Topics in Corporate Finance

Perspectives on the theory and practice of corporate finance

Vojislav Maksimovic

Dirk Brounen, Abe de Jong
and Kees Koedijk

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PREFACE

One of the important challenges for financial economists is to understand the financial practices of corporations. How do corporations choose their financial structure? Why do they finance themselves the way they do? Simultaneously, the practitioners look for prescriptions. How should they choose their financial policy? Observing the many textbooks on corporate finance one would expect that prescriptions can easily be found. The reality is however that despite the enormous output of academic research in corporate finance, very little is produced that gives specific guidance to financial executives.

Against this backdrop the Amsterdam Center for Corporate Finance (ACCF) has decided to devote this issue of its discussion series "Topics in Corporate Finance" to the financial structure of corporations. In the first contribution, Professor Vojislav Maksimovic explicitly addresses how firms should choose their financial structure. His insights are that competitive considerations should be the key driving force, and also that financial structure decisions should be an integral part of a firm's overall risk management. His analysis shows how complex the issues are, partially explaining the lack of specific guidance that comes from corporate finance theory.

The second contribution reports on a survey among European CFO's. Professors Brounen, De Jong and Koedijk have succeeded in bringing together the opinions of a large sample of financial decision makers from the UK, the Netherlands, Germany and France on key corporate finance issues. They conclude that there is a wide variation in corporate finance practices, and that the variation appears to be influenced mostly by firm size and to a lesser extent by the degree of shareholder orientation. Nationality per se does not have a significant explanatory power.

We hope that you enjoy reading this publication, and that it may contribute to bridging the gap between theory and practice.

A.W.A. Boot
C.M. van Praag
April, 2004

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THE FINANCIAL STRUCTURE OF CORPORATIONS

by Vojislav Maksimovic

1 INTRODUCTION

How should a firm that wishes to maximize its market value by being a strong competitor choose its capital structure? There are two schools of thought, which we can call "Solid-financial-footing" and "Debt-makes-you-tough". Solid-financial-footing argues that low levels of debt are optimal because they ensure that firms have the financial flexibility to respond to competitive challenges of the market place. Debt-makes-you-tough argues that leverage sharpens incentives and makes firms stronger competitors.

An interesting case study is provided by the discount department store industry in the US. The large discount chain Wal-Mart expanded its operations from 8 to 50 states in the period 1975 to 1996. During its relentless expansion Wal-Mart came into contact with 68 different chains of incumbent discount department stores. Some of these incumbent firms reacted aggressively and attempted to maintain market share. Others reacted more passively, maintained higher prices and lost market share. Khanna and Tice (2000) show that there exists a correlation between the incumbents' capital structure and their competitive response. Namely, incumbent firms with high leverage responded less aggressively. This finding is consistent with the findings by Chevalier (1994) and Phillips (1995) that leverage is associated with a weaker competitive response. These results suggest that high leverage weakens a firm's ability to compete.

However, Khanna and Tice also find that discounters that have undergone Leveraged Buyouts are aggressive competitors. These firms are very highly levered, but in a way that provides incentives for the managers to compete aggressively. Thus, an incumbent discounter's competitive response to Wal-Mart's expansion is not related to leverage in a simple monotonic way, but depends on the effect of that leverage on the incentives of the managers and the equityholders. In this study we explore this relation.

Beginning with Jensen & Meckling's (1976) and Myers' (1977) work on the incentive effects of debt and equity financing, researchers have shown how the split between ownership and control and the existence of multiple classes of claimants on the firm's cash flow introduce conflicts of interest. As a result of these conflicts, the firm's equityholders or managers may have an incentive to choose investment projects that reduce the total value of the firm. The literature on agency costs has identified financial policies that can mitigate these incentives, thereby maximizing the value of the firm.

Analytical models in this literature take the firm as the unit of analysis. The firm's environment and competitive position is usually not specified. Instead, the cash-flows from alternative investment choices are exogenous. The models are usually solved to yield financial structures that maximize the value of the firm, taking the payoffs from different investment choices as given and recognizing the conflicts of interest between different classes of stakeholders.

Because models of capital structure normally do not specify the firm's industry environment, the reactions of the firm's customers and suppliers and of rival firms to changes in its incentives are not addressed. There is therefore a danger that the analysis may miss some of the consequences of a firm's financial decisions. In particular, it is possible that if the reactions of other product market participants to the firm's policies are analyzed, then the effects of some financing decisions may differ from those that obtain in single firm models.

Moreover, although logically consistent, as noted by Myers (1984) and Harris and Raviv (1991), capital structure models that focus on trade-offs between tax models have only had minor success in explaining intra-industry differences in firms' financial policies. This is highly unsatisfactory, given that one would expect that firms in the same industry are expected to face similar trade-offs.

We review some recent contributions that have attempted to address this issue. These contributions specify the firm's product market environment and analyze the relationship between financing decisions and product market behavior. The literature that we review begins with Titman's (1984) analysis of the effect of financial structure on contracts between sellers and customers and with the analysis of financing choices on product market competition by Allen (1986), Brander & Lewis (1986) and Maksimovic (1986).

In common with the earlier literature on agency, the contributions reviewed here posit a potential conflict of interests between the equityholders (or managers) who control the firm and other stakeholders. For some choices of financial structure, this conflict may result in inefficient production or investment incentives. However, instead of analyzing the interaction between financial structure choices and incentives of a single firm in isolation, these papers explore how financial structure choices interact with the firm's environment to affect incentives. In most contributions analyzed here, the object is to describe financial structures that minimize the loss of firm value from conflicts of interest. However, in contrast to single-firm models, it is shown that when the firm's product market environment is taken into account, the firm may sometimes benefit from a perceived conflict of interest between stakeholders.

Product market environments differ from each other in many dimensions: intensity of competition, growth potential and free cash flow. As a result, financial structures that unfavorably affect incentives in one industry may be optimal in other industries. It is therefore important to identify 'mechanisms' that have the potential to affect the interaction between financial structure choices and incentives in different product market environments. Whether or not a specific mechanism is important for any individual industry is an empirical question.

In this paper we focus on four mechanisms that have been identified in the literature as determining how financial structure affects value in product markets. These mechanisms are:

(i) ***investment environment:*** the effect of investment choices of other firms in the industry on the interaction between the firm's financial structure and its investment incentives;
(ii) ***effects on contracting:*** the effect of debt on a firm's ability to enter into advantageous implicit and explicit contracts with competitors or customers;
(iii) ***effect of cash on competitiveness:*** the effect of changes in leverage on a firm's competitive position and
(iv) ***debt and conflict:*** the exploitation by competitors of conflicts of interest caused by the firm's need to finance its investments externally.

Below we characterize in turn each of the four mechanisms:

(i) ***Investment Environment:*** *The Effect of Investment Choices of Other Firms in an Industry on the Interaction between the Firm's Financial Structure and its Investment Incentives*

In Section 2 we discuss the equilibrium models that directly extend the single firm paradigm by analyzing financial structure choice in the context of an industry equilibrium that takes into account the investment decisions of all firms in the industry. These models are referred to in this paper as *industry equilibrium* models (IE). These models show how the riskiness of firms' investment strategies is endogenously determined in industry equilibrium. As a result, the effect of financial structure on firms' investment incentives also depends on the equilibrium number of firms in the industry and their investment choices.

Using these insights, the papers show how several familiar results about the relationship between financial structure and firm value derived from single firm models must be modified when industry equilibrium is taken into account. The models also generate empirical predictions about how the distributions of financial structures and technology choices depend on industry characteristics, such as cost structures and availability of alternative technologies.

(ii) ***Effects on Contracting:*** *The Effect of Debt on a Firm's Ability to Enter into Advantageous Implicit and Explicit Contracts with Competitors or Customers*

In Section 3 we show how financial structure affects the firm's ability to make credible implicit or explicit contracts with customers and rival firms. The ideas reviewed in this section analyze two consequences of leverage. First, high debt levels increase the probability that the firm will become bankrupt and cannot be compelled to fulfil its obligations. Second, debt may decrease both the profits that the firm's equityholders receive from complying with the contract and the cost that they bear if they act opportunistically. Both these effects decrease the firm's ability to enter into credible contracts. As a result, its value will fall below the level it could attain with less debt.

(iii) ***Effect of Cash on Competitiveness:*** *The Effects of Changes in Leverage on Firms' Incentives and on Industry Equilibrium in Concentrated Industries*

In Section 4 we discuss the effect of financial structure choices on the firm's incentives in the product market in concentrated industries. In concentrated industries firms do not act as price takers. Instead they act strategically, taking into account the effect of

their financial and production actions on their competitors. We argue that particular financing choices allow firms to credibly commit to higher output levels and thereby influence market equilibrium outcomes in their firm's. An important theme of this analysis is that it is individually rational for the firm to adopt financial structures that do this. However, when all firms try to gain advantage in this way their values are reduced.

(iv) ***Debt and Conflict:*** *The Exploitation by Competitors of Vulnerabilities Caused by External Financing*

Financial structures that mitigate conflicts of interest within the corporation may make the firm more vulnerable to competitive moves by rivals or simply to bad outcomes in the product market. In Section 5 we analyze different trade-offs that arise between avoiding internal conflicts and increased costs in the product market. We argue that firms that depend on external financing are naturally more vulnerable to aggressive product market competition from rivals.

A very important issue is how to measure the various effects. Here we have to be careful. The mechanisms involved are subtle; hence the empirical testing of the models is tricky. Moreover, the empirical literature is only just beginning to take shape. In Section 6 we describe promising recent work that attempts to ascertain the empirical relevance of the four mechanisms. In particular we review an important new empirical paper by Mackay and Phillips (2002).

Finally, we summarize our findings and the key implications for financial policy in Section 7.

2 Conflicts of interest and industry equilibrium

The IE models that we review in this section explore the consequences of directly embedding the single firm agency model in an industry environment. The models, Maksimovic & Zechner (1991) (MZ) and Williams (1995), differ from the usual single firm agency models in three important respects. First, it is assumed that the potential conflict of interest between different classes of stakeholders is over the choice of which technology to use for producing the firm's output in a single industry. Second, the number of firms in the industry and their investment choices are endogenously determined in equilibrium. Third, the cash-flows generated by investing in each of the available technologies are not exogenous. Instead, the cash-flows depend on the number of firms competing in the industry, their investment technology choices and on the demand function for the firms' products. The endogeneity of cash-flows generated by different technologies introduces a key difference between single firm agency models and the IE models. In single firm models it is clear which investment choice maximizes the net present value of the firm and the models are usually constructed so that other choices reduce the value of the firm. By contrast, in IE models the net present value of a technology depends on the number of firms choosing it. As a result, in equilibrium the number of firms choosing

each project may adjust so that several seemingly different investment choices may have the same value. Thus, changes in incentives that cause the firm to choose different investments may not change the firm's value. These issues were first explored by MZ in the context of a two-technology model. They show more formally how the risk of a firm's cash flows is endogenously determined and depends on the efficiency of the firm's technology. In equilibrium, the returns of the less efficient technology are a mean preserving spread of the returns of the more efficient technology. As in the single firm models, MZ show that financial structures may create incentives to choose a technology that appears less efficient from a single firm viewpoint. They also show that over certain parameter ranges the equilibrium number of firms choosing each technology adjusts, so that firm value is unaffected by these apparently perverse incentives. However, the equilibrium distribution of financial structures across firms in an industry depends on the number of firms choosing each technology and is not arbitrary.'

This framework can be adjusted to allow for tax advantages of debt. In this case the equilibrium is asymmetric. As before, the riskiness of a project's cash flows is endogenous. An endogenously determined number of firms have a high level of debt and have riskier earnings before interest and taxes. Others issue less debt and have less risky earnings before interest and debt. In equilibrium firms are indifferent between low leverage and the choice of a project with higher expected pre-tax cash flows and high leverage and the choice of a project with lower expected pre-tax cash flows.

Interestingly, it can be shown that when industry equilibrium is taken into account, determinants of capital structure (such as corporate tax rates) not only have a direct effect on firm decisions but also change the distribution of projects in the industry. This, in turn, affects the cash flows generated by each project, and indirectly the firm's capital structure choice. Thus, for example, increases in the corporate tax rate lead more firms to select financial structures that provide equityholders with incentives to pick riskier projects. However, as more firms do so they change the project's cash flow distribution, and lower this project's debt capacity.

A simple numerical example may help clarify the relationship between single firm and IE analysis. We consider the incentive to 'risk-shift' in the context of a simple model in which all investors are risk-neutral and the interest rate is zero. The sequence of events is that (1) a firm's financial structure is chosen, (2) the firm chooses to invest in a particular project, and (3) the state of the world is revealed and the output is produced and sold. Consider first an all-equity firm in isolation choosing between two projects. A non-stochastic project *NS* always yields a cash flow of 100 and does not require any investment. A stochastic project *S* yields either 120 or 80, depending on which of two equiprobable states occurs. In addition, it requires an initial investment of $I_S = 2.5$. It is clear that the optimal choice is that of Project *NS*. However, if the firm has sufficient preexisting debt outstanding and the firm's decisions are taken in the interests of the firm's equityholders only, then the firm will choose Project *S* providing that it has enough cash on hand to invest. In this example this results in a lower value for the firm as a whole whenever the firm has preexisting debt with a face value above 80.

The example suggests several intuitions. All other things being equal, a zero debt policy is optimal in this case. Second, we can predict that only the stochastic technology will be subject to risk shifting. Finally, risk shifting only requires attention when the stochastic technology is less efficient. Each of these intuitions may have to be modified in an IE model if the analysis is expanded to take into account market clearing in product markets. We illustrate the differences with a numerical example based on MZ. To do so we specify an inverse demand function for the firm's output and we explicitly assume that the marginal cost of output depends on the quantity produced.

Specifically, consider the following simple market environment in which all firms are price-takers' Let there be 100 firms facing a linear market demand

$$P = 250 - \sum_l q_i$$

where q_i, is the output of firm i. As before, there are two projects. If a firm selects project *NS* it pays no initial fixed cost and can produce q, units at an increasing marginal cost $MC_{NS} = 15 + q_i$. If a firm selects the stochastic technology, it pays an initial fixed cost $Is = 2.5$. The marginal cost of output is $MC_S^{\mathrm{L}} = 5 + q_i$ in the state of the world denoted by L and $MC_S^{\mathrm{H}} = 25 + qi$ in the state of the world denoted by H.

Once each of the hundred firms has chosen its project, we can determine the industry supply curve in each of the two states by summing the firms' individual supply functions. The aggregate supply function together with the demand curves yields an equilibrium price for each state (p^L and p^H). From these it is possible to determine the operating revenues in each state for a firm that chooses Project *NS* (π^L_{NS} and π^H_{NS}) or one that chooses Project *S* (π^L_S and π^H_S).

First, we explore how the riskiness of a firm's cash flows depends on the investment choices of other firms in the industry. Assume that all the firms have chosen Project *NS*. In that case there is no uncertainty and it can be shown that $p^H = p^L = 17.3$ and that $\pi^L_{NS} = \pi^H_{NS} = 2.71$. Consider now the revenues that a price-taking firm that enters the market and adopts Project *S* might expect. In accordance with the intuition from single firm analysis, the firm would be much riskier ($\pi^L_S = 76$ and $\pi^H_S = 24.43$). Perhaps less obvious, its expected value is 47.71 $[v_S = 0.5(\pi^L_S + \pi^H_S) - I_S]$, considerably more than that of a firm that has adopted Project *NS*, which is 2.70 $[v_{NS} = 0.5(\pi^L_{NS} + \pi^H_{NS})]$.

Consider next the opposite case, where all the firms have chosen Project *S*. It can be shown that $p^L = 7.42$ and $p^H = 27.23$ and that $\pi^L_S = 2.94$ and $\pi^H_S = 2.48$. Given these market prices, a price-taking firm that enters the market and adopts Project *NS* realizes $\pi^L_{NS} = 28.68$ and $\pi^H_{NS} = 74.75$. Thus, the nonstochastic project now has riskier cash flows. Moreover, it is now more valuable than the stochastic project, $v_{NS} = 51.72 > v_S = 0.22$. Hence, high leverage would induce the firm's equityholders to choose Project *NS*.

Neither of these two examples is an equilibrium because v_{NS} does not equal v_S. As a result, all-equity firms would not all choose Project *S* or Project *NS*. For the same reason, financial structures that induced all firms to choose the same project would not be equilibrium financial structures.

To find the equilibrium it is necessary to make the number of firms adopting each technology endogenous and solve for this quantity in the following equilibrium equation,

$$0.5(\pi^{L}_{S} + \pi^{H}_{S}) - I_S = 0.5(\pi^{L}_{NS} + \pi^{H}_{NS}) - I_{NS}.$$

where INS is the initial fixed cost of Project *NS*, if any. Solving for the equilibrium number of firms choosing each project, we find that 48 firms will chose Project *S* and the reminder will choose Project *NS*. $p^L = 12.58$ and $p^H = 22.08$. Project NS is in equilibrium less risky than project *S:* $\pi^{L}_{NS} = 2.94$ and $\pi^{H}_{NS} = 25.04$ compared to $\pi^{L}_{S} = 28.70$ and $\pi^{H}_{S} = 4.27$.

Note that in equilibrium a highly leveraged financial structure would induce a firm to choose the project with the riskier cash flows, Project *S*. However, in equilibrium the value of the firm is equal regardless of the choice of projects. Thus, a single firm would be indifferent in its choice of financial structure. However, if all firms adopt highly levered financial structures the equilibrium would breakdown. Thus, the analysis places restrictions on the industry wide distribution of financial structures that support the first-best equilibrium allocation of projects.

In the last example, Project *S* had more volatile cash flows than Project *NS*. This accords with the single firm intuition, but is not a necessary outcome of equilibrium analysis. If $I_{NS} = 2.5$ and $I_S = 0$, then 53 firms will chose Project *S*. For these parameter values, $\pi^{L}_{S} = 25.05$ and $\pi^{H}_{S} = 2.93$, while $\pi^{L}_{S} = 4.27$ and $\pi^{H}_{S} = 28.7$. Highly levered firms will now choose the less efficient Project *NS*. Thus, the riskiness of the project's cash flows is endogenous, and depends on its efficiency, in this case measured by *I*.

The relation between riskiness of cash flows and the choices of technology are shown graphically for firms selecting Project *S* in Figures 1. Consider an industry selling to the domestic markets. In this example take a firm's choice of Project *NS* to mean that the firm relies on perfectly competitive domestic suppliers. A firm that relies on foreign suppliers is subject to foreign exchange risk and can be thought of as choosing Project *S*. As can be seen in Figure 1, when all firms depend on domestic suppliers the cash flows are not subject to foreign exchange risk. However, a firm that chooses to rely on domestic suppliers in order to have no direct exposure to foreign exchange risk is still risky if other firms in the industry use foreign suppliers. Its risk exposure is increases as the proportion of other firms in the industry using domestic suppliers falls.

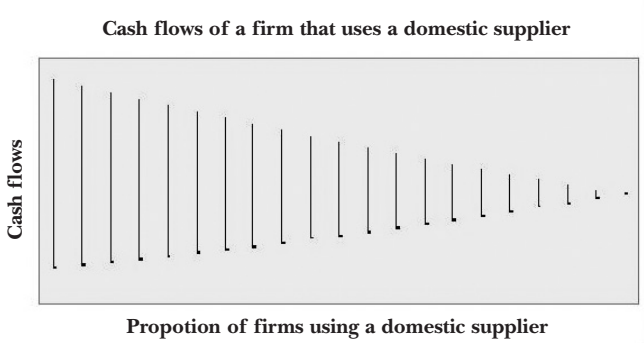

Figure 1: The relation between the highest and lowest cash flows realized by a firm that uses a domestic supplier and the proportion of firms in the industry using a domestic supplier.

Williams (1994) extends the MZ analysis in four key respects. First, in his model firms can be financed by both external debt and external equity. Second, an agency problem is introduced by assuming that entrepreneurs who raise funds by issuing equity and/or debt cannot commit themselves to invest the proceeds. If they wish, they may instead consume the proceeds themselves. Third, firms are not price-takers but act strategically." Fourth, in his model demand is uncertain (it is 'high' or low') and all technologies are nonstochastic. Instead, firms have a choice of investing in labor intensive' technologies or 'capital intensive' technologies. Labor intensive technologies require no initial investment and can produce quantity q at a variable cost αq. Capital intensive technologies require a initial investment of γ and can produce quantity q at a variable cost of $(\alpha - \beta)\, q$, $\alpha > \beta > 0$. Thus, capital intensive firms always produce more than labor intensive firms. Taking γ into account, they are more efficient at high levels of output whereas labor intensive technologies are more efficient at low levels of output. If financial contracting issues were not material (e.g., if all firms were internally financed), then for a range of parameter values the model would yield a market equilibrium in which some firms are capital intensive and some labor intensive.

This is the first-best equilibrium in which the number of firms adopting each technology adjusts so that the net present values of firms adopting the two technologies are equal. Let the number of firms choosing the capital intensive technology in first-best equilibrium be n^*. The central questions in the Williams paper are: Can the first-best product market equilibrium be supported by equilibrium choices of financial structures once the agency problems are recognized? If not, what configuration of technology and financial structure choices occurs?

The agency problem arises because if an entrepreneur elects to raise funds for the capital intensive technology from outside investors, he or she must be motivated to invest rather than consume the proceeds. This requires that the entrepreneur's net returns from investing in this technology be greater than the sum of the benefits of immediate consumption of the proceeds and the profits from selecting the labor intensive technology.

For some parameter values, appropriate choices of outside debt and equity can remove the entrepreneur's incentive to substitute the labor intensive technology for capital intensive technology and to consume the investment funds. Consider first the incentive to substitute the labor intensive technology. Suppose that there exists a debt level that exceeds the operating profit of the labor intensive technology in any state of the world but is smaller than the profit of the capital intensive technology in some state. If so, this level of debt solves the substitution problem because an entrepreneur whose firm has issued that much debt will not have an incentive to adopt the labor intensive technology. Next, consider the incentive to consume investment funds. The entrepreneur does not wish to consume the investment funds when the capital intensive technology generates sufficiently high net returns and when his share of these returns is sufficiently high. As in the numerical examples above, the fewer capital intensive firms there are in the industry the higher is their return and the greater the amount by which their highest operating profit exceeds that of labor intensive firms. As a result, the number of firms that can successfully solve the financial contracting problem and obtain financing for the capital intensive technology is endogenous. Two types of market outcomes occur in the Williams model. The first best equilibrium occurs if parameters are such that n^* entrepreneurs can successfully solve their financial contracting problem and raise γ externally. The properties of this equilibrium are similar to those in MZ. A second-best equilibrium occurs if parameters are such that fewer than n^* entrepreneurs can satisfy the financial contracting constraints permitting them to raise γ externally. In this equilibrium the NPV of the capital intensive technology will exceed the NPV of the labor intensive technology. As a result, more entrepreneurs would like to select the capital intensive technology. However, their marginal investment in the capital intensive technology would reduce the returns of this technology. This reduced rate of return makes it rational for entrepreneurs to consume the proceeds of security sales instead of investing them. As a result, they cannot credibly commit to invest in the capital intensive technology and will not be able to obtain external financing to do so.

