2.33 ***	2.57	2.20 **
d) A risk matched discount rate for this particular project (considering both country and industry)	50.95	2.09	2.31	2.02 *	2.11	2.06 .	2.20	1.99 .	2.55	2.03 *	1.90	2.25 **	2.24	1.79 ***	2.21	2.02 .	1.97	2.61 ***
b) The discount rate for the overseas market (country discount rate)	34.52	1.65	1.80	1.61 .	1.49	1.73 *	1.77	1.60 .	1.50	1.66 .	1.70	1.58 .	1.78	1.41 **	1.81	1.58 .	1.58	1.92 *
c) A divisional discount rate (if the project line of business matches a domestic division)	15.61	0.95	1.18	0.87 **	0.99	0.92 .	0.88	0.98 .	1.27	0.89 *	0.91	1.01 .	1.08	0.66 ***	0.94	0.93 .	0.89	1.17 *
e) A different discount rate for each component cashflow that has a different risk characteristic (e.g. depreciation vs. operating cash flows)	9.87	0.66	0.72	0.62 .	0.55	0.68 .	0.59	0.67 .	0.38	0.67 .	0.67	0.57 .	0.61	0.79 *	0.63	0.68 .	0.71	0.46 *

[a] Respondents are asked to rate on a scale of 0 (never) to 4 (always). We report the overall mean as well as the % of respondents that answered 3 (almost always) and 4 (always).

***, **, * denotes a significant difference at the 1%, 5% and 10% level, respectively. All table columns are defined in Table 1.

Table 6

Survey responses to the question: What factors affect how you choose the appropriate amount of debt for your firm? [a]

	%important or very important	Mean	Size		P/E		Leverage		Investment grade		Pay dividends		Industry		Management own.	
			Small	Large	Growth	Non-G	Low	High	Yes	No	Yes	No	Manu.	Others	Low	High
g) financial flexibility (we restrict debt so we have enough internal funds available to pursue new projects when they come along)	59.38	2.59	2.54	2.65 .	2.61	2.75 .	2.61	2.60 .	2.71	2.59 .	2.73	2.40 ***	2.67	2.52 .	2.68	2.41 **
d) our credit rating (as assigned by rating agencies)	57.10	2.46	1.92	3.14 ***	2.89	2.81 .	2.29	2.64 **	3.36	3.11 **	2.76	2.04 ***	2.52	2.39 .	2.81	1.99 ***
h) the volatility of our earnings and cash flows	48.08	2.32	2.29	2.36 .	2.41	2.25 .	2.25	2.32 .	2.11	2.44 **	2.33	2.28 .	2.35	2.31 .	2.32	2.41 .
a) the tax advantage of interest deductibility	44.85	2.07	1.77	2.44 ***	2.36	2.27 .	1.99	2.26 **	2.32	2.54 .	2.35	1.65 ***	2.30	1.79 ***	2.27	1.89 ***
e) the transactions costs and fees for issuing debt	33.52	1.95	2.07	1.81 **	1.98	1.80 .	1.94	1.87 .	1.85	2.06 .	1.91	2.02 .	1.89	1.95 .	1.88	2.02 .
c) the debt levels of other firms in our industry	23.40	1.49	1.29	1.77 ***	1.72	1.52 .	1.36	1.70 ***	1.80	1.71 .	1.63	1.34 **	1.38	1.66 **	1.57	1.37 *
b) the potential costs of bankruptcy, near-bankruptcy, or financial distress	21.35	1.24	1.36	1.10 **	1.29	1.02 *	1.16	1.37 *	0.99	1.40 **	1.27	1.21 .	1.31	1.22 .	1.30	1.33 .
i) we limit debt so our customers/suppliers are not worried about our firm going out of business	18.72	1.24	1.20	1.30 .	1.43	1.00 ***	1.34	1.20 .	1.23	1.14 .	1.19	1.30 .	1.21	1.40 *	1.17	1.45 **
n) we restrict our borrowing so that profits from new/future projects can be captured fully by shareholders and do not have to be paid out as interest to debtholders	12.57	1.01	1.16	0.80 ***	1.09	0.69 ***	1.18	0.83 ***	0.77	0.85 .	0.95	1.06 .	1.08	0.97 .	0.78	1.30 ***
j) we try to have enough debt that we are not an attractive takeover target	4.75	0.73	0.57	0.91 ***	0.95	0.86 .	0.62	0.90 ***	0.84	0.96 .	0.76	0.66 .	0.83	0.66 *	0.85	0.74 .
f) the personal tax cost our investors face when they receive interest income	4.79	0.68	0.59	0.72 *	0.53	0.80 **	0.68	0.63 .	0.87	0.51 ***	0.71	0.55 *	0.65	0.63 .	0.65	0.72 .
k) if we issue debt our competitors know that we are very unlikely to reduce our output	2.25	0.40	0.41	0.37 .	0.48	0.32 *	0.33	0.47 **	0.38	0.51 .	0.38	0.41 .	0.46	0.36 .	0.37	0.52 **
m) to ensure that upper management works hard and efficiently, we issue sufficient debt to make sure that a large portion of our cash flow is committed to interest payments	1.69	0.33	0.33	0.32 .	0.32	0.28 .	0.22	0.49 ***	0.28	0.38 .	0.32	0.34 .	0.40	0.26 **	0.33	0.35 .
l) a high debt ratio helps us bargain for concessions from our employees	0.00	0.16	0.16	0.15 .	0.18	0.13 .	0.13	0.19 *	0.14	0.17 .	0.13	0.19 *	0.18	0.15 .	0.17	0.18 .