The Williams model yields interesting empirical predictions. To avoid technology substitution, each capital intensive firm must issue debt obligations with a higher face value than a labor intensive firm could issue. Thus, in the second- best equilibrium profitable, large capital intensive firms with high debt levels can coexist with small marginally profitable labor intensive firms that issue a smaller absolute quantity of debt securities.

The IE papers in this section suggest that once industry equilibrium is taken into account, predictions drawn from the analysis of a single firm in isolation may need to be modified or reversed. For example, an important conclusion of equilibrium analysis is that a diversity of financial structures may exist within the same industry even when debt financing has a tax advantage. This suggests that the observed diversity in financial structures within industries does not imply that even simple tax based models of leverage fail to identify the relevant trade-offs facing firms. Thus, the prospect that we might explain financial structures with such models may not be as bleak as it may have seemed.

The IE framework is capable of making predictions about the joint determination of industry structure and the set of optimal financial contracts appropriate for each class of firms. Because of the large number of potential predictions about the combination of profitability, size distributions, riskiness and choice of technology several predictions are likely to be testable.

3 Financial structure and implicit contracts

In many cases it is advantageous for firms to enter either explicit or implicit contracts with customers, rival firms or with suppliers. Examples are contracts committing the firm to producing output of a certain quality, guaranteeing to repair any deficiencies or implicit contracts with rivals controlling the amount of competition in the marketplace. Many such contracts have the following two characteristics: (i) if the opposing party believes them to be credible they increase the value of the firm at the time of their inception, and (ii) there exist circumstances in which it is advantageous for firms to renege on their contracts unless there is sufficient punishment for doing so. Since financial structure affects a firm's incentives, it will also affect the firm's ability to enter into credible agreements with other product market participants. As a result, financial structure choices affect the value of the firm and the outcomes in the product market.

The literature has focused on two ways in which financial structure affects the implicit or explicit commitments that the firm enters into. Titman (1984) has studied the effect of the possibility of insolvency on the firm's ability to make optimal contracts with customers or other stakeholders in the firm. Maksimovic (1987, 1988) and Maksimovic & Titman (1991) (MT) have analyzed the effect of financial structure on the firm's incentives to renege on implicit agreements.

Insolvency and contracts with customers

Buyers of durable goods often require spare parts or servicing for a prolonged period after purchase. To the extent that these services are more efficiently provided by the original manufacturer, it may be efficient for the seller to enter into a long term contract to supply these services at the time of purchase. A seller who can credibly enter into such a contract may command a higher price for his or her product than one who cannot. As a result, the ability to enter into credible contracts may be valuable for the firm even after making provisions for the expected costs of the services to be provided.

While entering into this type of long term contract creates value for the seller at the contract's inception, the seller may have an incentive to renege on the contract at a later date. This may occur if performance of contractually agreed services is costly. Therefore, if a contract is to be credible, it must contain provisions that remove the incentive to renege by penalizing a firm that does so. Such penalties fail as enforcement devices if the

seller becomes bankrupt between the inception of the contract and the time that the agreed services are o be performed. The new owners of a bankrupt firm cannot be compelled to fulfill its contractual obligations made by the previous owners. Thus, the higher the probability that the firm will become insolvent, the less likely it is that the firm will fulfill its contractual obligations.

Titman (1984) analyzes a model in which the firm's probability of bankruptcy increases with leverage. Hence, in his model debt financing lowers the value of a seller by reducing the price that can be obtained for the output. The significance of this effect will depend on the nature of the firm's business. Thus, Titman is able to make predictions relating the firm's equilibrium financial structure to the characteristics of the relationship between it and its customers.

Financial structure and the incentive to renege

An implicit contract between a firm and its customers or rivals cannot be enforced by legal penalties. This does not mean that such contracts will always be broken. A firm will not renege on a contract if the benefits of complying with the terms of the contract exceed the cost of opportunistic behavior. The benefits of complying will typically include the profits from future business and the value of maintaining its reputation. Costs of reneging may include legal sanctions and 'punishment' that customers may inflict by withholding their business and rivals may inflict by engaging in a price war. Both benefits and costs are affected by such factors as the number of rival firms in the industry, opportunities for secretly varying the quality of the product and the growth in demand over time.

Changes in financial structure alter the share of future cash flows that belongs to equityholders, thereby affecting their incentive to comply with the terms of the contract. For example, as leverage increases, a greater proportion of future cash flows are assigned to debtholders. This reduces the value to the equityholders of complying with implicit or explicit contracts limiting opportunistic behavior. As a result, for high enough leverage the equityholders will prefer to engage in opportunistic behavior

Consider the consequences of a large increase in leverage by the firm. Because other parties understand the incentives of equityholders to renege, they will expect opportunistic behavior by the firm if its leverage increases sufficiently. Accordingly, they will take actions to protect themselves. In turn, these actions will be predicted by the firm's equityholders. The resulting market outcome in which both parties predict a breakdown of the contract, and plan for it, will in general be less favorable to the firm then if leverage had not increased.

These considerations suggest that to avoid such outcomes the firm should limit its leverage. The level at which leverage should be limited depends on the details of the debt contract and the type of market interaction between rival firms. This relationship between market structure, leverage and the firm's ability to enter into implicit contracts has been explored by Maksimovic (1988) and is examined next. For simplicity, assume

that there are two identical firms with access to a product market opportunity that repeats in each future period. Industry demand and costs are known and are constant over time. To realize maximum total profits, each firm should set its output at a fraction of the monopoly level in each period.

However, in the absence of a binding contract or threat of future punishment it is individually rational for firms to produce more in each period. If they maximize profits without coming to an understanding to limit output each firm will produce its Nash equilibrium output. The profits at this equilibrium are generally lower than would be the case if firms produced less. As a result, it is advantageous for the firms to devise a way to enforce a tacit agreement to limit output.

Output can only be limited below the Nash equilibrium level if a firm can credibly impose costs on a rival that breaks a tacit agreement. The ways in which firms can commit themselves to punish violators have been studied extensively in the industrial organization literature. A class of output strategies that have been shown to sustain understandings to limit output in some imperfectly competitive industries is the class of trigger strategies, investigated by Friedman (1971), Green & Porter (1984), Porter (1983a), and Brock & Scheinkman (1985). A firm following a trigger strategy will commence by producing at some output level, and will maintain that output unless one of its rivals deviates. Should this occur, the firm produces at the Nash level in each subsequent period. The threat of increased production in the future (i.e., a price war) provides incentives to limit output. The threat is credible because if one of the firms is producing at the Nash equilibrium level, then it is also optimal for its rival to produce the Nash equilibrium output. Such an equilibrium is subgame perfect. The price war that occurs if a tacit agreement breaks down is both the result of the breakdown and the 'punishment' which the transgressor firm brings down on itself.

If firms collude and limit output in each period the present value of each firm's profit is $\pi^c + \pi^c/r$, where π^c is the profit realized in each period and r is the interest rate. If a firm cheats, its total profit is $\pi^d + \pi^{nc}/r$, where π^d is the one-period profit from deviating if the other firm adheres to the agreement and π^{nc} is the profit realized in each period in a Nash equilibrium For

$$\pi^c + \pi^c/r > \pi^d + \pi^{nc}/r,$$

an implicit agreement to limit output to the monopoly level is sustainable since firms will find it in their interest to abide by that agreement. If $\pi^c + \pi^c/r < \pi^d + \pi^{nc}/r$, an agreement is not feasible and the firms will realize the Nash equilibrium profits π^{nc} in each period. Thus, in both cases the output (and profit levels) is constant over time.

By issuing financial claims against future income, however, the equity holders may alter the trade-off between their net payoffs from maintaining the long term relationship and their net payoffs from deviating. As a result, industry output and firm value can be affected by a firm's capital structure. If the financial market is efficient, this will be factored into the price of debt and the price of shares at the time debt is issued.

Suppose that the equityholders of all previously all-equity firms simultaneously issue debt. For each debt instrument sold equityholders receive a lump sum cash payment in return for an obligation to pay \$1 per period forever. Let Firm i issue b_i debt instruments. At the end of each period the equityholders pay the debtholders $\$b_i$ and are then free to declare and pay out a dividend. If the firm cannot meet its obligations, then, in accordance with contractual obligations, the debtholders gain control of the firm and its resources. In that case the equityholders receive nothing. Debt obligations are common knowledge. The payoff to equityholders consists of the cash receipt from the sale of financial instruments and dividends paid by the firm. The payoff to the debtholders of firm i is $\$b_i$ in each period in which the firm is solvent and the firm itself if bankruptcy is declared.

If the firm is leveraged the profit to the equityholders from maintaining an agreement $(\pi^c - b_i)+(\pi^c - b_i)/r$. If the equityholders break the agreement they can realize $(\pi^d - b_i) + \max[(\pi^{nc} - b_i)/r, 0]$. It is clear that no choice of debt level can increase the total profit realized in the trigger strategy equilibrium. However, as b_i tends to π^d it becomes rational for the firm's equityholders to deviate from the agreement. Thus, high levels of debt may make a previously self-enforcing tacit agreement unsustainable.

Let the maximum coupon payment for which the agreement is sustainable be b^*. In the absence of any tax advantage of debt the financial structure will be chosen so that the coupon payment of each firm is below b^*. In equilibrium, output, and thus the total value realized, will not be affected by the existence of debt."

This approach can be generalized to take into account production capacity constraints by firms. It can also be adapted to analyze the interaction between a firm and its customers when the firm can vary the quality of its output. The basic approach can be adapted to analyze cases where the firm wants to commit not to enter into implicit contracts. For example, by selecting a high level of debt an incumbent firm may be able to deter a potential entrant to the industry. On observing the incumbent firm's debt level, the entrant would know that the incumbent's equityholders would have an incentive to renege on any implicit agreement between the two firms. Without an implicit agreement the most profit that the entrant could earn is π^{nc}. Thus, the incumbent high leverage would deter an entrant whose the initial cost of is entry is greater than π^{nc}/r and less than π^c/r. In the preceding analysis it has been assumed that the quantity produced by each firm is known to its rival. In a more general setting, pertinent information such as the rival's output or technology may not be directly observable. Firms have to use publicly available information to infer whether their rival is breaking the tacit agreement. As shown by Green & Porter (1984), if a firm cannot observe its rival's output directly it will base its response on a noisy signal, such as the market price of output. Although optimal, this policy will result in unintended breakdowns of the implicit agreement. Thus, it is in the interest of firms to find a mechanism that maintains cooperation without exposing them to the risk of a costly price war. MT extend the analysis of the firm's incentives to maintain a reputation for honoring implicit contracts in three ways. First, they allow the future demand for the firm's product to be stochastic — in their case it follows a random

walk. This makes the incentive to deviate from an implicit agreement vary with demand.

Second, they investigate the incentive to renege when dividends and repurchases are not permitted. These restrictions on payouts to equityholders prevent them withdrawing any cash from the firm after reneging on an implicit agreement to produce high quality goods' Third, they extend Titman's (1984) analysis to industries in which suppliers and customers do not have a relationship beyond the point of sale.

MT examine incentives to maintain a reputation in the context of a firm selling a good of variable quality. The customers cannot observe the quality of the good until they purchase it. It is more costly to produce the high quality good than the low quality good. However, customers would be willing to pay a premium that exceeds the additional production cost for a good that they knew was of high quality. As a result, the firm can increase its value if it can credibly commit to produce the high quality good.

Because it is more costly to produce the high quality good, firms have an incentive to renege on their implicit commitments and to substitute low quality output. However, if the firm does this it destroys its reputation for producing a high quality product. Thus, the incentive to deviate may be counterbalanced by the present value of the additional future cash flows that arise from maintaining a reputation for high quality. If the present value of the reputation is sufficiently high and the firm has, or can raise, enough cash to finance the production of high quality goods, it can credibly commit to producing a high quality good. Because the commitment is credible the customers will be willing to pay a premium in the current period.

A firm can only maintain its reputation if it is able to finance the additional cost of producing high quality goods. A firm in financial distress is thus not able to maintain its reputation. As a result, policies that increase the probability that the firm encounters financial distress in the future also increases the probability that the firm will not be able to benefit fully from investment in building up its reputation. Thus, an increase in the probability of financial distress in the future reduces the value of maintaining a reputation today. For a sufficiently large the reduction in value of maintaining a reputation, the firm loses its incentive to produce high quality output today. If customers are rational, the change of incentives will translate into an immediate reduction in the amount that they will pay for the firm's goods and thus its value.

High leverage increases the probability of financial distress. By increasing leverage, firms in industries where implicit contracts are important reduce their value. MT's model predicts that these firms will have lower leverage than firms in industries in which implicit contracts, are not important. The model also predicts that failures in implicit contracts and price-wars are most likely to occur in industry downturns, when firms are facing financial distress.

4 The Effects of Changes in Leverage on Firms' Incentives and on Industry Equilibrium in Concentrated Industries

In many industries firms interact with a small number of rivals in the product market or with a small number of suppliers. In those instances the interaction between the firm and its rivals can be modeled as a strategic game. A change in the incentives of the agents who control the firm may then cause rivals or suppliers to change their production or pricing decisions, thereby affecting the firm's value. This occurs because the rivals' outputs will in general depend on some action of the firm, such as its choice of quantity produced.

Interestingly, in some cases a change in incentives that creates a conflict of interests between different classes of investors in the firm's securities may increase the value of the firm. This will happen if the new incentives enable the firm to commit credibly to product market strategies that move the industry to a more advantageous equilibrium.

The effect of conflicts between equityholders and debtholders on the firm's incentives and value in an oligopoly is examined in contributions by Brander & Lewis (1986) (BL) and Maksimovic (1986). Rotemberg & Scharfstein (1990) (RS) consider another conflict, that between the firm's current investors and potential new investors. They show that a firm's incentives and value in an oligopoly can also be affected by varying its firm's dependence on external financing. Before discussing conflicts of interest between equityholders and debtholders it is helpful to proceed by first examining an inherently simpler setup in which the effect of changes of incentives on a product market equilibrium is explored. Accordingly, we first show how optimal loan commitments may affect market outcomes in an oligopoly, and how to derive equilibrium loan commitment terms.

To illustrate the issues consider a standard Nash-Cournot duopoly in which the firm chooses the quantity it produces. Thus, each firm strategically chooses the quantity it must produce to maximize its profits, taking the other's output as given. In equilibrium, each firm's output is its best response to the other's equilibrium output. Firms do not collude and there is perfect information.

The event sequence is as follows: At time t_o firms arrange financing for the output that they plan to produce in equilibrium. At time t_1, they produce the output at a constant and identical marginal cost of production, c, and take it to market. There is no uncertainty.

Let the demand function in the industry be linear

$$p = \alpha - \beta(q_i + q_j), \quad \alpha, \beta > 0$$

where p is the price and q_i and q_j are the outputs of firm i and j respectively.

The profits of firm i are

$$\pi_i(q_i, q_j) = a - b(q_i + q_j)q_i - rq_i,$$

where r is one plus the market rate of interest, $a = \alpha/c$ and $b = \beta/c$. Differentiating π_i, with respect to q_i, setting each to zero and solving jointly yields the standard expressions for output $q_i = q_j = (a - r)^2/(3b)$ and profits $\pi_i = \pi_j = (a - r)^2/(9b)$.

Consider now how the situation would change if instead of obtaining a loan for cq_i, at time t_o firm obtained a larger loan commitment at a rate $r_i < r$. Such a transaction would require a fixed initial fee to be paid. We assume that the banks are willing to provide such commitments at zero economic profit and determine the terms below. Can firms benefit from such an arrangement? How should r_i be set?

Having received a loan commitment, the marginal cost of financing a unit of output for firm i is, at r_i, less than it would be without the commitment. All other things being equal, the firm will be a more aggressive competitor. If the marginal financing cost for other firms remained unchanged, this would alter the product equilibrium. In the new equilibrium firm i would produce more than before and firm j would produce less. As a result, the value of firm i would increase and the value of firm j would decrease. Thus, it is to the advantage firm i to obtain a loan commitment with $r_i < r^*$.

In equilibrium both firms will attempt to take advantage of loan commitments to increase value. Repeating the steps above, the equilibrium outputs at time t_1 are now $q_i = (a - 2r_i + r_j)/(3b)$ and $q_j = (a - 2r_j + r_i)/(3b)$. Thus, industry equilibrium in the product market at time t_1 depends on the terms of the loan commitment at time t_0. To see how the value of firm i depends on the loan commitment we substitute the expressions for q_i and q_j in the expression for π_i. This yields

$$\pi_i(r_i, r_j) = ((a - 2r_i + r_j)(a - 3r + r_i + r_j))/(9b).$$

From this expression one can determine the optimal r_i for each r_j. Differentiating the expression with respect to zero and solving for r_i we obtain the reaction function for firm I,

$$r_i = -r_j/4 + (6r - a)/4.$$

Note that each firm will prefer to take a loan commitment because it increases its output at the expense of the rival. We can derive a similar expression for r_j as a function of r_i. Nash equilibrium choices of r_i and r_j occur when the reaction functions intersect at $r_i = r_j = r^* = (6r - a)/5$.

It can be verified by direct calculation that the bank will supply the required loan commitment in return for a flat fee of $(r - r^*) \times (a - r^*)/(3b)$. In equilibrium each firm now produces $q = (a - r^*)/(3b)$, which exceeds the equilibrium output in the absence of loan commitments. This occurs because the lower marginal cost of financing makes each firm a more aggressive competitor.

The equilibrium of this simple model illustrates the following propositions. First, financial contracts can affect equilibrium in the product market by providing incentives for firms to act more aggressively. Second, it is individually rational for each firm to obtain loan commitments that guarantee loans at a rate below the spot rate r, thereby credibly committing itself to produce more than in the absence of loan commitments. Third, because in the new equilibrium each firm produces more than before, taken together the firms are worse off than in the absence of the loan commitments.

Conflicts of interest between debtholders and equity holders

The intuition that the firm's financial structure can commit it to advantageous product market strategies has been explored in contemporaneous contributions by BL and Maksimovic (1986). As a commitment device, debt has two important features. First, the payoff to debt holders is a function of the total value of the firm rather than the level of output. Second, the standard debt contract results in a transfer of ownership from one class of investors to another if the firm is insolvent.

The contingent transfer of ownership in bankruptcy is central for constructing leverage policies that credibly change industry equilibrium to the firm's advantage. In states that are favorable to the firm, the firm will be solvent and the residual cash flows will belong to the firm's equityholders. By contrast, in states of the world which are sufficiently unfavorable to the firm, the firm will be bankrupt. In this case the residual right to the firm's cash flows will belong to the debtholders. The key insight is that the agents controlling the firm's actions will chose output levels to maximize the expected profits in those states in which they are the residual owners of the firm and not the unconditional expected value of the firm. By altering the firm's financial structure, its equityholders can alter the states in which the transfer from themselves to debtholders will occur. Hence the firm's optimal output level will in general change as the firm's financial structure changes.

As in the model above, if the firm increases output as a result of changed incentives, its rivals may decrease their output in equilibrium. The reduction in the rivals' output, combined with the increase in the firm's output, may result in an increase in the value of the firm taken as a whole.

The firm increases output as a result of changed incentives if the output that maximizes expected profits only over the states in which the firm's equityholders retain control exceeds the output that maximizes expected profit over all states. In that case leverage provides incentives for the equityholders to increase output in excess of that of a profit maximizing all-equity firm.

The role of debt in affecting the states in which the firm maximizes profits can be seen by examining the firm's objective function in the BL model. They focus on the case of a Nash-Cournot duopoly in which firms use their output levels as strategic variables. In BL the product market is modeled at a high degree of abstraction. The operating profit (revenue minus variable costs) of firm i is $R^i(q_i, q_j, z_i)$, where q_i and q_j are the out-

puts of firms i and j respectively. The random variable z_i reflects the stochastic shocks to the operating profit and is distributed over an interval $[z_1, z_2]$. It is assumed that larger values of values of z_i denote a better state of the world (i.e., $R^i{}_z > 0$) and that R^i satisfies the usual properties relating output to operating profits, such as $R^{ii}{}_i < 0$ and $R^i{}_j < 0$. For most of the analysis Brander and Lewis also assume that $R^i{}_{iz} > 0$, so that a better state of the world is associated with higher marginal operating revenues.

The sequence of decisions is that first firms simultaneously choose a debt level, D_i. The equityholders of each firm then choose an output level, q_i to maximize the value of equity, taking the debt levels of both firms as given. Finally, uncertainty is resolved and cash flows are realized.

The debt levels are chosen initially by the owners of each firm so as to maximize the total value of the debt securities they sell and the expected value of equity. The expected total value of equity depends on the equilibrium values of q_i and q_j. These equilibrium values are the Nash strategies of the product market game between the firms and depend on the equityholders' payoff functions of both firms.

The key insight is that as the debt level of a firm changes, the equityholders' objective function changes. As a result, the equilibrium values of q_i and q_j change. Hence, it is possible to express the values of the firms as functions of the debt levels D_i and D_j and the interaction between firms as a game in which each firm's debt level is its strategic variable. BL characterize the equilibrium debt choices in this game.

The change in equityholders' incentives introduced by issuing debt can be seen by comparing the payoff function of the equityholders at the time that they choose the quantity produced with the value of the firm as a whole. After debt is issued, the value of equity is given by the expected value of the payoffs to equityholders, $R^i{}_i(q_i, q_j, z_i) - D_i$, over the range of z_i for which the firm is solvent, i.e., for values of z_i above the level z^* at which bankruptcy occurs, defined by $R^i{}_i(q_i, q_j, z_i^*) - D_i = 0$. This is contrasted with the value of the firm as a whole, the expected value of $R^i{}_i(q_i, q_j, z_i)$ over the entire range of z, $[z_1, z_2]$.

By varying the level of debt, the firm's owners can alter z^* and thus the equityholders' objective function at the time that the output is selected. Note that this introduces a conflict of interests between the firm's equityholders and debtholders. The rationale for the use of debt critically depends on this conflict of interests. It is precisely because the firm's equityholders do not take the value of the firm's debt into account that their new payoff function is credible.