Table 6 (continued)

Survey responses to the question: What factors affect how you choose the appropriate amount of debt for your firm?

	%important or very important	Mean	CEO age		CEO tenure		CEO MBA		Regulated		Target debt ratio		Public corp.		Foreign sales		Fortune 500 mail	
			>59	Ynger	Long	Short	Yes	No	Yes	No	No	Yes	Yes	No	Yes	No	No	Yes
g) financial flexibility (we restrict debt so we have enough internal funds available to pursue new projects when they come along)	59.38	2.59	2.54	2.59 .	2.68	2.52 .	2.51	2.64 .	2.76	2.57 .	2.63	2.54 .	2.68	2.40 **	2.91	2.45 ***	2.60	2.55 .
d) our credit rating (as assigned by rating agencies)	57.10	2.46	2.52	2.44 .	2.28	2.56 **	2.37	2.50 .	3.59	2.32 ***	2.19	2.73 ***	2.86	1.68 ***	2.77	2.30 ***	2.26	3.31 ***
h) the volatility of our earnings and cash flows	48.08	2.32	2.38	2.33 .	2.40	2.29 .	2.22	2.40 *	2.27	2.31 .	2.34	2.26 .	2.34	2.31 .	2.43	2.27 .	2.32	2.30 .
a) the tax advantage of interest deductibility	44.85	2.07	2.15	2.05 .	1.92	2.14 *	2.11	2.07 .	2.64	1.98 **	2.03	2.13 .	2.24	1.76 ***	2.45	1.91 ***	1.97	2.53 ***
e) the transactions costs and fees for issuing debt	33.52	1.95	1.95	1.98 .	2.22	1.83 ***	2.03	1.97 .	1.71	1.95 .	2.02	1.89 .	1.92	2.03 .	1.98	1.94 .	2.00	1.70 **
c) the debt levels of other firms in our industry	23.40	1.49	1.43	1.52 .	1.46	1.53 .	1.61	1.45 .	2.32	1.40 ***	1.37	1.60 **	1.63	1.27 ***	1.41	1.51 .	1.41	1.86 ***
b) the potential costs of bankruptcy, near-bankruptcy, or financial distress	21.35	1.24	1.12	1.29 .	1.37	1.20 .	1.24	1.25 .	1.38	1.25 .	1.32	1.19 .	1.15	1.42 **	1.29	1.22 .	1.27	1.08 .
i) we limit debt so our customers/suppliers are not worried about our firm going out of business	18.72	1.24	1.32	1.23 .	1.39	1.17 **	1.23	1.25 .	1.33	1.23 .	1.27	1.24 .	1.27	1.16 .	1.20	1.26 .	1.30	0.98 **
n) we restrict our borrowing so that profits from new/future projects can be captured fully by shareholders and do not have to be paid out as interest to debtholders	12.57	1.01	0.99	1.00 .	1.05	0.97 .	1.04	0.98 .	0.86	1.02 .	1.03	0.99 .	0.95	1.10 .	1.01	1.00 .	1.12	0.48 ***
j) we try to have enough debt that we are not an attractive takeover target	4.75	0.73	0.82	0.70 .	0.78	0.70 .	0.76	0.73 .	0.71	0.71 .	0.71	0.77 .	0.94	0.34 ***	0.93	0.64 ***	0.70	0.88 *
f) the personal tax cost our investors face when they receive interest income	4.79	0.68	0.56	0.68 .	0.67	0.63 .	0.65	0.65 .	0.67	0.62 .	0.73	0.58 *	0.65	0.64 .	0.78	0.61 *	0.67	0.72 .
k) if we issue debt our competitors know that we are very unlikely to reduce our output	2.25	0.40	0.45	0.39 .	0.48	0.34 **	0.37	0.42 .	0.38	0.38 .	0.44	0.36 .	0.43	0.35 .	0.42	0.39 .	0.40	0.36 .
m) to ensure that upper management works hard and efficiently, we issue sufficient debt to make sure that a large portion of our cash flow is committed to interest payments	1.69	0.33	0.38	0.32 .	0.42	0.28 **	0.30	0.36 .	0.14	0.34 *	0.34	0.34 .	0.31	0.36 .	0.27	0.35 .	0.37	0.17 **
l) a high debt ratio helps us bargain for concessions from our employees	0.00	0.16	0.14	0.16 .	0.16	0.15 .	0.16	0.16 .	0.14	0.16 .	0.16	0.18 .	0.17	0.15 .	0.16	0.16 .	0.17	0.14 .

[a] Respondents are asked to rate on a scale of 0 (not important) to 4 (very important). We report the overall mean as well as the % of respondents that answered 3 and 4 (very important).

***, **, * denotes a significant difference at the 1%, 5% and 10% level, respectively. All table columns are defined in Table 1.