Given debt levels, the equilibrium outputs are obtained by differentiating the expressions for the value of the levered firms equity for firm i and for firm j with respect to q_i and q_j respectively, equating them to zero, and solving the resulting first order conditions for output levels. The relation between a firm's debt level and the equilibrium outputs of the two firms can then be derived by totally differentiating the first order conditions and using Cramer's rule.

With some additional technical assumptions, an exogenous increase in a firm's debt level leads to an increase in its equilibrium output and a decrease in the equilibrium output of the rival firm. It can be shown that these considerations imply that in equilibrium

it is optimal for firms to have at least some debt in their financial structures.

BL provide a convincing rationale for the existence of a linkage between financial and product markets based on the intuition that changes in debt levels can commit a firm to a more aggressive product market strategy. However, it is a feature of their modeling approach that the product market is not modeled directly. Instead, it is described by a reduced form function $R^i{}_i(q_i, q_j, z_i)$. Signs of certain endogenous variables are assumed rather than derived from first principles.

While this has the advantage of making the model general, it leaves room for further research to characterize the parameter values for which the model holds in any particular application.

A key assumption for deriving the specific result is that leverage causes the firm's equityholders to be more aggressive and the rival's equityholders to be less aggressive. This is a fairly common assumption in the analysis of Cournot oligopolies. As pointed out by Sundaram & John (1992), it implies that the product market game are strategic substitutes in the sense of Bulow, Geanakoplos & Klemperer (1985). However, it is easy to come up with specifications of product market games in which this assumption is violated. In those cases leverage would not be advantageous for firms.

As is common in models of oligopoly, it is also assumed that the conditions for the equilibrium to exist are satisfied. This could be a problem in the application of the model to some industries because the usual existence theorems for oligopolistic games assume that the decision-maker's payoff function is concave in the strategic variable. It is not clear in the present context under what conditions the value of equity is concave in the quantity produced over the relevant ranges.

One of the models in Maksimovic (1986) also investigates the use of leverage to create a commitment in the product market. His approach is to introduce uncertainty into the framework of the loan commitment model discussed above by allowing demand to be either high or low. The level of demand is revealed only after the quantity produced is chosen and paid for by the equityholders.

For some parameter values the firm will produce more if the equityholders maximize profits in the high state only. However, if the firm has no debt the equityholders cannot credibly commit to produce only for the high state. The equityholders of a leveraged firm can commit to do so. By taking on a sufficiently large debt burden the firm will be bankrupt if the low state occurs. As a result, the equityholders of a sufficiently leveraged firm receive no profits in the low state and their commitment to maximize profits in the high state only is credible. Hence, leverage is a commitment device. Results about value dissipation similar to those derived in the loan commitment model then follow.

A conceptual issue in both BL and Maksimovic (1986) relates to the timing of the decision on the quantity to produce. In BL equityholders decide on the level of output before the state of the world is revealed, but production costs are paid only out of revenues. This timing sequence is important in determining the effect of leverage on incentives. It raises issues of limited liability. It is in general not possible for the original equityholders to commit the new owners of a bankrupt firm to pay for predetermined output

levels. If, as in Maksimovic (1986), production costs are paid by the firm's owners before the state of the world is revealed, then leverage may create incentives to decrease the level of output.

The papers reviewed so far in this section suggest that it may be optimal to create a conflict of interests between the firm's claimants because the conflict induces the firm's rivals to lower output. However, once the rivals are committed to their reduced output levels it would be optimal for the firm to revert to an all-equity structure and reduce its own output levels. Thus, there is an incipient tension between the profitability of committing to a high output level to induce the rival to reduce his output and an incentive to remove that conflict of interest.

If the firm is financed with public debt, so that a recapitalization is observable, then this incipient tension does not pose a difficulty for the model. However, the incentive to revert to an all-equity financial structure is a problem if the firm is private and if it tries to effect the commitment using private debt. In that case, the initial commitment could be undone secretly, and would therefore not be credible to rivals. For the commitment to be credible in this case, another imperfection that makes the reduction of leverage costly is required. One such case is explored in Fulghieri & Nagarajan (1992). In their model the firm's equityholders have proprietary information about the value of the firm. The lower the value of the firm, the greater is the equityholders' incentive to reduce leverage and to issue additional equity. This adverse selection problem makes it costly to undo the change in incentives from the increase in leverage. As a result, the initial commitment may be credible even if it can be reversed secretly.

Several papers have used the BL framework to explore the changes of financial structure on market equilibrium. Glazer (1994) analyzes the effect of a fixed level of long term debt on production incentives. With limited liability, the more valuable the firm's other assets, the less aggressively the firm will compete in the product market. Thus, a firm that makes and retains lower profits this year will be a more aggressive competitor next year than a firm that has made and retained higher profits. Glazer argues in this context, that rival's financial leverage may in some cases induce firms to be less aggressive competitors. The reason is that an increase in output today will not only lower market prices today but will lead to lower prices tomorrow as rivals react to their depleted bank accounts.

Brander & Lewis (1988) suggest that leverage may favorably alter the incentives of the firm's managers even if it does not create a conflict of interest. They show that there may be a commitment value of bankruptcy costs even when managers do not act only in the interest of the shareholders. To show this they introduce bankruptcy costs into a framework very similar to that of the BL model above. The main differences are that (i) the managers maximize the total value of the firm, and (ii) there is a cost of bankruptcy. The expected cost of bankruptcy is modeled by subtracting $BF(z^*)$ from the expected value of the firm, where B is the bankruptcy cost, $F(z)$ is the cumulative distribution of stochastic shock and, as before, z* is the level of the shock at which the firm becomes insolvent. Thus, in Brander & Lewis (1988) bankruptcy costs punish low profits. Interestingly, they

show that if B is a fixed cost, then the firm may become a more aggressive competitor as B increases.

Conflicts of interest between current and future investors

RS analyze the product-market incentives of a firm when the managers are interested in maximizing the expected value of a combination of future profits and the market price of the firm's stock in the short term. They show that if the two differ, then managers have an incentive to increase the market price of stock in the short term by manipulating output levels. The optimal manipulation depends on industry parameters and may result in an increase or decrease in the firm's output.

RS characterize parameters for which firms that adopt the objective of market price maximization become more aggressive competitors. In this case the firm's short term objective acts as a credible commitment to increase output. This commitment moves the industry to an equilibrium more advantageous to the firm. As a result, financial policies that induce managers to maximize short term stock price increase the value of the firm. However, as in all models in this section, if financial policies that promote aggressive competition are adopted by enough firms, the value of all firms in the industry declines.

As in many other models in corporate finance, investors have less information than managers of firms. The managers know the firm's output level but the investors do not. This asymmetry of information drives the difference between the stock price and the managers' expectation of future profits. However, the information structure of the RS model is somewhat unusual in corporate finance in that neither the managers nor the investors know the firm's true costs precisely.

Each firm's costs depend on four components unknown to managers or investors: a permanent and a temporary industry wide component and a permanent and temporary firm-specific component. Thus, firms' costs are correlated over time and across firms. Information about one firm's current costs improves estimates of its own and other firms' future costs.

The firm's stock price depends on the investors' estimate of both the absolute level of future costs and its future costs relative to the costs of rival firms. Since investors do not observe costs directly, they must infer them from the profits realized by all firms in the industry. This provides a potential incentive for each firm to vary its output so as to increase the stock market's assessment of its price. RS focus on the inference drawn by the stock market from observing the first period profits of rival firms relative to those of the firm. Two competing effects are involved.

Suppose, for example, that the rival firms' profits are high relative to those of the firm. The high profits of rival firms may lead the investors to conclude that the firm's costs are high compared to those of rival firms. If the market believes this, the price of the firm's shares will fall. Alternatively, investors may conclude that the industry wide costs are low. If this occurs, the price of the firm's shares will increase. If the first effect is stronger, then the firm will try to reduce its rivals' profits by increasing its own output.

If the second is stronger, then the firm will try to increase its rivals' profits by cutting its own output. In the former case the firm becomes a more aggressive competitor and its expected profits will increase in industry equilibrium. In the latter case it becomes a less aggressive competitor and its expected profits will decrease in industry equilibrium.

By altering its payout policy a firm can determine the extent to which it will need to go to the market at the end of the first period. Increased dependence on market financing increases firm value if increased concern with the stock price leads the firm to become a more aggressive competitor, i.e., if the first effect described above predominates. Similarly, if the second effect predominates, a smaller dependence on the market will make the firm more aggressive. As a result, the firm's payout policy is determined by the inferences investors draw from relative profits and is set to maximize the firm's incentive to produce.

5 The Exploitation by Competitors of Vulnerabilities Caused by External Financing

Corporate finance literature has devoted a great deal of attention to devising financial contracts to mitigate perceived agency problems within the firm. Less attention has been devoted to analyzing how contracts designed to mitigate specific conflicts of interest within the firm affect the firm's ability to compete in product markets. By contrast, many of the models that have focused on the effect of debt on product market competition have an opposite bias. They do not address the effect of financial policies designed to gain product market advantage on the firm's internal incentives. Relatively few contributions have considered both problems jointly.

One problem naturally arises when the firm's financial contracting problem and its product market are considered together: do solutions to firms' internal agency problems leave them open to aggressive competition or predation from rivals? If so, financial structures that mitigate conflicts of interest between different classes of investors may lower the value of the firm. This has important empirical consequences in view of the claims made for high leverage as a way of improving managers' incentives (e.g., Jensen, 1986).

Allen (1986) is an early contribution that addresses these issues. More recently Bolton & Scharfstein (1990) and Phillips (1993) show how rivals can exploit the conflicts of interest within the firm to deny it access to outside financing. Schleifer & Vishny (1992) (SV) analyze how financial structures designed to prevent managers from dissipating the firm's resources can in downturns impel the firm to liquidate its assets at loss.

Allen considers a two period duopoly where demand is stochastic. The two firms compete on an equal footing as Nash-Cournot duopolists in the first period. If neither of the firms becomes insolvent at the end of the first period, then they compete similarly in the second period. Similarly, if they both become insolvent, they both undergo costly reorganization between periods and compete on an equal basis in the second period.

However, if only one firm becomes insolvent, the process of reorganization causes it to set its second period output after its rival has done so. As a result of this strategic disadvantage, the firm is less profitable and its rival is more profitable than would otherwise be the case.

Allen considers a case where debt financing provides a corporate tax shield. Firms face a trade-off between increasing debt to take advantage of the tax shield and at the same time increasing the probability of bankruptcy and the associated strategic disadvantage in the second period. An equilibrium may then exist in which one firm adopts high leverage while the second firm foregoes the tax advantages of debt in order to increase the probability of strategic dominance in the second period.

In Allen's model the financial market imperfection that drives the trade-off arises from the costs of reorganizing a bankrupt firm's assets. Costly contracting at the point at which the firm initially tries to acquire assets in order to compete can also affect industry equilibrium. Bolton & Scharfstein (1990) bring out these issues is sharp relief. They analyze a model in which an initial solution to a firm's internal agency problem leaves it open to aggressive competition from rivals. They also consider how the contract between the firm and its investors can be amended to deter predation by rivals.

Bolton and Scharfstein model the firm's agency problem by assuming that only the firm and not outside investors observe profits in each period. As a result, the firm's owners have an incentive to under report profits, thereby keeping more for the firm's cash flow for themselves. If the incentive to misrepresent profits is not corrected, the firm will not be able to raise external financing. The firm's financial contract with investors is therefore designed to mitigate the conflict of interest between the firm and investors.

In the formal model two firms compete over two periods. To stay in business each firm incurs a fixed cost, F per period. One of the firm's can finance the investment of F internally, whereas the other firm must obtain funding from the capital market. Bolton and Scharfstein focus first on the latter firm and examine how financial contracts designed to mitigate agency problems of external financing can provide incentives for the rival firms to become a more aggressive competitor.

The optimal contract maximizes the expected profits of the investor subject to (i) an incentive compatibility constraint that the firm truthfully reveals profits at the end of the first period, (ii) limited liability constraints and (iii) the individual rationality constraint that the firm wishes to enter into the contract.

A key feature of this contract is that the firm is not funded in the second period if low profits are realized in the first period. This is to provide an incentive for the firm to reveal its information to its shareholders truthfully and not to hide profits. However, this provision also provides an incentive for a rival firm to become a more aggressive competitor in the first period by producing more than the profit maximizing output. By overproducing in the first period the internally financed rival firm can lower the profits of the outside financed firm, ensuring that outside investors will not finance operations in the second period. As a result, the internally financed firm will benefit from increased market power in the second period achieved by predation in the first period.

Bolton and Scharfstein consider how the contract between the cash constrained firm and investors can be amended to deter predation by the rival firm. The rival firm's incentive to predate in the first period is determined by the increase in the probability that the firm will not be funded in the second period if it reports a bad performance in the first period. If low reported profits in the first period do not significantly increase the probability that the funding is reduced, the rival firm's benefit from predation in the first period also decreases.

Deterring predation by making the funding in the second period less dependent on reported profits in the first period is in general costly to shareholders because it creates incentives for the firm to misrepresent the firm's profits to investors. Thus, the investor and the externally financed firm have a choice of either adopting the modified optimal contract that deters predation and is less efficient or of adopting the previously derived contract and accepting predation by the rival firm.

These results suggest that external financing may be costly for the firm by encouraging aggressive competition and reducing the likelihood that the firm will be able to obtain capital for its continuing its operations. Several strong assumptions are made in order to obtain these results so cleanly. For example, it is assumed that the investors can commit to enforceable choices at the beginning of the first period, that profits may be unobservable (or observable but unverifiable, so that contracts cannot be written contingent on the realized profits) and that the investors have all the bargaining power in determining the firm's financial contract. It is a strength of the analysis that the implications of the assumptions are discussed extensively and defended in the paper. Phillips (1993) also analyses the effect of another informational imperfection in the financial markets on product market competition. However, in contrast to Bolton and Scharfstein, in his model profits are observable and contracts drawn on the firm's cash flows are enforceable. Efficient financial contracting is impeded by an informational asymmetry between investors and the entrepreneur: Investors cannot observe the firm's profit potential at the time when the firm must invest in order to take advantage of a product market opportunity.

Phillips (1993) considers a game-theoretic model of oligopolistic competition. Firms have a two period horizon. They must make an investment at the end of the first period in order to stay in business in the second period. Phillips assumes that the investment project at the end of the first period can be financed either with the firm's internal cash or borrowed funds. The informational asymmetry between investors and the entrepreneur creates an incentive for the entrepreneur to borrow to invest even if the expected net present value of the project is negative. To resolve this adverse selection problem, optimal contracts between firms and investors will require some portion of the new investment to be financed by internal cash.

Because a firm that wants to invest is required to partially finance the project internally, the amount of cash that the firm has on hand at the end of the first period is a critical variable. This creates incentives for a rival producer to compete more aggressively in the first period, thereby depleting the firm's cash reserves and forcing it to forego the

investment. The rival producer benefits from the resulting reduction in competition.

The strength of the incentive to predate in the first period depends on the firm's initial financial structure in the first period. If the firm enters the first period with very little debt, then the cost to a rival producer of depleting the firm's resources sufficiently to prevent it from investing is very high. On the other hand, if the firm enters the first period with high leverage, then the rival producer may be able to drive it out at little cost.

Phillips (1993) derives equilibrium financial structures of firms in both periods and equilibrium product market strategies. His model predicts that firms with good second period profit potential have low leverage in the first period. This financial structure deters predation. Interestingly, firms with low second period profit potential may adopt very high leverage. The high level of leverage makes it impossible for them to obtain sufficient loans for new investment at the end of the first period. Accordingly, it commits them to exiting the industry at the end of the first period, depriving rival producers of any incentive to predate. Phillips also explores a case in which firms with good second period profit potential have an incentive to adopt high leverage. In that equilibrium product market high quality firms have an incentive to show that they will not invest in the future.

SV explore a different trade-off: between financial structures that are designed to avoid agency problems within the firm, and the value of the firm's assets if the firm is liquidated due to financial distress. The agency problem that they are interested in is the manager's incentive to use the firm's cash surplus on projects that do not benefit the shareholders. This incentive may be avoided in some cases by a financial structure that combines short-term and long-term debt.

As discussed by Hart (1991), short-term debt forces the firm to go to the capital market for investment funds. Long-term debt creates a debt-overhang that limits the managers' ability to finance the undesirable projects by borrowing.

Highly leveraged financial structures that reduce the manager's discretion to undertake undesirable investments when the firm has surplus cash may also expose it to financial distress in market downturns. This is not a concern if the liquidation value of the firm's assets equals the value of the firm. The firm's assets can simply be sold and the proceeds paid out to securityholders.

The key claim in SV is that any firm's assets are worth more to industry insiders than to outside investors. Insiders, such as rival producers, have superior information about the value of a firm's assets. Often they have specialized skills necessary to exploit the assets optimally. Thus, if a firm is to be liquidated it may be worth more to an industry insider than to an outside investor.

The comparative advantage of insiders for running firms in an industry has implications for financial structure choice. If all firms in an industry adopt highly leveraged financial structures, then it is likely that all firms will be in financial distress at the same time. As a result, the assets of distressed firms will be purchased by outsiders. Since outsiders cannot operate the assets as well as insiders, the price obtained in these sales should be less than the value that the sellers could have realized by continuing to oper-

ate the asset. This difference is a loss that can be attributed to forced sales of assets that result from the choice of a financial structure designed to prevent managers from undertaking unprofitable investments in good times.

The trade-off between agency costs and loss of value in liquidation can be used to generate predictions about financial choices of firms in an industry. SV discuss numerous scenarios and their dependence on parameter values. For example, in a duopoly, one firm may adopt a highly leveraged financial structure. This prevents unprofitable investments in good times but leads to losses when assets are liquidated in downturns. The second firm may instead choose low leverage. By doing so it positions itself to acquire assets of the distressed firm in a downturn. However, this option is may be costly because low leverage permits the manager to waste cash when the firm is profitable.

More generally, the SV suggest that optimal debt levels are limited by asset illiquidity. SV partially attribute the increases in leverage in the 1980s to an increase in liquidity of the market for corporate divisions. They see the increase as having been driven both by exogenous factors such as relaxed antitrust enforcement and an influx of foreign buyers, and as having been partially self-reinforcing.

6 Measuring the Identified Effects

The preceding sections suggest several mechanisms by which financial structure could affect product market equilibrium. It is therefore important to sort out which, if any, of these mechanisms can explain financial and product market decisions in specific product market environments. In this section we describe three contributions that have attempted to do this: Titman & Wessels (1988) (TW), Chevalier (1994a,b) and Phillips (1995). We begin our examination with a recent paper by Mackay and Phillips (2002). This paper is the most comprehensive study to date to empirically characterize the relation between capital structure and industry characteristics.

Using a large sample of Compustat data, Mackay and Phillips (2002) begin their analysis by tracing the sources of variation in capital structures of firms. They find that in competitive industries about 20% of the variation in firms' capital structures can be explained by knowing the industry in which the firm operates. However, about 60% of the differences in the sample are explained by firm-level factors. For concentrated industries their data shows that slightly less, approximately 50%, of the variation is explainable by firm-level factors. The relative importance of firm-level factors leads Mackay and Phillips to conclude that industry equilibrium models of the type explored by Maksimovic and Zechner (1991) or Williams (1995), which predict heterogeneity of capital structures within industries, fit the data better than models of strategic interaction.

The industry equilibrium models suggest that there exists a relation between the choice of technology by firms and the firms' capital structure and risk. Specifically, Maksimovic and Zechner (1991) show that firms that deviate from the most commonly

used technology in an industry are both riskier and optimally most highly levered. Williams (1995) argues that large, capital intensive firms are also most highly levered.

To test these propositions Mackay and Phillips estimate the median capital-labor ratio in each manufacturing industry in their Compustat sample. They show that, as suggested by Maksimovic and Phillips, the greater the riskiness of a firm's cash flows the greater the deviation of its capital-labor ratio from the industry's median capital-labor ratio. Such firms also have more leverage.

Mackay and Phillips (2002) is also interesting from a methodological point of view. They use a sophisticated Generalized Method of Moments estimator to simultaneously estimate the interaction of leverage, riskiness, and the firm's choice of capital-labor ratio. This methodology enables them to uncover relations that are not observable using the standard Ordinary Least Squares methodology, which is subject to simultaneity in their context.

Of the models reviewed in this paper perhaps the easiest to test empirically are Titman's (1984) model of the indirect costs of bankruptcy. Because this model focuses on the transaction between the firm and customers it does not require the specification of an econometric model of industry equilibrium or the analysis of interactions between firms. Instead, much can be learned by regressing the firm's leverage on measures of the costs that firms can impose on customers by liquidating or by breaking implicit contracts.

One paper that includes variables measuring these costs in a more extensive study of capital structure choice is TW. TW begin by specifying eight determinants of firms' financial structure choice. We focus on one of these hypothesized determinants: the extent to which the firm produces unique products or its 'uniqueness'. Following Titman (1984), they argue that the cost borne by customers when a firm liquidates is positively related to 'uniqueness'. Hence, firms that produce 'unique' products should have lower leverage than firms that do not.

In addition to 'uniqueness' the other determinants explored by TW are the collateral value of assets, nondebt tax shields, growth, industry classification, firm size, volatility of earnings and profitability. TW use six measures of capital structures: ratios of long-term, short-term and convertible debt to market value and book value of equity.

There do not exist direct measures of some of the determinants of capital structure identified by TW. Instead, they assume that there exists a linear relationship between the unobserved determinants and fifteen observed indicators or firm characteristics. This assumption permits some of the indicators to be related to more than one determinant. For example, TW assume that a firm's 'uniqueness' is measured by an unknown linear function of the ratio of the firm's R&D expenditures to sales, the ratio of sales expenditures to sales and the proportion of the industry's total workforce that voluntarily quits its job in the sample year.

TW estimate equations (1) and (2) using LISREL on a single cross-section of 469 firms from the Compustat annual file using data from 1974-1982. By using LISREL, TW are able to estimate the coefficients of using observed indicators x instead of the unobserved determinants they specify.

TW find that both the ratio of long-term and short-term debt to equity are negatively related to 'uniqueness'. This relationship holds both when equity is measured as book value and when it is measured at market value. It also appears stronger than other, more traditional determinants of financial structure. TW interpret this finding as providing support for Titman's (1984) model discussed in Section 3 above

In contrast to Titman (1984), in most models reviewed in this chapter both debt levels and product market interactions between firms are endogenously determined. As a result of this added complexity, it is often possible to obtain very different predictions about the covariation between debt and competitive levels as the values of the exogenous variables change. General tests of these models call for a structural estimation approach in which both output and financial structures are endogenous. Unfortunately, such structural models at the industry level would be difficult to estimate and have not been attempted. Instead, researchers have attempted to obtain evidence on the links between financial structure choices and product market interactions by tracing out the product market consequences of significant recapitalizations in several industries. Phillips (1995) and Chevalier (1994a, b) represent alternative approaches to this problem.