Table 7

Survey responses to the question: Has your firm seriously considered issuing debt in foreign countries? If "yes", what factors affect your firm's decisions about issuing foreign debt? [a]

	%important or very important	Mean	Size		P/E		Leverage		Investment grade		Pay dividends		Industry		Management own.	
			Small	Large	Growth	Non-G	Low	High	Yes	No	Yes	No	Manu.	Others	Low	High
c) providing a "natural hedge" (e.g., if the foreign currency devalues, we are not obligated to pay interest in US$)	85.84	3.15	3.06	3.22	2.98	3.29	3.20	3.32	3.06	3.23	3.12	3.36	3.32	2.94 *	3.00	3.28
b) keeping the "source of funds" close to the "use of funds"	63.39	2.67	3.09	2.52 **	2.73	2.35 *	2.70	2.79	2.38	2.70	2.57	3.12 **	2.92	2.23 ***	2.55	2.74
a) favorable tax treatment relative to the U.S (e.g., different corporate tax rates)	52.25	2.26	1.94	2.41 **	2.27	2.29	2.26	2.39	2.37	2.40	2.29	2.08	2.36	2.13	2.16	2.33
e) foreign interest rates may be lower than domestic interest rates	44.25	2.19	2.33	2.11	2.27	2.03	2.22	2.13	2.20	2.48	2.08	2.40	2.22	2.10	2.04	2.54 **
d) foreign regulations require us to issue debt abroad	5.50	0.63	0.60	0.64	0.75	0.29 **	0.55	0.72	0.65	0.57	0.63	0.73	0.64	0.66	0.59	0.61

	%important or very important	Mean	CEO age		CEO tenure		CEO MBA		Regulated		Target debt ratio		Public corp.		Foreign sales		Fortune 500 mail	
			>59	Ynger	Long	Short	Yes	No	Yes	No	No	Yes	Yes	No	Yes	No	No	Yes
c) providing a "natural hedge" (e.g., if the foreign currency devalues, we are not obligated to pay interest in US$)	85.84	3.15	3.30	3.13	3.39	3.13	3.33	3.06	3.33	3.14	3.30	3.17	3.21	2.95	3.34	2.92 **	3.22	3.00
b) keeping the "source of funds" close to the "use of funds"	63.39	2.67	2.57	2.71	2.74	2.67	2.77	2.66	3.33	2.66 *	2.78	2.64	2.65	2.95	2.72	2.65	2.85	2.30 **
a) favorable tax treatment relative to the U.S (e.g., different corporate tax rates)	52.25	2.26	2.13	2.30	2.00	2.39 *	2.42	2.04 *	2.11	2.22	2.44	2.12	2.37	1.67 **	2.50	1.94 **	2.34	2.11
e) foreign interest rates may be lower than domestic interest rates	44.25	2.19	2.30	2.16	2.26	2.17	2.22	2.14	1.67	2.14	2.40	1.93 **	2.18	2.26	2.25	2.08	2.28	2.03
d) foreign regulations require us to issue debt abroad	5.50	0.63	0.77	0.57	0.50	0.69	0.60	0.58	1.11	0.57 *	0.57	0.64	0.61	0.56	0.59	0.64	0.64	0.62

[a] Respondents are asked to rate on a scale of 0 (not important) to 4 (very important). We report the overall mean as well as the % of respondents that answered 3 and 4 (very important).

***, **, * denotes a significant difference at the 1%, 5% and 10% level, respectively. All table columns are defined in Table 1.

Table 8

Survey responses to the question: Has your firm seriously considered issuing common stock? If "yes", what factors affect your firm's decisions about issuing common stock? [a]

	%important or very important	Mean	Size		P/E		Leverage		Investment grade		Pay dividends		Industry		Management own.	
			Small	Large	Growth	Non-G	Low	High	Yes	No	Yes	No	Manu.	Others	Low	High
m) Earnings Per Share dilution	68.55	2.84	2.65	3.12 **	3.17	3.03 .	2.81	2.93 .	3.00	3.18 .	3.06	2.63 **	3.03	2.60 **	3.07	2.63 **
k) the amount by which our stock is undervalued or overvalued by the market	66.94	2.69	2.67	2.71 .	2.94	2.65 .	2.50	2.93 **	2.58	3.08 **	2.70	2.66 .	2.76	2.50 .	2.93	2.47 **
a) if our stock price has recently risen, the price at which we can sell is "high"	62.60	2.53	2.57	2.47 .	2.57	2.61 .	2.45	2.67 .	2.42	2.92 *	2.35	2.69 *	2.79	2.26 **	2.62	2.45 .
c) providing shares to employee bonus/stock option plans	53.28	2.34	2.22	2.50 .	2.20	2.38 .	2.66	2.00 ***	2.77	1.97 **	2.46	2.17 .	2.16	2.47 .	2.34	2.30 .
e) maintaining a target debt-to-equity ratio	51.59	2.26	2.04	2.58 **	2.56	2.03 **	1.86	2.68 ***	2.44	2.58 .	2.68	1.85 ***	2.48	1.91 **	2.64	1.84 ***
j) diluting the holdings of certain shareholders	50.41	2.14	2.30	1.90 *	1.94	2.23 .	2.20	2.09 .	1.46	2.24 **	1.97	2.31 .	1.95	2.20 .	2.00	2.38 *
b) stock is our "least risky" source of funds	30.58	1.76	1.93	1.52 *	2.07	1.37 ***	1.80	1.71 .	1.44	1.68 .	1.56	1.97 *	1.76	1.69 .	1.62	1.91 .
g) whether our recent profits have been sufficient to fund our activities	30.40	1.76	1.91	1.54 *	1.93	1.39 **	1.71	1.79 .	1.52	1.82 .	1.67	1.76 .	1.84	1.69 .	1.60	1.88 .
f) using a similar amount of equity as is used by other firms in our industry	22.95	1.45	1.33	1.63 *	1.70	1.00 ***	1.35	1.57 .	1.56	1.43 .	1.74	1.09 ***	1.36	1.38 .	1.59	1.32 .
h) issuing stock gives investors a better impression of our firm's prospects than issuing debt	21.49	1.31	1.52	1.00 **	1.48	0.89 ***	1.22	1.37 .	0.92	1.43 **	1.10	1.46 *	1.14	1.50 *	1.18	1.51 *
l) inability to obtain funds using debt, convertibles, or other sources	15.57	1.15	1.36	0.84 **	1.00	0.79 .	1.09	1.20 .	0.68	1.45 ***	1.03	1.19 .	1.03	1.22 .	1.16	1.21 .
d) common stock is our cheapest source of funds	14.05	1.10	1.35	0.73 ***	1.02	0.97 .	1.26	0.96 .	0.68	0.68 .	0.93	1.28 *	0.98	1.17 .	0.86	1.36 **
i) the capital gains tax rates faced by our investors (relative to tax rates on dividends)	5.00	0.82	0.78	0.88 .	0.88	0.79 .	0.98	0.63 **	0.80	0.92 .	0.80	0.77 .	0.75	0.92 .	0.81	0.88 .

Table 8 (continued)

Survey responses to the question: Has your firm seriously considered issuing common stock? If "yes", what factors affect your firm's decisions about issuing common stock? [a]

	%important or very important	Mean	CEO age		CEO tenure		CEO MBA		Regulated		Target debt ratio		Public corp.		Foreign sales		Fortune 500 mail	
			>59	Ynger	Long	Short	Yes	No	Yes	No	No	Yes	Yes	No	Yes	No	No	Yes
m) Earnings Per Share dilution	68.55	2.84	3.04	2.81 .	2.64	3.00 *	2.62	2.95 *	3.64	2.72 ***	2.69	2.97 .	3.18	1.48 ***	2.89	2.80 .	2.73	3.29 **
k) the amount by which our stock is undervalued or overvalued by the market	66.94	2.69	2.52	2.74 .	2.86	2.60 .	2.73	2.67 .	2.43	2.69 .	2.69	2.66 .	2.90	1.78 ***	2.96	2.58 *	2.74	2.43 .
a) if our stock price has recently risen, the price at which we can sell is "high"	62.60	2.53	2.54	2.55 .	2.51	2.56 .	2.45	2.56 .	2.64	2.50 .	2.47	2.57 .	2.70	1.83 ***	2.36	2.59 .	2.46	2.79 .
c) providing shares to employee bonus/stock option plans	53.28	2.34	2.65	2.23 *	2.44	2.29 .	2.13	2.42 .	2.15	2.31 .	2.28	2.38 .	2.24	2.72 **	2.50	2.29 .	2.24	2.74 **
e) maintaining a target debt-to-equity ratio	51.59	2.26	1.72	2.41 **	2.12	2.38 .	1.79	2.46 ***	3.14	2.11 ***	1.71	2.68 ***	2.40	1.73 **	2.21	2.24 .	2.24	2.38 .
j) diluting the holdings of certain shareholders	50.41	2.14	2.32	2.13 .	2.27	2.14 .	2.16	2.19 .	2.00	2.16 .	2.24	2.02 .	2.25	1.68 **	1.93	2.20 .	2.25	1.65 **
b) stock is our "least risky" source of funds	30.58	1.76	1.71	1.74 .	1.72	1.73 .	1.53	1.83 .	1.69	1.75 .	1.79	1.73 .	1.79	1.62 .	1.82	1.75 .	1.90	1.17 **
g) whether our recent profits have been sufficient to fund our activities	30.40	1.76	1.36	1.86 **	1.84	1.73 .	1.42	1.91 **	1.69	1.70 .	1.75	1.77 .	1.73	1.80 .	1.55	1.80 .	1.88	1.22 **
f) using a similar amount of equity as is used by other firms in our industry	22.95	1.45	1.12	1.52 *	1.41	1.47 .	1.13	1.58 **	2.15	1.30 **	1.46	1.37 .	1.43	1.54 .	1.11	1.54 *	1.48	1.30 .
h) issuing stock gives investors a better impression of our firm's prospects than issuing debt	21.49	1.31	0.92	1.39 **	1.32	1.30 .	1.11	1.41 .	1.23	1.28 .	1.24	1.36 .	1.29	1.33 .	1.21	1.35 .	1.41	0.91 **
l) inability to obtain funds using debt, convertibles, or other sources	15.57	1.15	0.79	1.26 *	1.32	1.10 .	0.76	1.35 ***	1.38	1.09 .	1.22	1.10 .	1.06	1.42 .	0.72	1.29 **	1.20	0.91 .
d) common stock is our cheapest source of funds	14.05	1.10	0.88	1.12 .	1.00	1.12 .	1.16	1.05 .	0.69	1.15 .	1.32	0.92 **	1.01	1.46 *	1.11	1.11 .	1.23	0.52 ***
i) the capital gains tax rates faced by our investors (relative to tax rates on dividends)	5.00	0.82	0.79	0.80 .	0.95	0.72 .	0.57	0.92 **	0.38	0.81 *	0.84	0.76 .	0.84	0.71 .	0.93	0.78 .	0.81	0.83 .