Phillips (1995) examines the association between financial structure and industry output in four industries: fiberglass, tractor trailer, polyethylene and gypsum. These industries were chosen because in each the largest firms used leveraged recapitalizations to increase debt ratios by at least twenty five percent. In each industry the largest four firms have a high market share. The first three industries are relatively concentrated. Gypsum differs from the industries in the sample because the minimum efficient scale is small relative to the size of the market and there are few barriers to entry.

Phillips (1995) finds that in all cases except gypsum the major firms that increased leverage either lost market share or did not increase their market share when other firms exited the industry. Instead, in these industries the firms that recapitalized experienced sales decreases, but operating margins increases. In gypsum these results are reversed.

Phillips also investigates whether the debt level in the industry affects the intensity of competition using output and cost data for each industry. His approach is based on Porter (1983b) and Bresnahan (1989). The starting point is the observation that the difference between the price p and marginal cost is an indicator of the intensity of competition. In a perfectly competitive industry p = marginal cost. More generally, in a Cournot-Nash oligopoly where demand and cost function satisfy certain aggregation conditions, the price of output is equal to marginal cost, discounted by a term that depends on the level of competition in the industry. Phillips uses this relation to test whether a firm's leverage affects the size of this discount. For each industry this relation is jointly estimated with the industry demand function on monthly data over the period 1980-1990 using two-stage least squares.

Phillips finds that in all the industries with the exception of gypsum the average industry debt ratio is positively correlated with industry price and negatively correlated with industry supply. In the gypsum industry the reverse occurs — high leverage is associated with intensified competition. Phillips attributes this contrast to differences in

industry structure: the gypsum industry is more fragmented and has lower barriers of entry than the other industries in his sample.

Chevalier (1994a, b) also examines the relationship between market structure and industry pricing following leveraged buyouts (LBOs). In contrast to Phillips, she focuses on a shorter time period (1985-1988) and one industry — super-markets — in which firms interact in many local submarkets. This approach has the advantage of generating multiple observations from one industry and thereby controlling for shifts in demand or firms' production functions without specifying parametric forms. The approach has a potential disadvantage in that the observations in the approximately eighty submarkets in her sample may not be independent, making cross-sectional comparisons more difficult to interpret.

Chevalier finds that LBOs are good news for rival firms. When a LBO is announced rival supermarket chains that share some of the local markets with the firm undergoing the LBO experience a significant positive share price response. She also examines supermarket prices in local markets in which one of the participating supermarket chains has undergone a LBO. Chevalier finds price decreases in local markets in which rival firms have not undergone LBOs and one of the rivals has a large market share. She finds that price increases are likely if some rival firms have undergone LBOs and if there does not a rival that has undergone an LBO and has a large market share.

Chevalier (1994a,b) and Phillips (1994) are important both for the evidence they provide about the relationship between leveraged recapitalizations and market competition and because they adopt innovative approaches to estimating that relationship. What is not yet clear is whether their findings on the relationship between leverage and competition can be generalized or are specific to industries that undergo leveraged recapitalizations. The latter might occur if the factors that make the industry attractive for leveraged recapitalizations also directly affect industry equilibrium. Equally important, leveraged recapitalizations are frequently accompanied by changes in incentives that cannot be measured by changes in leverage and that are specifically intended to reduce the conflicts of interest between the equityholders and debtholders. Such changes in incentives are difficult to quantify but are at the heart of agency models

7 Conclusion

In this report we considered how a firm that wishes to maximize its market value by being a strong competitor chooses its capital structure. There are two schools of thought, which we can call "Solid-financial-footing" and "Debt-makes-you-tough". Solid-financial-footing argues that low levels of debt are optimal because they ensure that firms have the financial flexibility to respond to competitive challenges of the market place. Debt-makes-you-tough argues that leverage sharpens incentives and makes firms stronger competitors. In order to analyze these two possibilities we traced out several mechanisms that

can cause debt levels to affect the firms' competitive strategy. Our analysis suggests several conclusions.

First, the risk associated with any degree of leverage depends on the whether the firm's business strategy and technology are typical for their industry or whether they are atypical. If the firm is typical for its industry, then it is likely to be partially hedged against operational risks because its revenues and costs are likely to be correlated. By contrast, a firm that adopts an atypical strategy or technology is exposed to the risk of having high costs when the majority of its competitors face low costs. As a result, the competitive strategies of firms that adopt atypical strategies or technologies are more sensitive to the effects of high leverage.

Second, financial stability directly affects a firm's ability to credibly commit to a competitive strategy. Thus, a firm that is financially stable can more credibly commit to maintain quality of its output, to fulfill its contractual obligations and to abide by implicit agreements with rivals. Such commitments create value. They are likely to be most valuable in industries with excess capacity, declining industries, cyclical industries and industries that produce durable goods. Thus, in these industries 'Solid-financial-footing' strategies are likely to be winning strategies.

Third, at sufficiently high levels of leverage, debt serves to shorten the horizons of managers and equityholders and create incentives for a firm to compete aggressively. This incentive to compete aggressively using borrowed capital can be tactically advantageous for a firm if it causes rivals to pull back. As a result, each firm acting independently may have an incentive to increase leverage. However, if several firms in an industry do this, the net result may be to create overcapacity and to lower profits in the industry. Such a situation may arise, for example, in the telecommunications industry when firms bid too aggressively in government auctions using borrowed capital. This type of problem is most likely to arise in profitable capital intensive industries with growth potential.

Fourth, debt is sometimes used as commitment device within firms to motivate managers and workers to increase efficiency. Empirical evidence in the US shows that debt is very effective in cutting waste in industries that generate free cash flow but limited moderate growth potential and limited investment opportunities. However, evidence from leveraged recapitalizations in the US also shows that firms that adopt this approach are very vulnerable to aggressive competition from potential rivals. For example, in the US highly leveraged incumbents were very vulnerable to the incursions into their market areas of Wal-Mart, a low cost discounter.

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Corporate Finance in Europe: A Survey

by Dirk Brounen, Abe de Jong and Kees Koedijk

1 Introduction

Over the last century academics from around the globe have worked on postulating models and theories enabling firms to enhance the efficiency of their financial management operations. Nobel price winning concepts like the capital asset pricing model and capital structure theorems have been praised and taught in class rooms, but to what extent these celebrated notions have also found their way into corporate board rooms remains somewhat opaque. In this paper we attempt to narrow the gap between scientists and professionals by conducting a survey on how professionals deal with different dilemmas within modern financial management. We measure the extent to which theoretical concepts have been adopted by professionals from a wide range of firms from the U.K., the Netherlands, Germany, and France. We also compare our results with the previous findings of Graham and Harvey (2001) for a similar sample of U.S. firms.

Recent studies have documented fundamental differences between the financial markets and systems when comparing the United States with Europe. La Porta *et al.* (1997, 1998) focus on the underlying disparities between the legal systems encompassing both continents. Their results show how common law and civil law countries diverge with respect to protecting investors and thereby causing significant distinctions between both financial markets. Rajan and Zingales (2003) stress the continental differences by comparing the polar forms of financial systems: the institution-heavy relationship-based, more prevalent in Europe, and the market-intensive arm's-length, more prevalent in the United States. Although the European market appears to be switching to the arms'-length system, compelling variations between both continental financing policies remain. Finally, from a corporate governance perspective, Chew (1997) shows how the Anglo-Saxon marked-based corporate governance system differs significantly from the relation-based or insider system, which is most widespread in Europe. In this study we also investigate the effect of the corporate governance system on an individual firm level and include this important issue in our overall analysis of European corporate finance practices. The recent stream of literature tends to infer a similar conclusion; the U.S. and the European financial markets and firms differ considerably. We contribute to the debate by comparing the corporate finance practice of individual firms in both continental markets. We test whether the apparent differences in institutional settings translate into significantly different financial management practices.

In order to confront theory with the behaviour of financial managers in practice we apply survey research. We analyse a wide range of corporate finance issues, ranging from capital budgeting techniques to capital structure, and corporate governance, which allows us to link the different issues and thereby deepen our analysis. Furthermore, we

analyze the responses in our survey conditional on firm specific characteristics. This enables us to test whether these factors drive the results. We sample a cross-section of 6,500 companies from the U.K., the Netherlands, France, and Germany. We collected 313 responses creating a sample size, which represents the second largest survey sample in the financial literature.[1] Survey research is relatively rare within the empirical corporate finance literature, where most studies are based on large samples of financial observations. Although these large samples offer cross-sectional variations and the statistical power to analyze these variations, they are hampered with respect to the specification and are limited to dealing with quantifiable issues. In our survey approach we use a relatively large sample combined with the ability to ask qualitative questions. Besides these opportunities, survey research is associated with some limitations. We measure beliefs rather than actions and therefore we might be confronted with respondence biases. We carefully take this drawback into consideration when composing our samples and constructing our questionnaire, such that this bias will be limited to the minimum. Although this type of field studies is rare, some path-breaking studies have preceded our endeavour.[2] However, the vast majority of the available financial field studies focuses on large U.S. firms and often is concerned with just one specific corporate finance issue at a time.

Recently Graham and Harvey (2001) have presented survey results for the U.S., while Bancel and Mittoo (2003) surveyed European CFOs on their corporate debt policy. The sample of U.S. firms of Graham and Harvey contains 392 observations, while the Bancel and Mittoo study on capital structure covers 87 observations from 16 countries. Our study contains 313 observations for 4 European countries. Our study enriches the existing literature in three manners. Firstly, by employing an international sample we are able to assess whether existing insights on corporate finance practices also hold outside the U.S. Here we broaden the scope of Bancel and Mittoo (2003) by including questions on capital budgeting and cost of capital. Secondly, we incorporate new questions, which address the corporate governance policy of firms. This enables us to investigate whether corporate governance differences influence the way in which firms organize their financial management. We improve on the approach of Bancel and Mittoo, who classify the countries into four legal systems, based on La Porta *et al.* (1997, 1998). Because we obtained the individual firm's degree of shareholder orientation, we are able to sophisticate the analysis of the impact of corporate governance. Finally, we extend the existing literature by applying multivariate regression analysis in order to explain the cross-sectional variation in corporate finance practices. The multivariate regressions offer a better explanation of the responses than uni-variate comparisons, because we can measure the effect of a variable conditional on the influence of others. This approach enables us to test whether country effects or firm characteristics dominate the explanation of corporate financial management policies.

1 The Graham and Harvey (2001) study analyses a sample of 392 U.S. CFOs, the second largest published survey by our knowledge was by Moore and Reichert (1983) containing data on 298 large firms from the U.S. A recent survey by Brav et al. (2003) on payout policy in the U.S. includes 384 respondents.

2 The most famous survey study in the recent financial literature is by Graham and Harvey (2001), a paper, which was awarded the Jensen Price for the best paper published in the Journal of Financial Economics in 2001. Other seminal survey papers in the field of corporate finance are Lintner (1956) and Billingsley and Smith (1996).

Our results with respect to capital budgeting show that European firms are still remarkably keen on applying the payback criterion, instead of discounting their cash flows using the internal rate of return or the net present value. Alike their U.S. colleagues, European CFOs determine their cost of capital using the CAPM, rather than applying arithmetic average historic returns or the dividend discount model. Overall we notice that firm size is positively related to the use of discounted cash flow methodology, the application of CAPM and maintaining a target debt ratio. Smaller firms, and firms oriented less towards maximizing shareholder value are more likely to evaluate their investment opportunities using the payback period criterion and set their cost of capital on whatever their investors tell them. Finally, concerning capital structure we find low disparities between corporate debt policies. In all four national samples respondents report financial flexibility to be the key factor when determining their debt structure, a result which corroborates previous studies from the U.S. Our main results show that corporate financial management practices are predominantly determined by firm size, to a lesser extent by shareholder orientation, and much less by country of origin.

The paper is organized as follows. In the next section, we present the sample collection procedures and sample statistics. Section three offers a comprehensive overview of our results on capital budgeting. Section four deals with the common practice regarding the cost of capital, while section five focuses on our results on capital structure. Finally we offer concluding remarks in section six. Appendix A describes additional results and Appendix B contains our survey.

2. Data and methodology

2.1. Sample collection procedures

Our survey includes four groups of questions. First, we include several questions to describe the firm and its CEO. Second pose questions on capital budgeting techniques. Third, we investigate cost of capital estimations and continue our analysis by focusing on capital structure policy. Finally, we conclude our questionnaire by asking firms about their goals and their perception of the importance of different stakeholders. The starting point for our questionnaire is the survey of Graham and Harvey (2001). In order to facilitate a fair comparison of both sets of survey results, we ask exactly the same questions. In addition we add questions on the firm's goals and stakeholders.

We first prepared the survey to be send to firms in the U.K., the Netherlands, Germany and France. First, the survey of Graham and Harvey (2001) has been translated into German and French by a certified translation agency and into Dutch by the authors. Next, in order to test whether the translations were correct and whether the wording was understood, we conducted several interviews in each of the four countries. In these interviews potential respondents first filled in the questionnaire, and discussed each question

afterwards. We learned that the average time to fill out the questionnaire was about 15 minutes. We adjusted some of the wording and added brief explanations, based on the interviewees' feedback.

We use the Amadeus dataset of Bureau Van Dijk as our sample universe, which covers public and private firms in Europe. From this database we selected all firms with 25 or more employees. In addition we use the Kompass database with names and positions of the high-ranked officials. We search for the name of the CFO in the Kompass data for each firm in the Amadeus data. Our goal is to select 2000 firms in the U.K., Germany and France, and 500 firms in the Netherlands. We first select all public firms in each country. Then we select all private firms of which we know the name of the CFO. Finally, we complement our sample sets with randomly chosen private firms.

The questionnaire was set out by a third party, ensuring that the results are handled anonymously, thereby stimulating the respondents to answer our questions frankly. In the period of November 1 to 8, 2002 the questionnaires were sent by mail to the sample firms. Each firm received a cover letter, the four-page questionnaire, a pre-stamped envelop and a response form to request a free report of the results. The latter serves as an incentive to fill in the questionnaire. The respondents were offered the opportunity to return their form both by mail or by fax. About two weeks after the firms have received the questionnaire all non-respondents were contacted by phone by native speakers, reminding them to return the questionnaire. During the phone conversation the respondents could go through the questions over the phone immediately or receive a link to a web page for filling in the questionnaire by email. This telephonic and email effort lasted until January 7, 2003 and we received our last response on January 30, 2003. The English text of the survey is included as Appendix B.

In total, we received 313 responses, 68 in the U.K., 52 in the Netherlands, 132 in Germany and 61 in France. We received 50.5% of the questionnaires by mail or fax, 19.2% by telephonic interviews and 30.3% through the web page. We analysed our results with regard to potential response biases, which threat survey research.[3] Overall we find that our sample is representative of the overall universe of firms and we detect only a small variation in answers based on the response technique. The overall response rate is 5%, which is somewhat lower than studies like Trahan and Gitman (1995) and Graham and Harvey (2001), which obtained a 12% and 9% response rate respectively. However, given the length and depth of our questionnaire and the vast size of our sample we feel confident when analysing our results.

3 We performed several experiments in order find out whether our results are affected by non-response bias. First we clustered our results along the way in which the responses have been received (mail or fax, telephone and internet) and analysed both the average responses and the distributions within each cluster. On a 5% significance level we reported a significant difference in means across clusters for only 19 out of the 133 questions and statements, which are included in our survey. Furthermore we follow the example of Moore and Reichert (1983) by comparing characteristics like firm size, industrial distribution, and public status of the responding firms to the population at large. Again we find no statistically significant differences between the two groups on a 5% confidence level and therefore we may consider our sample to be representing the population.

2.2. Corporate governance characteristics

La Porta *et al.* (1998) describe institutional details for 49 different countries, including the five countries, which are part of our study. Their results clearly show that external capital is most important in the U.S., U.K. and the Netherlands. The importance of the capital markets in the U.S. and U.K. is further stressed by the large number of listed firms and IPOs per million inhabitants. Furthermore, La Porta *et al.* (1998) report cross-national statistics on the power of shareholders and creditors, using a anti-director index. This anti-director index measures the power of shareholders, which is much higher in the Anglo-Saxon countries. Finally, creditor rights also differ substantially across countries in our sample and illustrate the large variation in institutional settings.

In order to incorporate these fundamental differences in national market characteristics properly, we included questions on corporate governance, i.e. important stakeholders and company goals. By doing so we test whether the individual firms in our sample reflect the institutional variations presented in La Porta *et al.* (1998) and we can control for these variations in our further analysis. First we ask our respondents which goals their companies aim to achieve. Panel A of Figure 1 clearly shows that in all countries firms aim at maximizing their profits, sustainable growth, and market position, while leverage and dividends are associated with lower priorities. The most prominent distinction is reported with respect to the goal of maximizing shareholder wealth. While Dutch and British firms declare to consider shareholder wealth as one of their top priorities, French and German firms consider this goal even less important than optimising their leverage. In order to extend our analysis on this phenomenon we asked an additional question regarding stakeholder importance. The outcomes, which are presented in Panel B, exhibit the typical pattern in which customers are regarded most important in each country. Regarding shareholder and bondholder importance the results are more scattered and clearly show that firms in the U.K. and the Netherlands consider their supplier of capital to be much more important than their colleagues from France and Germany. [4] French and German firms consider the general public to be more important to them than their financiers.

2.3. Firm statistics

Figure 2 presents summary information on the characteristics of the firms in our European samples and compares these with the U.S. firms of Graham and Harvey (2001). The companies in our European sample are smaller on average compared to the U.S. firms of Graham and Harvey. While 51% of all firms in their U.S. sample have sales exceeding 500 million U.S. dollars, this number is less than 25% in each European sample. In the subsequent analysis we refer to firms with sales exceeding 1 billion U.S. dol-

4 We also investigated the relatively high fractions of private firms in the French and German samples (88% and 77% respectively). This potentially explains the lower scores on shareholder orientation in Germany and France. However, additional unreported analysis shows that the scores on the importance of shareholders for public firms is 2.63 in Germany and 1.43 in France, while the UK and the Netherlands score 3.38 and 3.10.

lars as 'large firms'. Regarding the portion of foreign sales we observe the opposite disparity. This component exceeds a quarter of total sales for at least 40% of each European sample, while U.S. firms exhibited remarkably lower involvement in foreign sales. The distribution across industry types is rather similar in all countries with most firms belonging to manufacturing in each sample. Like Graham and Harvey we document that non-manufacturing firms are spread evenly across other industries in our European samples. With respect to the price-earnings ratios we document slighter lower average values for our European sample. Whereas only 40% of the U.S. firms reported a price-earnings ratio below 15, our European firms reported this response more frequently ranging between 56% in France to 67% in Germany. This result, however, needs to be handled with care given the time difference between both surveys.

Panels E to G of Figure 2 display information concerning corporate debt policy. The longterm debt ratios show that about a quarter of the firms in the U.K. and France posses no long-term debt at all. These firms are financed completely with equity and short-term liabilities. The German firms are over-represented in the 10-19% interval, while many Dutch firms are in the 20-29% interval. Subsequently, we define low levered firms as firms with leverage below 30%, while highly levered firms have a debt ratio above 30%. The fractions of firms with low and high leverage are hardly different between the countries. The only exception is France, which is under-represented in the highest interval. This international pattern in leverage complies with previous studies of Rajan and Zingales (1995) and De Bondt (1998), who documented similar national differences and explained them by emphasizing the institutional differences and the importance of indirect credit markets. Regarding the presence of a target debt ratio, Panel F shows lower values for our European samples compared to previous U.S. results. 65% of the firms in the French sample report to have no debt target. We have split up our samples along target ratios and refer to firms, which declared to have flexible, strict or tight target ratio, as 'target ratio' in the subsequent analysis. The percentage of firms that considered issuing equity differs substantially between the three countries with relatively better developed public capital markets (U.S., U.K. and Netherlands) and the other countries. The percentage of firms that considered issuing debt is quite similar. The only exception is the low percentage of German firms considering a convertible debt issue.

The next component of our summary statistics concerns the CEOs background. On average, our results indicate that European CEOs in our sample are slightly younger than their U.S. colleagues. Regarding their tenure the variation is less compelling. The most remarkable result regarding tenure stems from France, where CEOs appear to stay with their firms for significantly longer time periods than their colleagues from other markets.[5] Concerning the level of education of the surveyed CEOs our results show comparable patterns. Compared to their U.S. colleagues a smaller portion of our European CEOs quit their studies after their undergraduate, and slightly higher portion has

5 The French sample has a relatively high fraction of private firms, which may explain the longer tenures in France. Additional unreported analysis shows that the percentages of CEOs with the maximum tenure in public firms is 57% in France and respectively 32%, 31%, 24% and 17% in the US, UK, Netherlands and Germany. We therefore conclude that this result is not driven by the high fraction of private firms.

acquired an MBA masters, except for the U.K where MBAs are rare. Finally, when it comes to executive stock ownership our results show very little evidence for cross-national patterns. In each sample the vast majority of firms responded that their executives own less than 5% of the firms' shares.

Finally, we gathered some summary statistics regarding the public or private status of the company, the dividend policy, and credit rating, of which the key results are presented in Panel A of Table 1. Like the U.S. firms in Graham and Harvey's study, most of our European firms are not utilities, pay dividends, and have an investment grade rating. The most remarkable difference is that contrary to the U.S. firms our European firms are mostly private, although the difference in distribution is still relatively small.

3. Capital budgeting techniques

3.1. Design

This section examines the way in which European firms evaluate investment projects. We carefully consider the underlying firm characteristics in order to link the results to differences in, for example, firm size and CEO education. In line with Graham and Harvey (2001) we include a wide variety of capital budgeting techniques, including discounted cash flow techniques like; the IRR, the NPV, the adjusted present value (see Brealey and Myers, 2003), the discounted payback period, the profitability index, and hurdle rates next to simple price earning multiples, book rates of return and more advanced methods like sensitivity analysis, real options and value at risk. 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) and we display the main results in Table 2.

3.2. Results

Most European respondents select payback period as their most frequently used capital budgeting technique. In the U.K., the Netherlands, Germany and France respectively 69.2%, 64.7%, 50.0% and 50.9% of CFOs use the payback period as their favorite tool. Of the U.S. firms of Graham and Harvey 56.7% declared to be using this payback rule, but there it came in only as third most popular tool after the internal rate of return and the net present value. In Europe the payback period criterion is immediately followed by the net present value and internal rate of return methods. In the U.K., the Netherlands, Germany and France respectively 53.1%, 56.0 %, 42.2% and 44.1% of all CFOs use the internal rate of return method while 47.0%, 70.0% 47.6% and 35.1% of all CFOs in these countries rely on the net present value method.