[a] Respondents are asked to rate on a scale of 0 (not important) to 4 (very important). We report the overall mean as well as the % of respondents that answered 3 and 4 (very important).

***, **, * denotes a significant difference at the 1%, 5% and 10% level, respectively. All table columns are defined in Table 1.

Table 9

Survey responses to the question: What other factors affect your firm's debt policy?[a]

	%important or very important	Mean	Size		P/E		Leverage		Investment grade		Pay dividends		Industry		Management own.	
			Small	Large	Growth	Non-G	Low	High	Yes	No	Yes	No	Manu.	Others	Low	High
c) we issue debt when interest rates are particularly low	46.35	2.22	2.07	2.40 **	2.35	2.42 .	2.13	2.29 .	2.40	2.43 .	2.37	1.98 ***	2.25	2.16 .	2.39	2.02 ***
a) we issue debt when our recent profits (internal funds) are not sufficient to fund our activities	46.78	2.13	2.30	1.88 ***	2.09	1.86 .	2.10	2.12 .	1.81	2.28 **	2.09	2.16 .	2.24	1.94 **	2.14	2.13 .
d) we use debt when our equity is undervalued by the market	30.79	1.56	1.37	1.76 ***	2.14	1.85 .	1.52	1.72 .	1.56	2.17 ***	1.65	1.37 *	1.67	1.47 .	1.83	1.49 **
g) changes in the price of our common stock	16.38	1.08	0.91	1.25 ***	1.45	1.38 .	0.96	1.27 **	1.05	1.52 ***	1.14	0.95 .	1.14	1.01 .	1.25	1.07 .
e) we delay issuing debt because of transactions costs and fees	10.17	1.06	1.25	0.83 ***	1.06	0.87 .	1.09	1.00 .	0.90	0.92 .	0.97	1.20 **	1.06	1.07 .	0.92	1.22 **
f) we delay retiring debt because of recapitalization costs and fees	12.43	1.04	1.04	1.05 .	1.16	1.04 .	0.91	1.18 **	1.10	1.30 .	1.13	0.93 *	1.19	0.86 ***	1.05	1.02 .
b) using debt gives investors a better impression of our firm's prospects than issuing common stock	9.83	0.96	0.85	1.05 *	1.19	1.14 .	0.91	1.09 .	1.00	1.39 **	1.00	0.84 .	1.01	0.87 .	1.07	0.95 .
h) we issue debt when we have accumulated substantial profits	1.14	0.53	0.50	0.55 .	0.61	0.55 .	0.46	0.54 .	0.57	0.60 .	0.55	0.50 .	0.58	0.45 .	0.61	0.52 .

	%important or very important	Mean	CEO age		CEO tenure		CEO MBA		Regulated		Target debt ratio		Public corp.		Foreign sales		Fortune 500 mail	
			>59	Ynger	Long	Short	Yes	No	Yes	No	No	Yes	Yes	No	Yes	No	No	Yes
c) we issue debt when interest rates are particularly low	46.35	2.22	2.13	2.26 .	2.24	2.21 .	2.36	2.15 .	2.19	2.20 .	2.30	2.12 .	2.39	1.90 ***	2.38	2.15 .	2.19	2.35 .
a) we issue debt when our recent profits (internal funds) are not sufficient to fund our activities	46.78	2.13	2.24	2.09 .	2.35	2.00 **	2.09	2.18 .	2.00	2.14 .	2.21	2.00 .	2.01	2.33 **	1.93	2.18 .	2.21	1.75 **
d) we use debt when our equity is undervalued by the market	30.79	1.56	1.51	1.57 .	1.44	1.60 .	1.50	1.58 .	1.86	1.50 .	1.63	1.46 .	2.10	0.54 ***	1.89	1.41 ***	1.54	1.67 .
g) changes in the price of our common stock	16.38	1.08	0.95	1.11 .	1.05	1.06 .	1.04	1.08 .	1.10	1.04 .	1.16	0.99 .	1.48	0.31 ***	1.15	1.02 .	1.08	1.10 .
e) we delay issuing debt because of transactions costs and fees	10.17	1.06	0.97	1.09 .	1.27	0.95 ***	1.13	1.06 .	0.76	1.10 .	1.13	0.99 .	1.03	1.15 .	1.11	1.05 .	1.17	0.57 ***
f) we delay retiring debt because of recapitalization costs and fees	12.43	1.04	1.08	1.01 .	1.20	0.93 **	1.10	0.98 .	1.05	1.06 .	1.07	0.99 .	1.14	0.87 **	1.22	0.97 *	1.07	0.89 .
b) using debt gives investors a better impression of our firm's prospects than issuing common stock	9.83	0.96	1.10	0.90 .	0.94	0.95 .	0.79	1.04 **	1.10	0.91 .	1.01	0.91 .	1.18	0.51 ***	1.00	0.92 .	0.92	1.14 .
h) we issue debt when we have accumulated substantial profits	1.14	0.53	0.51	0.53 .	0.61	0.46 *	0.45	0.58 .	0.71	0.52 .	0.56	0.50 .	0.56	0.47 .	0.57	0.51 .	0.52	0.55 .

[a] Respondents are asked to rate on a scale of 0 (not important) to 4 (very important). We report the overall mean as well as the % of respondents that answered 3 and 4 (very important).

***, **, * denotes a significant difference at the 1%, 5% and 10% level, respectively. All table columns are defined in Table 1.

Table 10

Survey responses to the question: Has your firm seriously considered issuing convertible debt? If "yes", what factors affect your firm's decisions about issuing convertible debt? [a]

	%important or very important	Mean	Size		P/E		Leverage		Investment grade		Pay dividends		Industry		Management own.	
			Small	Large	Growth	Non-G	Low	High	Yes	No	Yes	No	Manu.	Others	Low	High
a) convertibles are an inexpensive way to issue "delayed" common stock	58.11	2.49	2.54	2.43	2.67	2.50	2.38	2.60	2.73	2.42	2.59	2.43	2.40	2.57	2.42	2.52
f) our stock is currently undervalued	50.68	2.34	2.26	2.44	2.72	2.19 *	2.21	2.52	2.40	2.64	2.25	2.46	2.41	2.43	2.28	2.42
g) ability to "call" or force conversion of convertible debt if/when we need to	47.95	2.29	2.28	2.29	2.58	2.56	2.32	2.20	2.21	2.65	2.42	2.17	2.26	2.33	2.08	2.52 *
e) avoiding short-term equity dilution	45.83	2.18	2.03	2.35	2.45	2.19	2.15	2.28	2.47	2.38	2.44	1.97 *	2.23	2.14	2.05	2.33
h) to attract investors unsure about the riskiness of our company	43.84	2.07	2.35	1.73 **	1.88	1.88	2.02	2.10	1.36	1.88 *	1.83	2.31 *	2.00	2.13	1.82	2.47 **
c) convertibles are less expensive than straight debt	41.67	1.85	2.08	1.58 *	1.56	2.31 **	1.80	1.83	1.43	1.80	1.57	2.14 **	1.58	2.10 *	1.71	2.00
d) other firms in our industry successfully use convertibles	12.50	1.10	1.12	1.06	1.22	0.69 *	1.29	0.83 **	0.93	1.25	0.86	1.21 *	0.92	1.30 *	1.05	1.06
b) protecting bondholders against unfavorable actions by managers or stockholders	1.41	0.62	0.61	0.64	0.72	0.31 **	0.57	0.66	0.43	0.64	0.54	0.71	0.58	0.72	0.61	0.67

	%important or very important	Mean	CEO age		CEO tenure		CEO MBA		Regulated		Target debt ratio		Public corp.		Foreign sales		Fortune 500 mail	
			>59	Ynger	Long	Short	Yes	No	Yes	No	No	Yes	Yes	No	Yes	No	No	Yes
a) convertibles are an inexpensive way to issue "delayed" common stock	58.11	2.49	2.79	2.46	2.74	2.42	2.61	2.47	2.78	2.51	2.36	2.68	2.54	2.27	2.52	2.41	2.51	2.41
f) our stock is currently undervalued	50.68	2.34	2.00	2.45	2.28	2.42	1.87	2.57 **	2.78	2.27	2.30	2.32	2.45	1.93 *	2.48	2.25	2.30	2.47
g) ability to "call" or force conversion of convertible debt if/when we need to	47.95	2.29	2.64	2.21	2.42	2.22	1.91	2.39 *	2.25	2.28	2.23	2.37	2.29	2.27	2.48	2.20	2.28	2.31
e) avoiding short-term equity dilution	45.83	2.18	2.00	2.25	2.28	2.16	2.00	2.24	3.11	2.10 **	2.05	2.37	2.21	2.07	2.24	2.12	2.05	2.59 *
h) to attract investors unsure about the riskiness of our company	43.84	2.07	2.29	2.00	2.00	2.08	1.57	2.33 ***	1.88	2.12	2.32	1.63 **	1.77	3.07 ***	2.00	2.10	2.16	1.75
c) convertibles are less expensive than straight debt	41.67	1.85	2.50	1.70 **	1.94	1.76	2.04	1.78	1.38	1.93	2.07	1.44 **	1.81	2.00	1.81	1.86	2.02	1.25 **
d) other firms in our industry successfully use convertibles	12.50	1.10	1.00	1.11	0.72	1.25 **	0.57	1.33 ***	1.50	0.95 *	1.33	0.78 **	1.09	1.00	1.33	1.00	1.18	0.80
b) protecting bondholders against unfavorable actions by managers or stockholders	1.41	0.62	1.08	0.53 ***	0.61	0.66	0.48	0.73 *	0.62	0.59	0.60	0.67	0.61	0.67	0.62	0.62	0.64	0.56

[a] Respondents are asked to rate on a scale of 0 (not important) to 4 (very important). We report the overall mean as well as the % of respondents that answered 3 and 4 (very important).

***, **, * denotes a significant difference at the 1%, 5% and 10% level, respectively. All table columns are defined in Table 1.