The relative popularity of the payback period in Europe is surprising, because financial textbooks have discussed the shortcomings of the payback criterion for many

decades. As is well known the payback ignores the time value of money and cash flows beyond the cut-off date. It is sometimes 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 firms will cease the operation and therefore can not receive positive cash flows that occur in the distant future. We do not find any evidence to support this claim. When taking firm characteristics into account we notice that the use of the pay-back criterion is more popular among smaller firms (except for the U.K.) and among firms with management belonging to the highest age cluster. The pay-back criterion is more popular among private companies than among public corporations. The NPV is used significantly more often by large firms and by firms, managed by a CEO with an MBA (except for the U.K.). Here we also might find an explanation for the difference between our European results and the U.S. outcomes of Graham and Harvey, since we already noted that our European firms tend to be somewhat smaller on average. When accounting for cross-sectional variation in shareholder orientation, we find that firms that reported to maximize shareholder value are also the firms that prefer to use discounting techniques instead of the plain payback criterion.[6] Theory shows that this indeed enhances shareholder wealth.

4. Cost of capital

4.1. Results

The first question we asked regarding cost of capital is whether firms compute this cost explicitly. The response to this question exhibits a very limited cross-national variation, i.e. 64% in the U.S., 57% in the U.K., 60% in the Netherlands, 59% in France, and 53% in Germany.

We continue our analysis by focusing on the firms, which responded positively, by first asking them how they compute their cost of capital. We explore whether firms use the capital asset pricing model (CAPM), a multi-beta CAPM (with extra risk factors in addition to the market beta), average historical returns, a dividend discount model, or whether they simply apply the average historic return on common stocks or whatever their investors tell them they require. The results in Table 3 indicate that the CAPM is the most popular method of estimating the cost of equity capital in Europe: in the U.K., Netherlands, Germany and France, 47.1%, 55.6%, 34%, and 45.2% of CFOs relies on the CAPM for estimating the cost of equity. Although the CAPM is a popular method in Europe, our results also show that this popularity is low compared to the U.S. Graham and Harvey (2001) report that almost 73.5% of U.S. CFOs relies to some extent on the CAPM when estimating the cost of equity capital. In Europe, this percentage is considerably lower and equals around 45% on average. In line with the U.S. results, the second

6 We analyse sample splits based on several firm characteristics. In Tables 2 and 5 we present the results for size and CEO education, other split ups are displayed in Appendix A.

and third popular methods for the European countries are respectively the use of average historical returns and the use of some version of a multi-beta CAPM. Again the percentages for the European countries are substantially lower. The differences between the U.S. results and the Netherlands, German and French results are especially remarkable. A sound explanation for this discrepancy might be the public or private status of a firm. In our cross-sectional analysis we find that in each national sample public firms are more likely to use the CAPM for deriving their cost of capital while private firms use whatever their investors tell them. This difference is rational, since public firms have stock prices at their disposal, which they will need to run the CAPM properly. Due to the absence of public stock returns, private firms prefer to use whatever investors tell them when discounting their cash flows. In the Netherlands, Germany and France the percentages for this category vary between 44.8%, 39.2% and 34.4%. In the Netherlands and France this method is the second most popular after the CAPM. In Germany this category is even the most popular method and outperforms the CAPM as method for obtaining an estimate for the cost of capital. When considering the underlying firm characteristics we notice that CAPM is consistently more popular among large firms, and among firms with relatively high proportions of foreign sales. The same holds for the more advanced CAPM alternatives in which additional risk factors are included, this too is used mostly by large companies and by firms with relatively high leverage. This indicates that large, public firms are more inclined to apply more sophisticated techniques when setting their cost of capital, whereas small firms rely on rules of thumb. This difference, however, is not a result of a lack of familiarity with the theoretical concepts, since there appears to be no relationship between the age and education of the CEO and the use of theoretical tools like the CAPM. If any, the relationship between the use of CAPM, the firm and the CEO exists, it would be reversed, since CEOs with long tenures are using CAPM more frequently. Apparently CEOs learn to appreciate the use of CAPM while they are in charge of the company, which implies that CAPM requires a critical mass (size), a public listing and a CEO with longer tenure.

4.2. Specific risk factors

After acknowledging the basic concepts that are being applied when deriving the overall cost of equity capital, we now turn to the explicit analysis of individual projects. We identify a wide variety of specific risk factors, which might be of importance when evaluating an individual project. These factors include: interest rate risk, foreign exchange risk, business cycle risk, unexpected inflation, commodity price risk, term structure risk, and distress risk. In line with the work of Fama and French (1992) and Jegadeesh and Titman (1993) we also include the fundamental factors size, value, and momentum.

We ask our respondents whether they take these individual factors into account when valuing projects, and if so whether they do this by adjusting their discount rate, the cash flow estimations or both. We display our key results in Table 4.

Overall, we document a strong tendency for omitting most of the specific risk factors. This result complies with the average response of U.S. companies to the same issue. The vast majority of firms does not take specific risk factors into account when evaluating individual investment projects. If any, firms tend to consider interest rate, and currency risk and in most of those cases where they do acknowledge these risks, they absorb them by adjusting either the discount rates or the cash flows. Momentum is considered only by a small minority, except for France where 27.8% of our respondents claims to adjust their discount rate based on recent stock price performance. Furthermore we notice that 26.3% of German companies and a remarkable 46.6% of French companies is prone to amend cash flow estimations according to their perception of commodity price risk.

4.3. Project versus firm risk

Next we concentrate on the use of discount rates when considering new projects in overseas markets. The U.S. results of Graham and Harvey regarding the use of discount rates have been surprising. The majority of firms in their sample claimed to use the plain vanilla firm discount rate when evaluating new foreign projects. This outcome implies that most companies are not incorporating differences in project risks and foreign markets properly. By posing the same questions to our respondents we would like to find out whether the same management approach is prevailing in Europe.

The main results of this exercise are presented in Table 5 and show even more striking responses. First of all, we find that alike their U.S. colleagues our European firms, except for the French, tend to prefer applying the plain company-wide discount rate to more sophisticated and sound risk-matched rates. We find that the level of popularity of the discount rate of the entire company is comparable to the U.S. results reported by Graham and Harvey and that in each single country large and public firms are more keen on using the company-wide rate than their small and private competitors. Regarding the second most popular discount rate, the risk-matched project rate, we first notice that the European firms are remarkably less keen on applying this rate on average when compared to the U.S. In the U.S. 50.9% responded to apply a risk-matched rate always or almost always, while the percentage ranges between only 23.7% and 27.3% in our European sample. Again we find that large firms and public firms are more likely to opt for the risk-matched rates. Alike the U.S. the remaining three alternatives, the use of a discount rate for the overseas market, a divisional discount rate, or a different rate for each component cash flow that has a different risk characteristic, is almost never used in each European sample.

Large firms are more likely to apply these theoretically more sound risk-matched rates. Except for the Netherlands we also find that the CEOs' education tends to increase the likelihood of the usage of risk-matched projects rates. Contrary to Graham and Harvey our results show that the more complicated alternatives of discounting new projects are applied more by higher educated CEOs consistently throughout all our national samples. Regarding the age of the CEOs in charge we notice that the simple company-

wide discount rate is being applied mostly by elder CEOs, while the more complicated project specific rates tend to be used more often by younger CEOs. A similar variation is found when looking into the shareholder orientation of the firms involved. Firms that declare to maximize their shareholders' wealth, tend to use more complicated firm specific rates. Since we pose the questions regarding new projects in overseas markets we also explicitly take foreign sales into account when interpreting the responses. In line with the results of Graham and Harvey we find no evidence that firms with foreign sales make use of more sophisticated discounting schemes. These international operating firms tend to rely on company discount rates in most cases as well.

In summary, our results show an interesting variation in cost of capital practices. In line with Graham and Harvey we document CAPM to be the most popular tool when computing the cost of capital among the firms, which discount their cash flow estimates. However, this result varies along firm size and appears to depend on whether firms are publicly listed. Large, publicly listed firms apply the CAPM on their stock price history, while small, private firms tend to rely on whatever their investors tell them. Furthermore, our results show that the vast majority of firms is likely to use a company cost of capital for evaluating their individual projects, instead of incorporating specific risk factors explicitly. Again we find that this tendency to use company discount rate differs along the size dimension, in which large firms are more likely to risk-matched discount rates when evaluating new projects.

4.4. Multivariate regression analysis

In order to deepen our analysis we run a set of multivariate probit regressions in which we can compare the impact of various explanatory variables on the four most important capital budgeting issues. This way we try to discover which factors determine whether firms apply DCF-techniques, which type of firms compute the cost of capital and which use CAPM to do so and which type of firms employ sophisticated discount rates? These questions are answered using three sets of model specifications. In the first model we analyze the significance of national variations of our full sample including the U.S. observations of Graham and Harvey (2001) through the use of a set of country dummies, in which the Netherlands serves as omitted variable. In the second model we extend this country analysis by controlling for the cross sectional variation in firm size and the educational level of the CEO using dichotomous variables. In our third and last model we extend the second model by including the level of shareholder orientation of each firm, a variable that is only available for our European sample.[7] We disseminate output of additional model specifications on our weblink.

First, we analyze the use of capital budgeting techniques, our results are displayed in Table 6. We distinguish between the DCF-techniques NPV, IRR, APV, and the discounted

7 We do not know the exact degree of shareholder orientation of U.S. firms, because Graham and Harvey (2001) did not survey their firms on this issue. Consequently, we performed a robustness check on models 2 and 3 by applying the heroic assumption that all US firms maximize shareholder wealth. We reran regression 3 including the U.S.-dummy variable. We find that none of the significant variables in models 2 and 3 becomes insignificant and vice versa..

payback period (dummy has value 1 if the response to at least one of these four techniques exceeds 2, and zero otherwise) opposed to the non-DCF-techniques. Model 1 shows that the country dummies reveal significant national differences. German and French firms make little use of DCF-techniques, while U.S. firms employ these methods significantly more often than the omitted Dutch firms. When including the control variables, size and CEO education, we find that size significantly attributes to explaining the cross sectional variation. Model 3, which exclusively focuses on our European sample, shows stability of the coefficient estimates across continents and reveal, that shareholder orientation is significantly and positively related to the use of DCF-methods. This conclusion confirms our results of Section 3 that large firms and firms, which have a strong shareholder orientation are more likely to use DCF capital budgeting techniques. In our second set of models we explain which firms compute their cost of capital. The cross-national analysis does not yield any pervasive results. Apparently computing the cost of capital is not induced by nationality. Firm size and shareholder-orientation on the other hand tend to increase the likelihood of cost of capital calculations significantly. Among the firms, which compute their cost of capital we differentiate between those who apply CAPM (or an extended CAPM) to do so and the group that uses other technology. We find that German firms use CAPM significantly less on a 10% confidence level, whereas U.S. firms turn out to be the most frequent users of CAPM. Much of this cross-national variation disappears when extending our model 1 with control variables, which show that only firm size appears to be driving the use of CAPM significantly. With respect to the last issue, which discount rate is used when evaluating new projects in overseas markets, we split up our samples into a group that utilizes a sophisticated rate in which risk-matching (on project, division or component level) is applied and a group that simply utilizes a company or country wide discount rate. The results from our first model specification show that U.S. firms are more likely to use a risk-matched discount rate compared to their European competitors. This difference, however, reduces after including the variation in firm size and CEO education. In combination with our results from model 3 we may conclude that larger and shareholder oriented firms are significantly more likely to apply a risk-matched discount rate.

Overall, our results stress the importance of multivariate regressions, because this approach enables us to isolate the impact of variables conditional on other influences. Continental and cross national variations appear to be present but lose much of their impact when controlling for the underlying variation in firm size, CEO education, and shareholder orientation. Capital budgeting and cost of capital dilemmas are influenced most by firm size and the degree of shareholder orientation, both have a significantly positive impact on the issue we raise. Adding these variables significantly helps to increase the fit of the models.

5. Capital structure

Our firm statistics already indicated that the overall debt levels in our European samples were low compared to their U.S. competitors. We also showed that in our French sample 65% of our respondents claimed to have no target debt-ratio of any kind. The combination of both results might indicate that capital structure is considered to be somewhat less important than in corporate America. In this section we analyse the capital structure of our European firms by posing questions with which different capital structure theorems can be tested. First we concentrate on the costs and benefits of debt ratios and the trade-off theory, which balances both. Then we continue our analysis by focusing on asymmetric information motives and agency costs as potential drivers of corporate debt policy.[8] Table 7 describes the factors that determine the appropriate amount of debt in firms. The combination of testing for all these factors should yield us a better understanding of how European firms set their capital structure in practice.

5.1. Trade-off theory of capital structure choice

5.1.1. Target debt ratios and the costs and benefits of debt

The static trade-off theory predicts a trade-off between tax advantages and bankruptcy costs of debt. According to this theory firms balance the beneficial tax shields with the financial distress costs when determining the appropriate amount of corporate debt. We test this theory by inquiring about the importance of both factors and document that tax advantages of interest deductibility are considered to be the fourth most important factor in this context, after financial flexibility, credit ratings and earnings volatility. The cross-national variation in this result is modest and indicates that tax advantages are considered to be of equal importance to both in European and U.S. firms. A reassuring discovery is that firms with higher leverage and a target debt ratio are more likely to consider tax advantages of debt an important factor.

The negative effects of debt financing, bankruptcy costs appear to be considered less important when judging by the results in Table 7. On a scale of 0 to 4, costs of bankruptcy scores range only between 0.65 for France and 1.42 for the Netherlands. Firms with high leverage seem more concerned about these costs, which is an obvious result because their expected bankruptcy costs are larger. The same table shows that the volatility of earnings, which increases the probability of bankruptcy and thus expected costs, is more important. In the U.S., this is the third most important factor as in the U.K. and Germany. In the Netherlands and France, volatility is the second most important factor.

8 We analyse sample splits based on several firm characteristics. In Tables 7, 8, and 9 we present the results for leverage and a target debt ratio, while other split ups are displayed in Appendix A. Figure 2, panel G presents the percentages of firms that seriously considered issuing common stock, convertible debt, and foreign debt. We inquired about the underlying motivations among firms that indicated to consider the issuance. However, the sample sizes are relatively small and we present the results in Appendix A. A discussion of additional results regarding product markets, industry factors, control contests, risk management and cash management considerations is presented in this Appendix.

Again, the importance of this characteristic is related to high leverage (U.K.) and aiming for a target ratio (U.K., Germany and France). We find no compelling variation across countries or continents. In all countries we find that firms consider bankruptcy costs and tax advantages to be important.

Finally, personal tax effects may offset or increase the tax advantage of debt and thereby impact the optimal balance between corporate tax effects and bankruptcy costs. The low scores in row (f) of Table 7 clearly show that, similar to the U.S., our European firms do not put much weight to the personal tax considerations of their investors. Apparently, firms do not try to attract specific investor clienteles through their capital structure choice.[9] When including the underlying shareholder orientation of firms into this matter, we find that shareholder oriented firms in the Netherlands, France and Germany consider the personal tax issue to be more important than their competitors with low shareholder orientation. These differences, however, are insignificant and are reversed for U.K. firms, indicating that shareholder orientation does not explain much of the cross-sectional variation.

5.1.2. Deviations from target debt ratios

Our firm statistics already indicated that in the U.S. more firms have target ratios, than in the European countries. In the U.K., the Netherlands and Germany about two-thirds or more of the firms aim for some target debt ratio. However, only one third of the French firms has a target ratio. A striking result is that in each of the countries about 10% of the firms has a strict target.

Welch (2004) argues that stock returns affect market value debt ratios, because the value of equity changes. Thus, in case firms express their target debt ratios in market values, they will have to rebalance after changes in equity value. We test this hypothesis and the results in row (g) of Table 8 indicate that the scores are indeed much higher in market-oriented countries. The U.S. and U.K. scores of 1.08 and 0.82, respectively, well exceed the other countries. A plausible explanation for this international variation is that the firms in the latter countries are less likely to be exchange-listed. However, the scores are relatively low, which corroborates the notion that executives think more in terms of book values than in market values as advocated by academics.

Fisher, Heinkel and Zechner (1989) argue that transaction costs prevent firms from frequently rebalancing their capital structure. Whether transactions costs and fees are important in capital structure choice is shown in Table 7, row (e). This transaction costs hypothesis receives moderate support, with scores ranging between 1.26 for the Netherlands and 1.75 for the U.K. We also ask firms whether they delay the issuance of debt because of transactions costs and fees, but the low values, which are stated in row (e) of Table 8, yield little support for this notion. Apparently transaction costs do not serve as a key driver of corporate debt policy. The subset of firms with a target debt ratios scores significantly higher in several countries in these two questions.

9 This result should be interpreted with caution. Personal taxes do affect stock returns and bond yields. Because firms are likely to respond to these returns, CFOs weigh the effects of personal tax implicitly in their decisions.

5.2. Asymmetric information explanations of capital structure

5.2.1 Pecking-order model of financing hierarchy

The pecking-order model of Myers and Majluf (1984) hypothesizes a hierarchy in financing means. First, firms prefer internal financing. Then, external financing is preferred, where debt is preferred over equity. The degree of asymmetric information determines the relative costs of each financing source. Firms that follow this pecking order do not have a target debt ratio, because the ordering determines their preference regarding the issuance of new capital.

Row (g) of Table 7 demonstrates that financial flexibility is the most important factor that influences the amount of debt in each of the five countries. This seems to be evidence of pecking-order behavior. Later in this section we will discuss this issue in more detail. Our survey includes additional questions related to pecking-order behavior. In row (a) of Table 8 we inquire whether a debt issue is triggered by insufficient recent profits, the results are weak and scattered, ranging between 1.24 for France and 2.30 for Germany.

In Table 8, row (d) reports what the score is on debt issues when equity is undervalued. This behavior would be consistent with pecking-order theory. Compared the 1.56 score in the U.S. our European firms score relatively low. Like Graham and Harvey we find that in large and dividend-paying firms equity valuation is more likely to influence financing decisions. This result nicely illustrates the role of security pricing in public markets, which is much lower in continental Europe.

Overall, our results for the pecking-order model confirm Graham and Harvey's conclusions: results are in line with the predictions of the pecking-order theory. However, given the results on information differences, asymmetries do not drive the pecking order.[10]

5.2.2. Anticipating improvement in credit ratings

Flannery (1986) argues that managers who expect a higher credit rating than their current rating - because they have superior information - will choose short debt, as their rates for long debt will improve. Table 9, row (e) shows that this argument receives only weak support, only a small minority of all firms in each sample consider this argument to be relevant. The respondents most likely interpreted credit ratings in a broad way, because in continental Europe rating agencies are less active, in comparison with Anglo-Saxon countries. However, the results for this question are similar.

10 The pecking order model is one of several signaling models, according to which firms can signal their quality to investors using their capital structure decisions (see Ross, 1977 and Leland and Pyle, 1977). Table 8, row (b) illustrates that in general this motivation scores low, between 0.65 in the Netherlands and 1.06 in France, in all samples when relating it to debt policy. Focusing on firms intended to issues equity yields comparable results, indicating that the firms in our sample do not actively signal information on their corporate prospects and value through their capital structure policy (results not reported).

5.2.3. Market timing interest rates

In the previous section we inquired about timing on the basis of private information within a firm. Managers may also try to time their issues because they expect that economy-wide interest rates may change. Row (c) of Table 8 yields the surprising result that this is the most important factor in U.S. firms, with a score of 2.22. The scores for the European countries tend to be considerably lower with Germany on the high end with 1.87, whereas Dutch firms report only 1.19 on average.

In Table 9 we ask firms about factors, which affect their choice between short- and long-term debt. Rows (a) and (c) report the influence of expected long and short interest rates in this context and again we find higher values for slightly lower values for our European firms compared to the U.S. results of Graham and Harvey.[11]

5.3. Agency costs

5.3.1. Conflicts between bondholders and equityholders

The underinvestment problem, as introduced by Myers (1977), is an agency problem between bondholders and shareholders that arises in situations of debt overhang. In firms with good growth opportunities, new projects will not be started if leverage is high. The motivation is that in these situations the bondholders will benefit more than the shareholders. In Table 7, row (n) we ask our respondents whether they restrict their borrowing such that profits from new projects can be captured fully by shareholders instead of being paid out as interest to bondholders. The low scores in the range of 0.73 for the Netherlands and 1.30 for the U.K. offer little support for this notion. Because the problem is induced by high leverage we expect that the underinvestment problem is more relevant in the high leverage samples. In France we indeed find significantly different scores of 2.17 and 1.13, indicating that underinvestment matters more in highly levered firms. However, for Germany we find the inverse difference, which is also significant at the 10% level. Myers' (1977) model also implies that this underinvestment problem can be mitigated by short term financing. In row (d) of Table 9 we test this hypothesis and the results are in line with our earlier findings, again scores are consistently below 1.00.

Asset substitution is another agency problem in which shareholder prefer high-risk projects, because they can fully benefit from the upside potential. On the other hand, bondholders have a fixed claim and prefer projects with lower risk. Leland and Toft (1996) model this problem and find short-term debt as a solution. Table 9, row (f) reports low scores, well below 1.00, in each of the five countries.[12] The results for the five countries are remarkably similar. By constructing an anti-director index La Porta *et al.*

11 We also find for firms that considered to issue foreign debt do so because foreign rates are more favourable (results not tabled). The scores are much higher in the U.S. (2.19), the Netherlands (2.42) and Germany (2.64), in comparison with the U.K. (1.36) and France (1.38).

12 Green (1984) has developed a prominent model in which asset substitution is mitigated by convertible debt issues. We find in unreported analyses that protecting bondholders against unfavourable actions of shareholders and managers is not an important factor in the convertible debt choice, again the results are consistent and are equal or less than 1.00.

(1998) show that shareholders have a much larger influence in U.S. and U.K. firms. One would expect shareholder-bondholder problems in countries with high shareholder influence and low creditor rights, i.e. the U.S. In Germany, one would expect the problems to be less relevant. Given these strong institutional differences, it is striking that the theories are not found to be relevant in either of the countries.