Table 11

Survey responses to the question: What factors affect your firm's choice between short- and long-term debt?[a]

	%important or very important	Mean	Size		P/E		Leverage		Investment grade		Pay dividends		Industry		Management own.	
			Small	Large	Growth	Non-G	Low	High	Yes	No	Yes	No	Manu.	Others	Low	High
b) matching the maturity of our debt with the life of our assets	63.25	2.60	2.69	2.46 **	2.70	2.46 *	2.57	2.63	2.60	2.45	2.53	2.67	2.51	2.72 *	2.54	2.62
g) we issue long-term debt to minimize the risk of having to refinance in "bad times"	48.83	2.15	2.05	2.29 *	2.31	2.03 *	1.95	2.55 ***	2.26	2.51 *	2.22	2.05	2.39	1.79 ***	2.18	2.10
a) we issue short term when short term interest rates are low compared to long term rates	35.94	1.89	1.79	2.01 **	1.97	2.11	1.82	1.93	2.22	2.05	2.00	1.74 **	2.03	1.77 **	1.95	1.67 **
c) we issue short-term when we are waiting for long-term market interest rates to decline	28.70	1.78	1.66	1.93 **	2.01	1.82	1.67	1.90 **	2.00	2.02	1.91	1.61 ***	1.90	1.65 **	1.82	1.67
d) we borrow short-term so that returns from new projects can be captured more fully by shareholders, rather than committing to pay long-term profits as interest to debtholders	9.48	0.94	1.03	0.80 **	0.87	0.89	1.01	0.85 *	0.84	0.77	0.98	0.87	1.05	0.81 **	0.89	0.97
e) we expect our credit rating to improve, so we borrow short-term until it does	8.99	0.85	0.86	0.84	0.87	0.68 *	0.79	0.99 *	0.66	1.18 ***	0.73	0.99 **	0.89	0.85	0.89	0.87
f) borrowing short-term reduces the chance that our firm will want to take on risky projects	4.02	0.53	0.62	0.40 ***	0.54	0.32 **	0.56	0.49	0.36	0.56 **	0.47	0.59 *	0.53	0.51	0.40	0.70 ***

	%important or very important	Mean	CEO age		CEO tenure		CEO MBA		Regulated		Target debt ratio		Public corp.		Foreign sales		Fortune 500 mail	
			>59	Ynger	Long	Short	Yes	No	Yes	No	No	Yes	Yes	No	Yes	No	No	Yes
b) matching the maturity of our debt with the life of our assets	63.25	2.60	2.28	2.69 ***	2.69	2.53	2.59	2.64	2.81	2.60	2.53	2.66	2.47	2.85 ***	2.33	2.69 ***	2.65	2.39 *
g) we issue long-term debt to minimize the risk of having to refinance in "bad times"	48.83	2.15	2.09	2.20	2.25	2.12	2.20	2.15	2.48	2.15	2.00	2.36 ***	2.23	2.02 *	2.40	2.06 **	2.11	2.31
a) we issue short term when short term interest rates are low compared to long term rates	35.94	1.89	1.78	1.93	1.87	1.90	1.98	1.87	1.95	1.86	1.93	1.85	2.00	1.72 **	2.11	1.80 **	1.86	2.03
c) we issue short-term when we are waiting for long-term market interest rates to decline	28.70	1.78	1.68	1.80	1.79	1.78	1.74	1.79	2.40	1.71 ***	1.72	1.87	1.93	1.50 ***	2.00	1.69 **	1.74	1.94
d) we borrow short-term so that returns from new projects can be captured more fully by shareholders, rather than committing to pay long-term profits as interest to debtholders	9.48	0.94	0.86	0.95	0.98	0.90	0.99	0.89	0.90	0.93	0.96	0.90	0.87	1.07 **	0.95	0.93	0.99	0.70 **
e) we expect our credit rating to improve, so we borrow short-term until it does	8.99	0.85	0.79	0.87	0.89	0.82	0.84	0.87	0.90	0.85	0.98	0.65 ***	0.88	0.82	0.89	0.85	0.89	0.70 *
f) borrowing short-term reduces the chance that our firm will want to take on risky projects	4.02	0.53	0.51	0.53	0.66	0.44 ***	0.45	0.56	0.43	0.54	0.55	0.51	0.46	0.67 **	0.44	0.57 *	0.59	0.29 ***

[a] Respondents are asked to rate on a scale of 0 (not important) to 4 (very important). We report the overall mean as well as the % of respondents that answered 3 and 4 (very important).

***, **, * denotes a significant difference at the 1%, 5% and 10% level, respectively. All table columns are defined in Table 1.

Table 12
Summary of the relation between survey evidence and capital structure theories.

A capital structure theory or concept is listed in the first column, followed by the related survey evidence in the right column. ✞ (✟) indicates that the evidence drawn from the unconditional responses to a survey question supports (does not support) the idea in the first column. An indented ❄ (**x**) indicates whether the survey evidence supports (does not support) the idea conditional on firm characteristics or other detailed analysis. The conditional (i.e., indented) evidence usually qualifies the unconditional result it lies directly below. Div stands for dividend.

Theory or concept	Survey evidence
<u>Trade-off theory of choosing optimal debt policy</u> Trade-off benefits and costs of debt (Scott, 1976). Often tax benefits are traded off with expected distress costs or personal tax costs (Miller, 1977).	✞corporate interest deductions moderately important. ✞foreign tax treatment moderately important. ✞cash flow volatility important. ✟expected distress/bankruptcy costs not important. ✞maintaining financial flexibility important (♏ E(distress costs) low). **x** unrelated to whether firm has target debt ratio. ✟personal taxes not important to debt or equity decision.

<u>Firms have target debt ratios</u>
A static version of the trade-off theory implies that firms have an optimal, target debt ratio.
	✞44% have strict or somewhat strict target/range.
	  ❄64% of investment grade firms have somewhat strict target/range.
	✞target D/E moderately important for equity issuance decision.
	✟37% have flexible and 19% have no target/range.
	✟issue equity after stock price increase.
	✟changes in stock price not important to debt decision.
	✟execs say same-industry debt ratios are not important.
	  ❄there are industry patterns in reported debt ratios.