5.3.2. Conflicts between managers and equityholders

Jensen (1986) notices that managers may have incentives to strive for firm growth by adopting negative NPV projects. Moreover, Jensen and Meckling (1976) argue that managers may work less efficiently, because they are merely partial or no owners of the firm. Through its fixed obligations debt is considered to be a disciplining device, which might mitigate these principle-agent difficulties. However, our results in row (m) of Table 7 imply that the disciplining role of debt is equally unimportant in each of the five countries, where scores never exceed 0.70. Graham and Harvey attribute the U.S. result to two reasons: (1) respondents' bias because managers do not want to admit this behavior; and (2) unwillingness of managers to discipline themselves through debt. It is noteworthy that the above-mentioned anti-director index of La Porta *et al.* (1998) again does not induce cross-country differences.

5.4. Multivariate regression analysis

In the previous analyses we have noted that cross-country differences arise in our results. We also found that a target ratio and leverage influence the respondents' choices. Two important models seem to be relevant, i.e. the pecking order model and the static trade-off model. We will now discuss these models in more detail. Moreover, we estimate whether the choices are driven by cross-country differences or by firm characteristics.

As mentioned before, row (g) of Table 7 demonstrates that financial flexibility is the most important factor that influences the amount of debt in each of the five countries, with scores between 2.59 in the U.S. and 1.84 in France. On the one hand, this seems to be evidence in favor of the pecking-order model, since flexibility increases the possibility to choose between different financing alternatives. On the other hand, Opler *et al.* (1999) show that flexibility may be important for other reasons than the pecking order. In Table 10 we report a regression test in which a dummy for a high score (3 and 4) on flexibility is explained by country dummies. In order to avoid perfect multicollinearity we omit the Netherlands. The results yield no significant country dummies, which is in line with our earlier findings. In Model 2 we add firm characteristics. Interesting is that flexibility is significantly (at the 10% level) more important in firms with a target debt ratio. This finding suggests that the pecking-order and the static trade-off are complements. A more detailed test of the pecking order is to investigate the relationship between asymmetric information and the desire for flexibility. Graham and Harvey use size and dividends as proxies for information problems, i.e. larger and dividend-paying firms have less asymmetry. Therefore, larger firms and dividend-payers are expected to

score lower on flexibility. We find the inverse, as both size and dividends have positive coefficients (the coefficient for dividends is significant at the 1% level). The result is similar to the uni-variate comparisons in the U.S. where larger firms score (insignificantly) higher and also dividend-payers score higher (significant at the 1% level). These results corroborate with Graham Harvey's conclusion that the desire for financial flexibility may represent pecking-order behavior, but is not driven by the asymmetric information-based rationale underlying the pecking-order theory.[13]

Firms that adopt the static trade-off model do so in two steps. First they decide to set a target capital structure. Then they choose factors that are included in the trade-off for the optimal capital structure. In Table 10 we investigate which factors induce firms to set a target capital structure. Model 1 contains country dummies and shows that French firms are significantly less likely to set a target. After including firm characteristics we find that leverage, size and dividends have a positive impact on the probability of aiming for a target, significant at the 1% level. In theory, no models exist that predict which firms have a target and which firms do not.[14] As far as we know, we are the first to document empirically that targets are most likely set by large, highly-levered, dividend-paying firms. Adding the cross-sectional variation in shareholder orientation does not attribute to explaining the target setting dilemma.

Under the static trade-off theory firms trade off tax advantages and bankruptcy costs. We estimate the relations between country dummies plus firm characteristics and these factors. Another set of factors are the agency models, but our summary statistics already revealed that these are of minor importance. Our regression results show that in Germany the tax advantage is less important. However, the next regression in Model 2 illustrates that the result is driven by cross-country differences in firm characteristics. After including additional variables the coefficient for Germany looses most of its significance. Obviously, the presence of a target significantly increases the probability that tax issues are important. Also large firms appear to find tax advantages more relevant. Bankruptcy costs are the cost of leverage in the static trade-off and measured as the probability that a firm considers the costs of bankruptcy (Table 7, row (b)) or the likelihood (Table 7, row (h)) important. Again we find that these costs are less relevant in Germany, but this difference reduces after extending the estimation model.[15] As expected, we also find a significantly positive effect for firms with a target.

The regression results in Table 10 also include a dummy variable for shareholder-orientation, which is insignificant in each of the four models. This contrasts with the capital budgeting results. Although both decisions have implications for shareholder wealth,

13 Brav et al. (2003) argue that the levels of dividends are nearly untouchable. This implies that paying dividends reduces the flexibility of firms, which explains the positive relation we report between the importance of flexibility and dividends.

14 Additional regression analysis shows that the relationship between firm size and the probability of aiming at a capital structure target is significantly stronger for our European firms than among the U.S. firms of Graham and Harvey (2001).

15 This finding contradicts Rajan and Zingales (1995, p.1444) conclusion based on a description of the institutional setting that Germany's bankruptcy code is creditor friendly. However, their empirical test confirms our findings. Firm size, as proxy for the inverse of the probability of default, has a negative effect on debt, which is not found in the other countries.

the link is much more direct in capital budgeting.[16]

A comparison between the variables for countries and the firm characteristics show that countries matter, but tell only part of the story. For flexibility, countries have no effect and for tax advantages the single significant coefficient becomes insignificant once other variables are included. Judging from the R^2's, the country-effects explain much less of the variation, in comparison with the other firm-level characteristics.

In Europe we document the following conclusions regarding capital structure practices. We find moderate support for the static trade-off theory, which predicts that firms have a target debt ratio, based on tax and bankruptcy considerations. In the U.S. the strongest evidence is found, both for the existence of targets and for the role of corporate taxes. The pecking order theory is rejected in each of the countries. However, the result of this theory, the desire for financial flexibility and pecking-order behavior, are important considerations in all countries. We find, however, that the asymmetric information problems do not drive this pecking order behavior. The relevance of agency problems and the benefits of signaling in capital structure choice are caused by divergent interests and the ability of shareholders and creditors to monitor each other and the management. Although recent studies suggest strong differences between the countries, we do not find convincing evidence of agency problems, signaling, or a role of capital structure in control contests in either country. This is a striking result because current theoretical and empirical literature largely focuses on these issues.

We conclude that the static trade-off theory faces moderate confirmation. Financial flexibility is important, but not driven by the asymmetric information as in Myers and Majluf's (1984) pecking order theory. Several practical considerations are highly relevant. Contrary to the institutional variations we document strong resemblances between the five very different countries when comparing capital structure policies. Differences emerge in the relevance of the public financial markets. In the U.S. and U.K., and to a lesser extent in the Netherlands, firms use the stock prices and interest rates in their decisions, while in Germany and France internal considerations appear to be are more relevant.

6. Conclusion

In this paper we examine the practice of corporate finance in four European countries: the U.K., the Netherlands, Germany and France and compare these practices with previous results of Graham and Harvey (2001) for U.S. firms. Our results offer a rare opportunity to directly investigate the use and adoption of academic concepts by professionals active outside the United States. The contribution of this paper therefore is multiple. First professionals can learn by observing the practice of their European colleagues.

16 We carried out the same robustness check on shareholder orientation as in the capital budgeting section, in which we assume that all U.S. firms maximize shareholder wealth. We reran regression 3 including the U.S.-dummy variable. We again find that none of the significant variables in models 2 and 3 becomes insignificant and vice versa.

Second our survey reveals where theoretical concepts fall short in tackling practical dilemmas, and thereby this paper can inspire academics in extending and refining existing notions. Third, we analyze the extend to which existing insights that originate from numerous U.S. studies hold outside the United States, and reveal what factors are really driving the practice of financial management in firms. Several studies have stressed the differences between institutional settings, when comparing the United States and Europe. These studies claim that these institutional differences determine how firm manage their capital and therefore create an international variation in corporate finance practice. We have tested whether European firms and U.S. firms are different, and which characteristics explain corporate policies regarding capital budgeting, cost of capital and capital structure.

We observe a remarkable cross-national pattern with respect to corporate governance. Firms in the U.K. and the Netherlands are consciously thriving at maximizing their shareholder's wealth, while German and French firms attach a low priority to this corporate goal. Regarding the corporate finance practices we find remarkably little difference across countries. With respect to capital budgeting techniques we discover a strong preference for the simple payback criterion among our European firms. Although this preference is stronger in Europe it does not differ significantly from capital budgeting policies of U.S. firms. We find that this preference for payback criteria is consistently stronger among small firms and among firms, which are less oriented towards shareholder wealth maximization. Of the firms that do calculate their cost of capital, most CFOs responded to be using the CAPM when computing their cost of equity capital. This preference of CAPM over more intuitive alternatives is comparable to how U.S. firms compute the cost of capital. The use of CAPM tends to rise with firm size, CEO tenure, and the importance of shareholder wealth maximization, while the educational background of the CEO appears to be irrelevant. Finally regarding capital structure policy we find surprisingly little international differences. Although recent studies by La Porta et al. (1997, 1998) and Rajan and Zingales (2003a, 2003b) have illustrated the institutional variation that is present within our international sample, these differences seem to have little effect on firm's capital structure practice. Financial flexibility i.e. pecking order behavior appear to be the most important factors, when determining the proper of amount of corporate debt. The pecking order behavior is, however, not driven by asymmetric information considerations. Generally, we find no evidence for agency theories, signaling, or a role of capital structure in control contest.

We document fundamental differences between large and small firms when analyzing corporate finance practices. Our results show that large firms are likely to use more sophisticated techniques when it comes to evaluating risky projects. In all samples we find that large firms are more likely to use NPV criteria and the CAPM for calculating the proper discount rate. Moreover, our results show that large firms are apt to utilizing more sophisticated, risk-matched discount rates instead of a standard firm cost of capital. This consistent difference in corporate finance practice along the size dimension is an intriguing result, which might help us to understand the well-documented size anom-

alies in the asset pricing literature. Next to size we document shareholder orientation as a second explanatory variable for the corporate finance practices in our samples. Firms, which strive for maximizing shareholder wealth, are more prone to apply discounting techniques when considering investment projects and are keener on utilizing CAPM in order to derive their proper cost of capital.

In both the U.S. and European markets professionals tend to adopt and neglect the same theoretical models and theories when managing their corporate finances. The gap between science and practice appears to be rather constant across borders and although institutional differences are large and significant, they do not seem to dominate the way firms are run financially.

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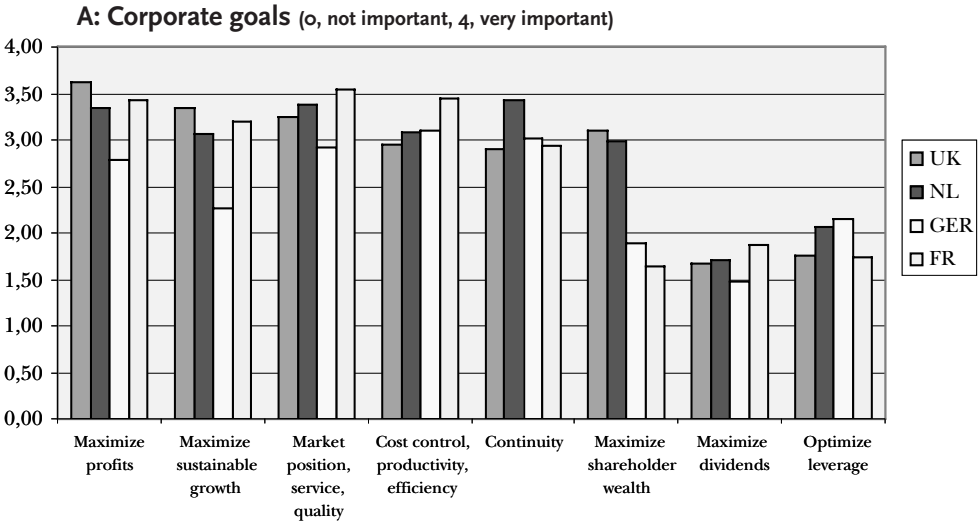
Figures

Figure 1: Corporate goals and important stakeholders

These tables summarize the national average responses to the questions: "Which goals are important for your firm?" and "Which stakeholders are important for your firm?"



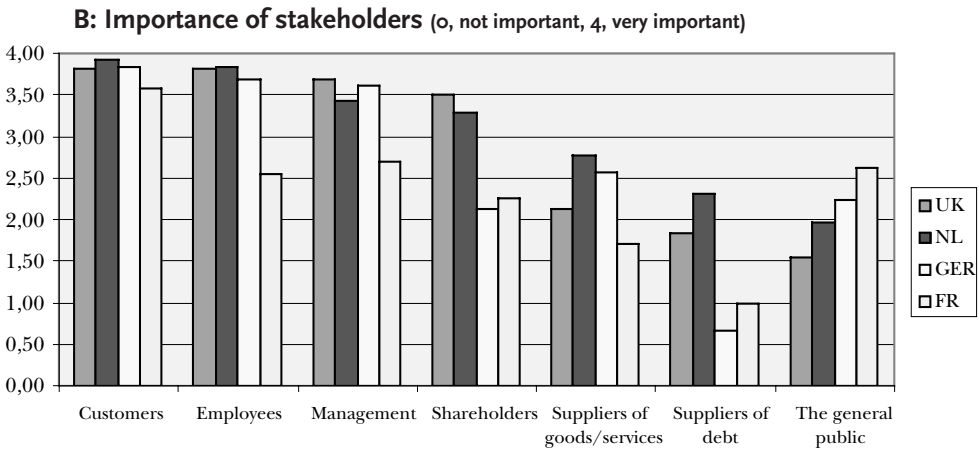
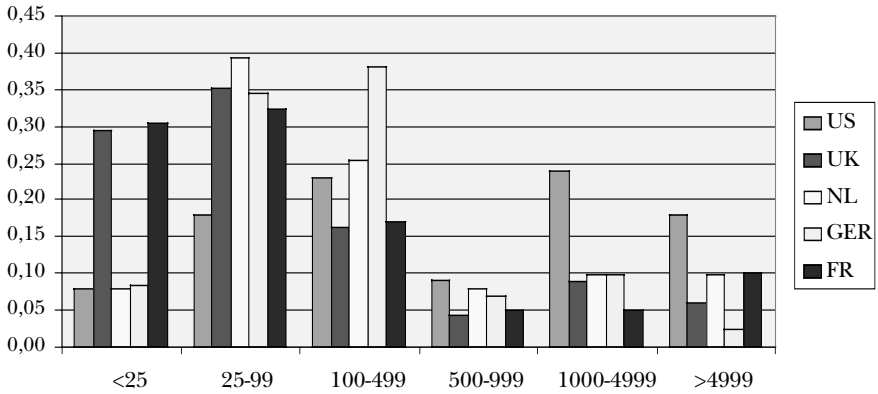
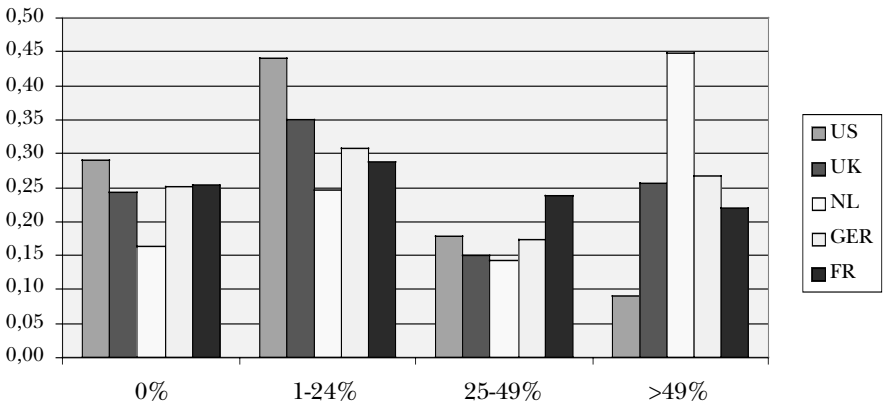


Figure 2: Firm characteristics

A: Sales (million $)



B: Foreign sales (% of total)



C: Industry

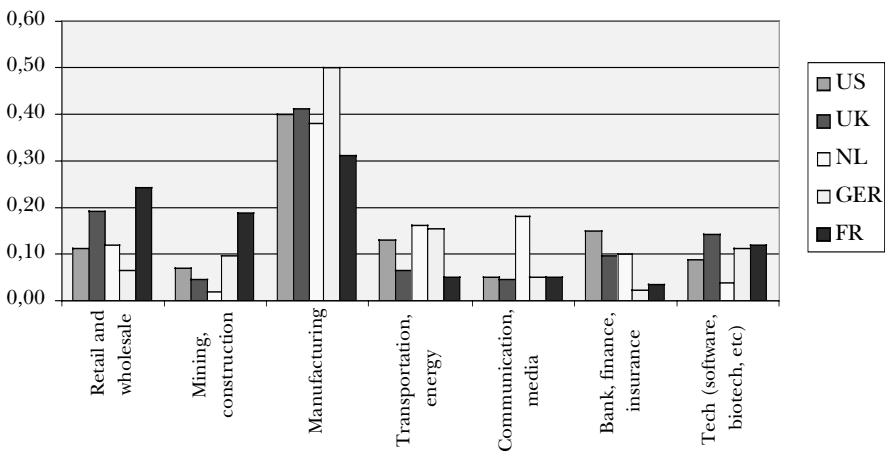
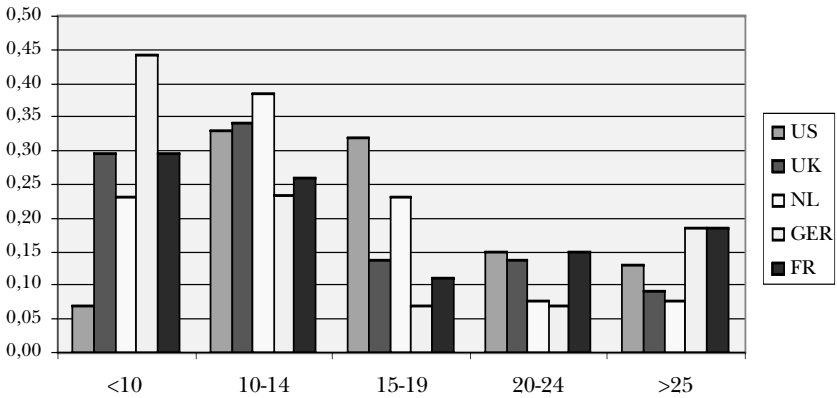
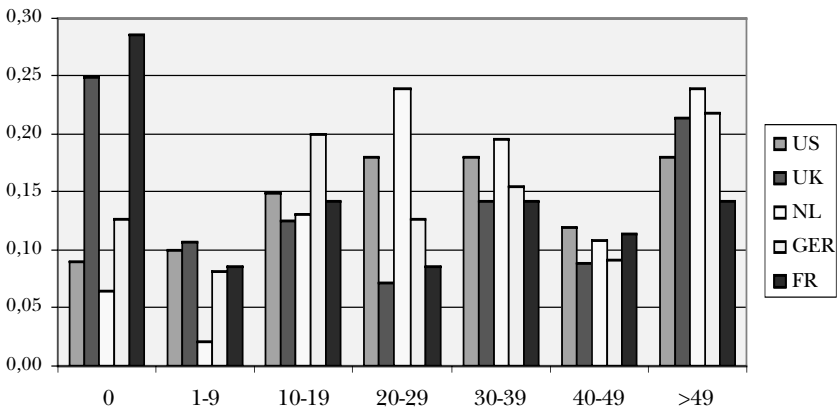


Figure 2: Firm characteristics (continued)

D: Price/earnings ratio



E: Longterm debt ratio (%)



F: Target debt ratio

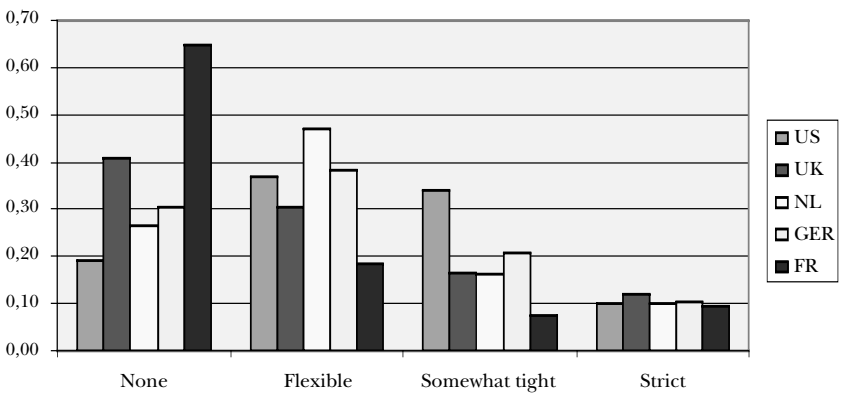
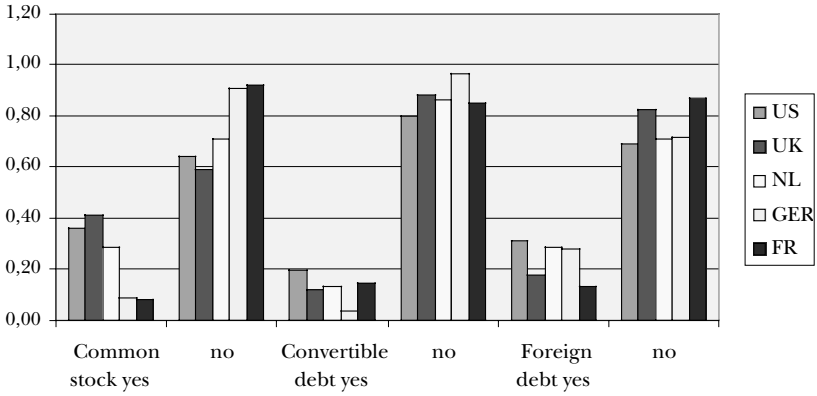
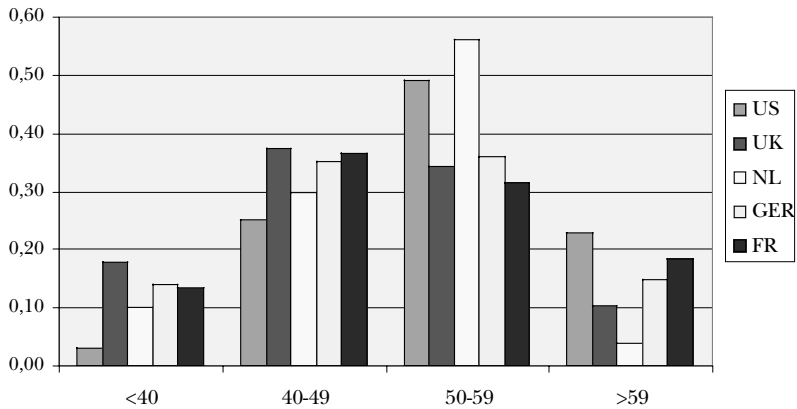


Figure 2: Firm characteristics (continued)

G: Percent that seriously considered issuing...



H: CEO Age (years)



I: CEO Tenure (years)

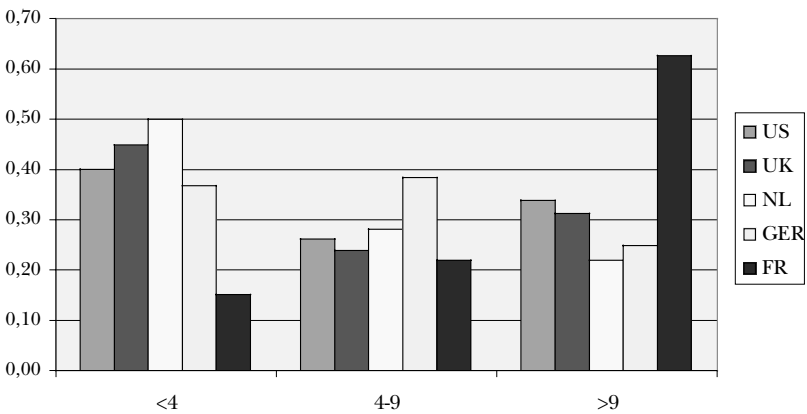
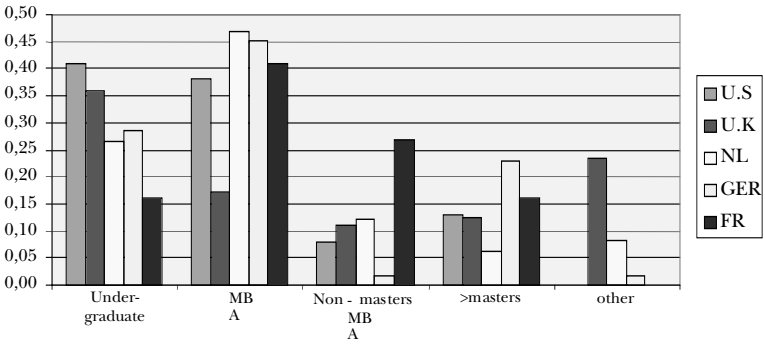
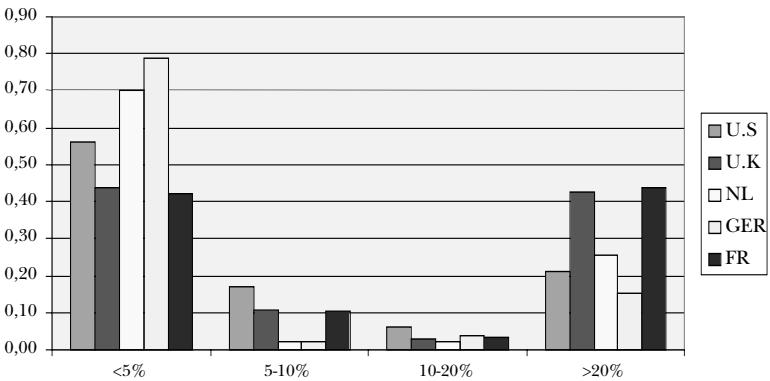


Figure 2: Firm characteristics (continued)

J: CEO Education



K: Executive stock ownership (%)



TABLES

Table 1: Summary statistsics and cross correlations

A: Summary statistics	U.S. (n=392)	U.K. (n=68)	NL (n=52)	GER (n=132)	FR (n=61)	N
Public	63%	54%	41%	23%	12%	705
Regulated Utility	7%	10%	7%	17%	29%	705
Pays Dividend	53%	61%	75%	52%	71%	705
Rating investment grade	79%	87%	77%	80%	69%	705
Large Size[1]	42%	15%	19%	12%	15%	705
MBA educated	38%	16%	44%	43%	38%	705
Shareholder orientated	NA	90%	87%	53%	53%	313
High leverage[2]	30%	29%	37%	34%	18%	705
Target ratio[3]	81%	59%	73%	70%	35%	705

B: Cross-correlations	Public	Regulated Utility	Pays Dividend	Rating investment grade	Size	MBA	Shareholder orientation	High leverage	Target ratio
Regulated Utility	-0.08	1.00	0.03	0.08	0.06	0.04	-0.14	0.01	0.11
Pays Dividend	0.17	0.03	1.00	0.14	0.19	0.05	0.14	0.06	0.16
Rating investment grade	0.13	0.08	0.14	1.00	0.38	0.01	0.06	0.11	0.21
Size	0.28	0.06	0.19	0.38	1.00	0.05	0.13	0.03	0.19
MBA	0.05	0.04	0.05	0.01	0.05	1.00	0.09	0.04	0.02
Shareholder orientation	0.27	-0.14	0.14	0.06	0.13	0.09	1.00	0.11	0.03
High leverage	-0.04	0.01	0.06	0.11	0.03	0.04	0.11	1.00	0.27
Target ratio	0.11	-0.03	0.16	0.21	0.19	0.02	0.03	0.27	1.00

[1] Large firms are firms with annual sales exceeding 1 billion U.S. dollars.
[2] We classify firms with long-term debt ratios exceeding 30% as high levered firms.
[3] Firms, which anounced to have a target debt ratios are classified as 'target ratio'.

Table 2

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

	U.S.						U.K.						Netherlands					
	% always or almost always	Mean	Size		CEO MBA		% always or almost always	Mean	Size		CEO MBA		% always or almost always	Mean	Size		CEO MBA	
			Small	Large	Yes	No			Small	Large	Yes	No			Small	Large	Yes	No
(b) Internal rate of return	75.61	3.09	2.87	3.41***	3.17	3.03	53.13	2.31	3.33	2.15***	1.70	2.50	56.00	2.36	2.25	2.80	2.73	2.07*
(a) Net present value	74.93	3.08	2.83	3.42***	3.17	3.00*	46.97	2.32	2.12	3.56***	2.18	2.45	70.00	2.76	2.53	3.70***	2.86	2.68
(f) Payback period	56.74	2.53	2.72	2.25***	2.48	2.55	69.23	2.77	2.77	2.75	2.73	2.74	64.71	2.53	2.56	2.40	2.86	2.28
(c) Hurdle rate	56.94	2.48	2.13	2.95***	2.57	2.42	26.98	1.35	1.07	3.00***	0.80	1.49	41.67	1.98	1.74	2.90*	2.36	1.65
(j) Sensitivity analysis	51.54	2.31	2.13	2.56***	2.41	2.25	42.86	2.21	2.02	3.50***	1.60	2.35	36.73	1.84	1.74	2.20	1.91	1.78
(d) Earnings multiple approach	38.92	1.89	1.89	2.01*	1.98	1.86	39.06	1.81	1.78	2.00	1.90	1.90	26.53	1.61	1.56	1.80	1.82	1.44
(g) Discounted payback period	29.45	1.56	1.56	1.55	1.68	1.49	25.40	1.49	1.56	1.00	2.20	1.31*	25.00	1.25	1.32	1.00	1.27	1.23
(l) We incorporate the "real options" of a project when evaluating it	26.56	1.47	1.47	1.57	1.49	1.39	29.03	1.65	1.67	1.50	2.09	1.49	34.69	1.49	1.62	1.00	1.57	1.43
(i) Accounting rate of return	20.29	1.34	1.34	1.25	1.42	1.29	38.10	1.79	1.82	1.63	1.30	1.90	25.00	1.40	1.45	1.20	1.27	1.50
(k) Value at risk	13.66	0.95	0.95	1.22***	0.99	0.88	14.52	0.85	0.72	1.75*	0.80	0.94	4.26	0.51	0.47	0.67	0.71	0.35
(e) Adjusted present value	10.78	0.85	0.85	0.72*	0.74	0.91*	14.06	0.78	0.71	1.22	1.20	0.76	8.16	0.78	0.74	0.90	0.73	0.81
(h) Profitability index	11.87	0.85	0.83	0.75	0.83	0.85	15.87	1.00	1.15	0.00***	1.60	0.92	8.16	0.78	0.82	0.60	0.77	0.78

Table 2 - continued

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

	Germany						France					
	% always or almost always	Mean	Size		CEO MBA		% always or almost always	Mean	Size		CEO MBA	
			Small	Large	Yes	No			Small	Large	Yes	No
(b) Internal rate of return	42.15	2.15	2.04	3.08**	2.40	1.97*	44.07	2.27	2.18	2.88	2.82	1.95**
(a) Net present value	47.58	2.26	2.08	3.64***	2.70	1.93***	35.09	1.86	1.63	3.25***	2.30	1.62
(f) Payback period	50.00	2.29	2.31	2.08	2.40	2.21	50.88	2.46	2.51	2.13	2.52	2.42
(c) Hurdle rate	28.81	1.61	1.52	2.31	1.59	1.62	3.85	0.73	0.80	0.17**	0.76	0.71
(j) Sensitivity analysis	28.07	1.65	1.58	2.15	2.04	1.37***	10.42	0.79	0.85	0.43	0.50	0.97
(d) Earnings multiple approach	20.51	1.25	1.18	1.77	1.47	1.09	33.33	1.70	1.73	1.50	1.84	1.63
(g) Discounted payback period	30.51	1.59	1.50	2.31*	1.57	1.61	11.32	0.87	0.91	0.57	1.11	0.74
(l) We incorporate the "real options" of a project when evaluating it	44.04	2.24	2.28	1.92	2.22	2.25	53.06	2.20	2.27	1.88	2.05	2.30
(i) Accounting rate of return	32.17	1.63	1.76	0.62***	1.46	1.76	16.07	1.11	1.16	0.71	1.15	1.08
(k) Value at risk	23.68	1.45	1.36	2.15**	1.73	1.24*	29.79	1.68	1.66	1.83	2.00	1.50
(e) Adjusted present value	7.83	0.71	0.63	1.38*	0.96	0.54**	14.55	1.11	1.12	1.00	1.53	0.89*
(h) Profitability index	16.07	1.04	1.00	1.31	0.98	1.08	37.74	1.64	1.63	1.71	2.00	1.46

Table 3

Survey responses to the question "Does your firm estimate the cost of equity capital? If "yes", how do you determine your firm's cost of equity capital?"

	U.S.		U.K.		Netherlands		Germany		France	
	% always or almost always	Mean	% always or almost always	Mean	% always or almost always	Mean	% always or almost always	Mean	% always or almost always	Mean
(b) Using the Capital Asset Pricing Model (CAPM, the beta approach)	73.49	2.92	47.06	2.06	55.56	2.37	33.96	1.36	45.16	1.90
(a) With average historical returns on common stock	39.41	1.72	31.25	1.47	30.77	1.42	18.00	1.06	27.27	1.30
(c) Using the CAPM but including some extra "risk factors"□	34.29	1.56	27.27	1.45	15.38	1.08	16.07	0.89	30.30	1.39
(f) Back out from discounted dividend/earnings model, e.g.: price = div./(cost of cap. growth)	15.74	0.91	10.00	0.73	10.71	0.79	10.42	0.58	10.34	0.69
(d) Whatever our investors tell us they require	13.93	0.86	18.75	1.19	44.83	1.86	39.22	1.98	34.38	1.66
(e) By regulatory decisions	7.04	0.44	16.13	0.94	3.70	0.33	0.00	0.27	16.13	0.87

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?" Percentage of respondents choosing each category is reported

	U.S.				U.K.				Netherlands			
	Disc. rate	Cash flow	Both	Neither	Disc. rate	Cash flow	Both	Neither	Disc. rate	Cash flow	Both	Neither
(b) Interest rate risk (change in general level of interest rates)	15.30	8.78	24.65	51.27	20.97	27.42	27.42	24.19	20.41	8.16	20.41	51.02
(f) Foreign exchange risk	10.80	15.34	18.75	55.11	12.50	32.81	17.19	37.50	6.00	26.00	18.00	50.00
(d) GDP or business cycle risk	6.84	18.80	18.80	55.56	16.13	24.19	8.06	51.61	8.33	6.25	10.42	75.00
(a) Risk of unexpected inflation	11.90	14.45	11.90	61.76	17.74	25.81	12.90	43.55	8.00	12.00	16.00	64.00
(h) Size (small firms being riskier)	14.57	6.00	13.43	66.00	21.88	12.50	7.81	57.81	17.02	14.89	14.89	53.19
(e) Commodity price risk	2.86	18.86	10.86	67.43	19.05	19.05	7.94	53.97	2.13	19.15	10.64	68.09
(c) Term structure risk (change in the long-term vs. short-term interest rate)	8.57	3.71	12.57	75.14	17.19	17.19	12.50	53.13	10.64	0.00	10.64	78.72
(g) Distress risk (probability of bankruptcy)	7.41	6.27	4.84	81.48	14.52	9.68	6.45	69.35	14.58	4.17	8.33	72.92
(i) "Market-to-book" ratio (ratio of market value of firm to book value of assets)	3.98	1.99	7.10	86.93	17.74	9.68	4.84	67.74	4.26	2.13	19.15	74.47
(j) Momentum (recent stock price performance)	3.43	2.86	4.86	88.86	16.95	5.08	6.78	71.19	4.35	0.00	8.70	86.96

	Germany				France			
	Disc. rate	Cash flow	Both	Neither	Disc. rate	Cash flow	Both	Neither
(b) Interest rate risk (change in general level of interest rates)	26.72	14.66	22.41	36.21	23.21	26.79	21.43	28.57
(f) Foreign exchange risk	13.27	19.47	18.58	48.67	16.36	20.00	5.45	58.18
(d) GDP or business cycle risk	6.19	9.73	11.50	72.57	15.79	22.81	12.28	49.12
(a) Risk of unexpected inflation	18.80	9.40	9.40	62.39	17.54	24.56	26.32	31.58
(h) Size (small firms being riskier)	9.91	9.01	12.61	68.47	23.64	16.36	10.91	49.09
(e) Commodity price risk	4.39	26.32	16.67	52.63	8.62	46.55	12.07	32.76
(c) Term structure risk (change in the long-term vs. short-term interest rate)	17.12	7.21	8.11	67.57	22.81	12.28	17.54	47.37
(g) Distress risk (probability of bankruptcy)	8.77	14.04	13.16	64.04	12.50	23.21	14.29	50.00
(i) "Market-to-book" ratio (ratio of market value of firm to book value of assets)	4.63	8.33	12.96	74.07	20.00	12.73	12.73	54.55
(j) Momentum (recent stock price performance)	5.66	0.94	3.77	89.62	27.78	3.70	7.41	61.11

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…"

	U.S.						U.K.						Netherlands					
	% always or almost always	Mean	Size		CEO MBA		% always or almost always	Mean	Size		CEO MBA		% always or almost always	Mean	Size		CEO MBA	
			Small	Large	Yes	No			Small	Large	Yes	No			Small	Large	Yes	No
(a) The discount rate for our entire company	58.79	2.50	2.50	2.50	2.49	2.51	40.98	1.97	1.87	2.63	1.80	1.88	64.58	2.48	2.37	2.90	2.55	2.43
(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	1.99	23.73	1.17	1.04	1.89	1.78	1.04	27.08	1.27	1.13	1.80	1.05	1.44
(b) The discount rate for the overseas market (country discount rate)	34.52	1.65	1.49	1.82**	1.77	1.60	20.00	0.97	0.88	1.44	2.33	0.77**	14.89	1.09	0.92	1.70	1.38	0.85
(c) A divisional discount rate (if the project line of business matches a domestic division)	15.61	0.95	0.82	1.09**	0.88	0.98	17.24	0.91	0.82	1.44	1.33	0.89	17.02	0.96	0.68	2.11**	1.40	0.63*
(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	0.59	0.67	10.53	0.58	0.61	0.38	1.33	0.47	2.13	0.26	0.22	0.40	0.38	0.15

	Germany						France					
	% always or almost always	Mean	Size		CEO MBA		% always or almost always	Mean	Size		CEO MBA	
			Small	Large	Yes	No			Small	Large	Yes	No
(a) The discount rate for our entire company	41.96	2.00	1.89	2.79*	2.15	1.89	24.14	1.03	0.88	1.89	1.36	0.83
(d) A risk-matched discount rate for this particular project (considering both country and industry)	25.00	1.16	1.00	2.31**	1.58	0.85**	27.27	1.16	1.06	1.75	1.57	0.91
(b) The discount rate for the overseas market (country discount rate)	14.85	0.92	0.81	1.69*	0.98	0.88	16.36	0.76	0.53	2.13**	0.90	0.69
(c) A divisional discount rate (if the project line of business matches a domestic division)	12.00	0.69	0.67	0.85	0.77	0.63	12.50	0.70	0.60	1.25	1.24	0.37**
(e) A different discount rate for each component cashflow that has a different risk characteristic (e.g.: depreciation vs. operating cash flows)	7.14	0.51	0.47	0.83	0.83	0.27***	11.32	0.62	0.54	1.14	0.79	0.53

Table 6: Multivariate Probit regression output for capital budgeting

	Capital Budgeting			Cost of Capital			CAPM			Discount rate		
	Full Sample		EU	Full Sample		EU	Full Sample		EU	Full Sample		EU
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Constant	0,79***	0,59**	0,24	0,19	0,07	-0,35	-0,56***	-0,89***	-1,14***	-0,34*	-0,51**	-0,96***
	(4,00)	(2,82)	(0,95)	(1,11)	(0,36)	(-1,48)	(-3,03)	(-4,30)	(-4,15)	(-1,85)	(-2,67)	(-3,72)
Germany-dummy	-0,55**	-0,51**	-0,37	-0,25	-0,21	-0,05	-0,38*	-0,31	-0,22	-0,13	-0,10	0,03
	(-2,41)	(-2,16)	(-1,52)	(-1,22)	(-0,98)	(-0,21)	(-1,69)	(-1,32)	(-0,89)	(-0,60)	(-0,45)	(0,13)
France-dummy	-0,66***	-0,66**	-0,53*	-0,05	-0,03	0,15	0,07	0,15	0,25	-0,22	-0,20	-0,05
	(-2,59)	(-2,50)	(-1,92)	(-0,21)	(-0,12)	(0,58)	(0,27)	(0,59)	(0,93)	(-0,87)	(-0,78)	(-0,21)
U.K.-dummy	-0,31	-0,26	-0,29	-0,16	-0,15	-0,18	-0,03	0,09	0,08	-0,12	-0,05	-0,05
	(-1,24)	(-0,97)	(-1,07)	(-0,68)	(-0,64)	(-0,73)	(-0,11)	(0,34)	(0,31)	(-0,49)	(-0,21)	(-0,18)
U.S.-dummy	1,03***	0,95***	-	0,18	-0,04	-	0,79***	0,56***	-	0,48**	0,36*	-
	(4,43)	(3,84)		(0,97)	(-0,20)		(4,00)	(2,63)		(2,45)	(1,77)	
Size	-	1,22***	1,35***	-	1,01***	1,09***	-	1,11***	1,19***	-	0,45***	0,54**
		(4,47)	(3,81)		(7,77)	(4,40)		(8,73)	(-5,61)		(3,73)	(2,47)
MBA	-	0,13	0,09	-	-0,07	-0,09	-	0,15	0,12	-	0,18	0,26
		(0,92)	(0,57)		(-0,60)	(-0,56)		(1,25)	(0,70)		(1,60)	(1,53)
Shareholder orientated (EU)	-	-	0,43**	-	-	0,49***	-	-	0,27	-	-	0,46**
			(2,47)			(2,92)			(1,39)			(2,30)
N	678	652	303	672	648	313	624	601	313	603	578	283
McFadden R-squared	0,22	0,27	0,10	0,02	0,09	0,08	0,10	0,20	0,13	0,04	0,06	0,05
Akaike info criterion	0,75	0,72	1,22	1,35	1,26	1,32	1,24	1,10	1,01	1,33	1,31	1,24

Models 1 and 2 employ a pooled data set in which our European sample is merged with the U.S. Model 3 exclusively focuses on the European sample. The dummy for capital budgeting has value one if at least one response to the questions a, b, e or g of Table 2 exceeds 2, or zero otherwise. The dummy for cost of capital equals one if respondents indicate that they calculate the cost of capital, and zero otherwise. The dummy for CAPM has value one if at least one response to the questions b or c of Table 3 exceeds 2, and zero otherwise. The dummy for discount rate equals one if at least one response to the question c, d or e of Table 5 exceeds 2, or zero otherwise. The dummies of the control variables size, MBA, and shareholder orientation are defined as in Table 1. Additional regressions are available in Appendix A. The McFadden R-squared is the likelihood ratio index and is an analogue to the R-squared reported in linear regression models. The Akaike info criterion provides a measure of information that strikes a balance between this measure of goodness of fit and parsimonious specification of the model, the lower the value the better the fit of the model. Coefficient estimates marked with *, **, *** are statistically significant at a 10%, 5%, and 1% confidence level.