<u>The effect of transactions costs on debt ratios</u>:
T. costs can affect the cost of external funds. Firms may avoid or delay issuing or retiring security because of issuance/recapitalization cost (Fisher, Heinkel, and Zechner, 1989)
	✞transactions costs affect debt policy.
	  ❄more important for small firms.
	✟absolute importance of T. costs in delaying debt issue is small.
	  ❄T. costs relatively important for small, no div firms.
	✟T. costs do not cause firms to delay debt retirement.

<u>Pecking-order theory of financing hierarchy</u>:
Financial securities can be undervalued due to informational asymmetry between managers and investors. Firms should use securities in reverse order of asymmetry: use internal funds first, debt second, convertible security third, equity last.
To avoid need for external funds, firms may prefer to store excess cash (Myers and Majluf, 1984).
	✞firms value financial flexibility.
	  x desire for flexibility is unrelated to degree of informational asymmetry (size) or growth status.
	  x flexibility less important for no-dividend firms.
	✞issue debt when internal funds are insufficient.
	  ❄more important for small firms.
	  x no relation to growth or dividend status.
	✞issue equity when internal funds insufficient.
	  ❄relatively important for small firms.
	✞equity issuance decision affected by equity undervaluation.
	  x no relation to size, dividend status, executive ownership.
	✟equity issuance decision unaffected by ability to obtain funds from debt, convertibles, or other sources.
	✟debt issuance unaffected by equity valuation.
	  x even less important for small, growth, no-div firms.

<u>Stock price</u>: Recent increase in stock price presents a "window of opportunity" to issue equity (Loughran and Ritter, 1998). If stock undervalued due to informational asymmetry, issue after information release and ensuing stock price increase (Lucas and McDonald, 1990)	✞issue equity when stock price has risen ❄recent price increase most important for firms that do not pay dividends (significant) and small firms (not significant).
<u>Credit ratings</u>: firms issue short-term if they expect their credit rating to improve (Flannery, 1986).	✞In general, rating is very important to debt decision. ✟short-term debt not used to time rating improvement.
<u>Interest rates</u>: do absolute coupon rates or relative rates between long- and short-term debt affect when debt is issued?	✞issue debt when interest rates low. ✞short-term debt used only moderately to time the level of interest rates or because of yield curve slope.

Table 12 (continued)

Theory or concept	Survey evidence
<u>Underinvestment</u>: firm may pass up NPV>0 project because profits flow to existing bondholders. Can attenuate by limiting debt or using short-term debt. Most severe for growth firms (Myers, 1977).	🕈low absolute importance of limiting the use of debt, or borrowing short-term, to avoid underinvestment. **x** growth status has no effect on relative use of short-term debt. ❄growth status affects relative importance of limiting total debt.
<u>Asset substitution:</u> shareholders take on risky projects to expropriate wealth from bondholders (Jensen and Meckling, 1976). Using convertible debt (Green, 1984) or short-term debt (Myers, 1977) attenuates asset substitution, relative to using long-term debt.	🕈neither convertible debt nor short-term debt is used to protect bondholders from the firm/shareholders taking on risky or unfavorable projects.
<u>Free Cash Flow can lead to overinvestment or inefficiency</u>: Fixed commitments like debt payments commit free cash so management works hard and efficiently (Jensen, 1986).	🕈debt is not used with intent of commiting free cash flows.
<u>Product Market and Industry Influences</u>:	
Debt policy credibly signals production decisions (Brander and Lewis, 1986).	🕈debt policy is not used to signal production intentions.
Sensitive-product firms use less debt so customers and supliers do not worry about firm entering distress (Titman, 1984).	🕈absolute importance of this explanation is low. **x** not important for high-tech firms. ❄relatively important for growth firms.
Debt ratios are industry-specific (Bradley et al., 1984).	🕈firms report that the debt, equity, and convertibles usage of same-industry firms does not affect financing decisions. ❄empirical debt ratios differ systematically across industries.
<u>Corporate Control</u>:	
Capital structure can be used to affect the likelihood of success for a takeover bid/control contest. Managers may issue debt to increase their effective ownership (Harris and Raviv, 1988; Stulz, 1988).	✞equity issued to dilute holdings of particular shareholders. **x** dilution strategy unrelated to managerial share ownership. 🕈takeover threat does not affect debt decisions.
<u>Risk Management</u>: finance foreign operations with foreign debt as a means of hedging FX risk.	✞foreign debt is frequently viewed as a natural hedge.
<u>Maturity-matching</u>: match maturity between assets and liabilities.	✞important to choice between short- and long-term debt.
<u>Cash Management</u>: match cash outflows to cash inflows.	✞long-term debt reduces the need to refinance in bad times. ❄spread out required principal repayments or link principal repayment to expected ability to repay.
<u>Employee stock/bonus plans</u>: shares of stock needed to implement employee compensation plans.	✞when funding employee plans, firms avoid issuing shares, which would dilute the holdings of existing shareholders.
<u>Bargaining with employees</u>: high debt allows effective bargaining with employees (Chang, 1992).	🕈debt policy is not used as bargaining device.
<u>Earnings per share dilution</u>	✞most important factor affecting equity issuance decision.