Table 7

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

	U.S.						U.K.						Netherlands					
			Leverage		Target debt ratio				Leverage		Target debt ratio				Leverage		Target debt ratio	
	% always or almost always	Mean	Low	High	No	Yes	% always or almost always	Mean	Low	High	No	Yes	% always or almost always	Mean	Low	High	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	2.61	2.60	2.63	2.54	50.00	2.13	1.88	2.83**	1.32	2.63***	51.06	2.32	2.41	2.17	2.29	2.33
(d) Our credit rating (as assigned by rating agencies)	57.10	2.46	2.29	2.64**	2.19	2.73***	27.42	1.48	1.36	1.63	1.00	1.77**	34.04	1.53	1.14	2.17*	1.29	1.64
(h) The volatility of our earnings and cash flows	48.08	2.32	2.25	2.32	2.34	2.26	35.48	1.73	1.29	2.26**	1.12	2.17***	42.55	2.06	2.14	1.94	1.79	2.18
(a) The tax advantage of interest deductibility	44.85	2.07	1.99	2.26**	2.03	2.13	30.16	1.68	1.41	2.21*	0.76	2.33***	37.50	1.90	1.93	1.84	1.36	2.12
(e) The transactions costs and fees for issuing debt	33.52	1.95	1.94	1.87	2.02	1.89	25.40	1.68	1.29	2.11**	1.04	2.06***	15.22	1.26	1.25	1.28	0.92	1.39
(c) The debt levels of other firms in our industry	23.40	1.49	1.36	1.70***	1.37	1.60**	16.13	1.11	1.12	1.00	0.84	1.34*	26.53	1.37	0.87	2.16***	0.60	1.71***
(b) The potential costs of bankruptcy, near-bankruptcy, or financial distress	21.35	1.24	1.16	1.37**	1.32	1.19	30.16	1.37	0.88	2.16***	0.80	1.81***	27.08	1.42	1.38	1.47	1.00	1.59
(i) We limit debt so our customers/suppliers are not worried about our firm going out of business	18.72	1.24	1.34	1.20	1.27	1.24	34.43	1.62	1.27	2.06**	1.08	2.03***	8.33	0.96	0.93	1.00	0.80	1.03
(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	1.18	0.83***	1.03	0.99	21.05	1.30	1.27	1.29	1.08	1.44	8.89	0.73	0.86	0.50	0.92	0.66
(j) We try to have enough debt that we are not an attractive takeover target	4.75	0.73	0.62	0.90***	0.71	0.77	0.00	0.58	0.53	0.71	0.32	0.79**	2.13	0.38	0.24	0.61	0.21	0.45
(f) The personal tax cost our investors face when they receive interest income	4.79	0.68	0.68	0.63	0.73	0.58*	3.23	0.65	0.50	0.68	0.52	0.69	4.35	0.61	0.68	0.50	0.29	0.75*
(k) If we issue debt our competitors know that we are very unlikely to reduce our output/sales	2.25	0.40	0.33	0.47**	0.44	0.36	3.33	0.60	0.55	0.74	0.60	0.64	0.00	0.24	0.21	0.29	0.15	0.27
(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	0.22	0.49***	0.34	0.34	4.84	0.52	0.47	0.47	0.52	0.49	2.22	0.27	0.21	0.35	0.00	0.36***
(l) A high debt ratio helps us bargain for concessions from our employees	0.00	0.16	0.13	0.19*	0.16	0.18	0.00	0.27	0.29	0.21	0.32	0.23	0.00	0.24	0.24	0.24	0.23	0.24

Table 7 - continued

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

	Germany						France					
			Leverage		Target debt ratio				Leverage		Target debt ratio	
	% always or almost always	Mean	Low	High	No	Yes	% always or almost always	Mean	Low	High	No	Yes
(g) Financial flexibility (we restrict debt so we have enough internal funds available to pursue new projects when they come along)	47.83	2.17	2.21	2.09	2.17	2.16	37.25	1.84	1.81	2.00	1.61	2.40**
(d) Our credit rating (as assigned by rating agencies)	38.60	1.85	1.71	2.07	1.08	2.21***	30.19	1.58	1.60	1.50	1.37	2.13
(h) The volatility of our earnings and cash flows	30.97	1.67	1.75	1.56	1.36	1.82*	34.78	1.54	1.50	1.83	1.15	2.54***
(a) The tax advantage of interest deductibility	21.05	1.28	1.23	1.36	1.00	1.41	29.63	1.57	1.57	1.60	1.50	1.75
(e) The transactions costs and fees for issuing debt	26.32	1.50	1.39	1.67	1.42	1.54	21.15	1.42	1.33	1.80	1.19	2.00*
(c) The debt levels of other firms in our industry	14.04	1.14	1.07	1.24	0.83	1.28**	12.96	1.24	1.25	1.20	1.21	1.31
(b) The potential costs of bankruptcy, near-bankruptcy, or financial distress	7.08	0.65	0.56	0.78	0.58	0.68	24.07	1.22	1.09	1.89	1.21	1.27
(i) We limit debt so our customers/suppliers are not worried about our firm going out of business	15.04	1.10	1.06	1.16	1.08	1.10	31.91	1.62	1.53	2.14	1.58	1.71
(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	19.27	1.06	1.24	0.77*	1.24	0.97	22.73	1.27	1.13	2.17*	1.19	1.50
(j) We try to have enough debt that we are not an attractive takeover target	2.68	0.48	0.27	0.80***	0.26	0.58**	6.52	0.61	0.53	1.17	0.58	0.69
(f) The personal tax cost our investors face when they receive interest income	6.31	0.75	0.75	0.75	0.86	0.69	10.00	0.84	0.80	1.00	0.69	1.21
(k) If we issue debt our competitors know that we are very unlikely to reduce our output/sales	2.68	0.43	0.33	0.58	0.42	0.43	2.22	0.40	0.31	1.00**	0.36	0.50
(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	0.93	0.31	0.28	0.36	0.25	0.35	7.32	0.63	0.66	0.50	0.60	0.73
(l) A high debt ratio helps us bargain for concessions from our employees	0.92	0.30	0.28	0.34	0.28	0.32	0.00	0.41	0.32	1.00	0.47	0.25

Table 8

Survey responses to the question "What other factors affect your firm's debt policy?"

	U.S.						U.K.						Netherlands					
	% always or almost always	Mean	Leverage		Target debt ratio		% always or almost always	Mean	Leverage		Target debt ratio		% always or almost always	Mean	Leverage		Target debt ratio	
			Low	High	No	Yes			Low	High	No	Yes			Low	High	No	Yes
(c) We issue debt when interest rates are particularly low	46.35	2.22	2.13	2.29	2.30	2.12	29.31	1.53	1.24	2.17**	0.83	2.00***	14.89	1.19	1.45	0.78**	1.29	1.15
(a) We issue debt when our recent profits (internal funds) are not sufficient to fund our activities	46.78	2.13	2.10	2.12	2.21	2.00	25.42	1.44	1.12	1.89*	1.04	1.76**	34.69	1.69	1.80	1.53	1.40	1.82
(d) We use debt when our equity is undervalued by the market	30.79	1.56	1.52	1.72	1.63	1.46	16.07	1.02	0.87	1.33	0.36	1.39***	6.38	0.62	0.59	0.67	0.50	0.67
(g) Changes in the price of our common stock	16.38	1.08	0.96	1.27**	1.16	0.99	8.93	0.82	0.81	0.83	0.30	1.16***	4.44	0.60	0.74	0.39	0.31	0.72
(e) We delay issuing debt because of transactions costs and fees	10.17	1.06	1.09	1.00	1.13	0.99	3.64	0.75	0.77	0.78	0.45	0.88*	2.13	0.40	0.52	0.22	0.07	0.55***
(f) We delay retiring debt because of recapitalization costs and fees	12.43	1.04	0.91	1.18**	1.07	0.99	0.00	0.53	0.50	0.59	0.39	0.58	2.13	0.55	0.69	0.33	0.21	0.70**
(b) Using debt gives investors a better impression of our firm's prospects than issuing stock	9.83	0.96	0.91	1.09	1.01	0.91	8.77	0.91	0.82	0.94	0.52	1.19**	2.08	0.65	0.69	0.58	0.57	0.68
(h) We issue debt when we have accumulated substantial profits	1.14	0.53	0.46	0.54	0.56	0.50	3.57	0.55	0.50	0.72	0.43	0.66	2.22	0.49	0.53	0.53	0.31	0.56

Table 8 - continued

Survey responses to the question "What other factors affect your firm's debt policy?"

	Germany						France					
	% always or almost always	Mean	Leverage		Target debt ratio		% always or almost always	Mean	Leverage		Target debt ratio	
			Low	High	No	Yes			Low	High	No	Yes
(c) We issue debt when interest rates are particularly low	32.76	1.87	1.80	1.98	1.68	1.96	24.49	1.33	1.25	1.67	1.29	1.43
(a) We issue debt when our recent profits (internal funds) are not sufficient to fund our activities	54.31	2.30	2.11	2.60*	1.64	2.60***	23.53	1.24	1.13	1.64	0.97	1.81**
(d) We use debt when our equity is undervalued by the market	6.31	0.45	0.56	0.28	0.37	0.49	8.16	0.80	0.73	1.11	0.69	1.07
(g) Changes in the price of our common stock	2.80	0.46	0.60	0.24**	0.49	0.44	4.65	0.65	0.54	1.33*	0.61	0.75
(e) We delay issuing debt because of transactions costs and fees	5.26	0.75	0.75	0.73	0.64	0.79	8.33	0.71	0.59	1.22	0.76	0.57
(f) We delay retiring debt because of recapitalization costs and fees	7.02	0.89	0.90	0.87	1.00	0.83	4.35	0.59	0.46	1.11*	0.59	0.57
(b) Using debt gives investors a better impression of our firm's prospects than issuing stock	4.31	0.75	0.61	0.98***	0.68	0.78	11.76	1.06	0.90	1.78*	0.89	1.47
(h) We issue debt when we have accumulated substantial profits	5.45	0.62	0.61	0.63	0.53	0.66	4.65	0.58	0.51	1.00	0.61	0.50

Table 9

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

	U.S.						U.K.						Netherlands					
	% always or almost always		Leverage		Target debt ratio		% always or almost always		Leverage		Target debt ratio		% always or almost always		Leverage		Target debt ratio	
		Mean	Low	High	No	Yes		Mean	Low	High	No	Yes		Mean	Low	High	No	Yes
(b) Matching the maturity of our debt with the life of our assets	63.25	2.60	2.57	2.63	2.53	2.66	58.73	2.16	1.88	2.83**	1.50	2.54**	57.45	2.55	2.61	2.47	2.06	2.81*
(g) We issue long-term debt to minimize the risk of having to refinance in "bad times"□	48.83	2.15	1.95	2.55***	2.00	2.36***	28.81	1.39	0.91	2.17***	0.46	2.03***	47.62	1.90**	1.87	1.95	1.57	2.07
(a) We issue short term when short term interest rates are low compared to long term rates	35.94	1.89	1.82	1.93	1.93	1.85	16.39	1.11	0.94	1.44	0.50	1.50***	25.00	1.48	1.56	1.37	1.53	1.45
(c) We issue short-term when we are waiting for long-term market interest rates to decline	28.70	1.78	1.67	1.90**	1.72	1.87	11.48	0.89	0.55	1.44***	0.38	1.22***	13.95	1.05	1.17	0.89	0.71	1.21
(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	1.01	0.85*	0.96	0.90	12.90	0.82	0.73	0.89	0.67	0.86	9.09	0.80**	0.88	0.68	0.71	0.83
(e) We expect our credit rating to improve, so we borrow short-term until it does	8.99	0.85	0.79	0.99*	0.98	0.65***	5.00	0.57	0.42	0.83	0.25	0.77**	4.65	0.47	0.42	0.53	0.50	0.45
(f) Borrowing short-term reduces the chance that our firm will want to take on risky projects	4.02	0.53	0.56	0.49	0.55	0.51	1.72	0.45	0.31	0.59	0.33	0.55	2.33	0.40	0.29	0.53	0.36	0.41

Table 9 - continued

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

	Germany						France					
	% always or almost always	Mean	Leverage		Target debt ratio		% always or almost always	Mean	Leverage		Target debt ratio	
			Low	High	No	Yes			Low	High	No	Yes
(b) Matching the maturity of our debt with the life of our assets	60.34	2.55	2.28	2.98***	1.89	2.86***	31.91	1.68	1.70	1.78	1.42	2.38**
(g) We issue long-term debt to minimize the risk of having to refinance in "bad times"□	51.75	2.24	1.93	2.71***	2.03	2.33	31.91	1.68	1.59	2.13	1.31	2.47**
(a) We issue short term when short term interest rates are low compared to long term rates	37.39	1.93	1.90	1.98	1.79	2.00	30.19	1.58	1.47	2.10	1.61	1.53
(c) We issue short-term when we are waiting for long-term market interest rates to decline	37.39	1.90	1.80	2.04	1.54	2.06*	16.98	1.15	1.07	1.56	1.06	1.35
(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	4.42	0.54	0.56	0.51	0.73	0.45	13.21	0.83	0.70	1.40	0.64	1.24
(e) We expect our credit rating to improve, so we borrow short-term until it does	7.89	0.58	0.45	0.78	0.57	0.58	11.76	0.75	0.55	1.67	0.66	0.94
(f) Borrowing short-term reduces the chance that our firm will want to take on risky projects	6.31	0.59	0.42	0.86**	0.42	0.68	15.22	0.83	0.75	1.33	0.72	1.07

Table 10: Multivariate Probit regression output for capital structure

	Flexibility			Target			Tax advantage			Bankruptcy costs		
	Full Sample		EU	Full Sample		EU	Full Sample		EU	Full Sample		EU
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Constant	0.03 (0,15)	-0,47** (-2,12)	-0.65** (-2,21)	0.67*** (3,57)	0,10 (0,46)	0.21 (0,81)	-0.32* (-1.73)	-0,95*** (-4,12)	-1,25*** (-3,82)	0,13 (0,73)	-0,18 (-0,85)	-0,46 (-1,55)
Germany-dummy	-0.07 (-0,33)	0,07 (0,31)	0,12 (0,50)	-0.11 (-0,52)	0,02 (0,07)	-0.04 (-0,18)	-0.49** (-2,14)	-0,39* (-1,65)	-0,33 (-1,32)	-0,46*** (-2,10)	-0,46** (-2,10)	-0,41* (-1,74)
France-dummy	-0.37 (-1,45)	-0,32 (-1,23)	-0.30 (-1,06)	-0,86*** (-3,46)	-0,78*** (-3,02)	-0.84*** (-3.15)	-0.23 (-0,90)	-0,05 (-0,19)	0,12 (0,43)	-0,08 (-0,31)	0,07 (0,27)	0,18 (0,62)
U.K.-dummy	-0,03 (-0,11)	0,09 (0,35)	0,13 (0,54)	-0,41* (-1,70)	-0,31 (-1,23)	-0,30 (-1,14)	-0,20 (-0,81)	-0,09 (-0,35)	-0,11 (-0,41)	-0,17 (-0,72)	-0,12 (-0,48)	-0,09 (-0,37)
U.S.-dummy	0,21 (1,08)	0,32 (1,56)	-	0.21 (1,03)	0,29 (1,31)	-	0.19 (0,97)	0,05 (0,26)	-	-0,01 (-0,05)	-0,02 (-0,11)	-
Leverage	-	-0,15 (-1,31)	-0.15 (-0,89)	-	0,61*** (4,66)	0.72*** (3,93)	-	0,07 (0,60)	-0,05 (0,28)	-	0,05 (0,40)	-0,05 (-0,30)
Target leverage	-	0,24* (1,76)	0.33** (1,88)	-	-	-	-	0,41** (2,78)	0,65*** (3,18)	-	0,42*** (3,11)	0,63*** (3,46)
Size	-	0,10 (0,74)	0.24 (1,02)	-	0,41*** (2,63)	0.87*** (3,25)	-	0,72*** (5,37)	0,69*** (2,98)	-	-0,12 (-0,92)	-0,11 (-0,45)
Dividend	-	0,48*** (4,04)	0.60*** (3,51)	-	0,46*** (3,74)	0.41** (2,53)	-	0,18 (1,43)	-0,02 (-0,11)	-	0,02 (0,15)	-0,02 (-0,10)
Shareholder orientated (EU)	-	-	-0.01 (-0,05)	-	-	-0.19 (-1,09)	-	-	0,33 (1,57)	-	-	0,15 (0,79)
N	632	563	303	674	616	313	639	570	280	632	562	268
McFadden R-squared	0.02	0,05	0.09	0.06	0,15	0.14	0.03	0,11	0.11	0,01	0,03	0,06
Akaike info criterion	1.38	1,34	1.23	1.11	1,01	1.18	1.30	1,21	1.11	1,38	1,38	1,37

Models 1 and 2 employ a pooled data set in which our European sample is merged with the U.S. Model 3 exclusively focuses on the European sample. The dummy for flexibility has value one if at least one response to the question g of Table 7 exceeds 2, or zero otherwise. The dummy for target equals one if the respondents indicate that they set a target debt ratio, and zero otherwise. The dummy for tax advantage has value one if the response to the questions a of Table 7 exceeds 2, and zero otherwise. The dummy for bankruptcy costs equals one if at least one response to the question b and h of Table 7 exceeds 2, or zero otherwise. The dummies of the control variables size, MBA, and shareholder orientation are defined as in Table 1. Additional regressions are available in Appendix A. The McFadden R-squared is the likelihood ratio index and is an analogue to the R-squared reported in linear regression models. The Akaike info criterion provides a measure of information that strikes a balance between this measure of goodness of fit and parsimonious specification of the model, the lower the value the better the fit of the model. Coefficient estimates marked with *, **, *** are statistically significant at a 10%, 5%, and 1% confidence level.

Appendix A: Additional Results

1 Introduction

This appendix provides additional results and discussions with our main text. In order to keep the text concise we omitted three elements from the paper. Because we expect that the information omitted may be relevant for some of our readers we decided to report additional results in this document.

In Section 2 we report univariate comparisons for firm characteristics. In Section 3 we include the results of regression specifications that serve as a robustness check to the regressions reported in the paper. In Section 4 we describe additional results for capital structure choice.

2 Univariate comparisons

In the paper we report sample splits on size and CEO education for capital budgeting and cost of capital estimated and on leverage and target ratio for capital structure. In the text we refer to other sample splits, which are not reported.

Table A1 extends Table 2 of the paper and splits the sample on the importance of shareholders. Table A2 is an extension of Table 3 and breaks up the samples according to public/private status, shareholder orientation, size, foreign sales, leverage, CEO age, CEO education and CEO tenure. Table A3 relates to Table 5 and splits on CEO age, shareholder orientation and foreign sales. Table A4 adds shareholder orientation to Table 7. Finally, Table A5 contains sample splits on size and dividend-paying for Table 8.

3 Multivariate regression results

The paper reports three regressions for each explained variables in Tables 6 and 10. We estimate two additional specifications; see Table A6 and A7. The second specification in the paper includes country dummies and firm characteristics. However, the influence of the firm characteristics may differ between the European sample and the US sample. Therefore we re-estimate the second equation and include the firm characteristics interacted with the dummy for US firms. The third specification in the paper includes shareholder orientation and is estimated for European firms only. In order to test whether the inclusion of shareholder orientation alters the estimated for other explanatory variables we estimate the third model without shareholder orientation for the European firms.

4 Capital structure: additional results and discussions

The text of the paper focuses on specific issues, while other questions in the survey receive little attention for expository reasons. Three questions in our survey are answered conditional on respondents indicating that they considered the issuance of for-

eign debt, common stock and convertible debt. The conditioning limits the number of respondents. Because the results are interesting we include the results in this appendix to our paper.

Product market and industry factors

According to Titman (1984), firms limit their amounts of debt, because stakeholders may fear that the firm goes bankrupt. For customers, this causes problems in case of spare parts and warranties, while for suppliers similar problems arise. We find little confirmation in row (i) of Table 7, where scores are low and scattered between 0.96 in the Netherlands and 1.62 in the U.K. In UK firms we even find a significant difference between firms with high and low leverage in line with the expectation that this problem is more relevant in case leverage is higher.

The product market competition model of Brander and Lewis (1986) hypothesizes that substantial amounts of debt are a credible threat to rival firms, in that the firm will not reduce production. In each of the five countries, this theory is hardly a relevant factor. The scores in row (k) of Table 7 are clustered well below 0.75, and the percentage of firms that (almost) always consider this factor varies between 0% and 3.33%.

While the previous results indicate that product market and competitive effects are of minor importance, industries may play an important role. A firm's industry may simply serve as a reference point and firms may base their capital structure choices on the choices of other firms in the industry. We investigate this behavior in general in row (c) of Table 7, and find scores ranging closely between 1.49 for the U.S. and 1.11 for the U.K. We also analyze this industry factor when inquiring about the planning of equity and convertible issuances. Row (f) of Table A9 summarizes the equity results which vary between 0.92 for Germany and 1.80 for France. This range is somewhat wider for the convertible results in row (d) of Table 10, where the minimum is 0.60 for Germany and the maximum is 1.67 in the Netherlands. The evidence is consistent over the three questions and over the five countries, as other firms in the industry are moderately important.

Control contests

Harris and Raviv (1988) argue that firms may try to have enough debt in order to be an unattractive take-over target. Table 7, row (j) reports that this consideration is relatively unimportant, since for all national samples the average score lies below 0.75. Stulz (1988) claims that managers may object against an issue of common stock, because this dilutes their private stakes in the company. Row (j) of Table A8 reports that this consideration is most important in the US, where the score equals 2.14. In our European samples we also find some mild support for this dilution argument, except for Germany where the score is only 0.83. As we noted in the discussion on agency problems, the similarities in the results are remarkably large, given the pronounced institutional differences between the five countries.

Risk management

Many firms receive part of their revenues in foreign currencies. According to Géczy, Minton, and Schrand (1997) the issuance of debt, denominated in a foreign currency, may provide an efficient hedge against the currency risks created by these foreign revenues. We ask respondents whether they use foreign debt issuances as a natural hedge and whether they strive to match foreign cash inflows and outflows. The results to these questions are gathered in Table A8, rows (c) and (d), respectively. The scores on foreign debt as a natural hedge are rather high: 3.15 (US), 3.09 (UK), 1.54 (NL), 2.00(GE), and 1.75 (FR). A similar question is whether foreign debt is issued to match cash in flows and out flows: 2.67 (US), 2.55 (UK), 1.93 (NL), 1.88 (GE), and 2.00 (FR). Only in the Netherlands and Germany interest rates are more important determinants of foreign debt choice.

Another risk management perspective is the matching of debt and asset maturity. In each of the five countries, this turns out to be the most important factor in the debt maturity decision. The scores in row (b) of Table 9 range between 2.60 for the U.S. and 1.68 for France. Apparently, firms match the duration of assets and liabilities such that changes in the interest rates have the lowest impact on firm's operations.

Practical, cash management considerations

Row (g) of Table 9 shows that the second most important factor in debt maturity choice is the preference for long term debt in order to reduce refinancing risk. In accordance with Graham and Harvey we find that this factor matters most in highly levered firms, indicating that these worry about having to refinance their debt capital in "bad times" and therefore prefer long term financing.

A practical motivation for issuing stock is that the firms have to provide shares for bonus or stock option plans. We also detect this relevant importance in row (c) of Table A9 where our results cluster around 2.00, except for France where we document only 1.40.

Other factors affecting capital structure: Debt

Hanka (1998) argues that a high debt ratio may help firms in bargaining with employees for concessions. As row (l) of Table 7 reports, this is clearly the most unimportant factor, as in the five countries; only one German firm almost always considers this aspect. Hovakimian, Opler and Titman (2001) find that U.S. firms with high returns on assets are more likely to issue debt. They reason that more profitable firms become under-levered, relative to their targets, and their financing choices serve to off-set earnings-driven changes. Our findings in row (h) of Table 8 show that this empirical evidence does not return in the managers' opinions, as scores remain well below 0.75 in all samples. Also no difference between firms with and without a target debt ratio arises.

Other factors affecting capital structure: Common stock

The issuance of common stock influences the earnings per share (EPS), which is an often-reported statistic in newspapers and analyst reports. Issuing debt increases EPS, while an equity issue decreases this number. Economically, the value should be unaffected by changes in this number simply because the denominator changes. However, as row (m) of Table A8 proves, EPS dilution is considered to be very important in the U.S., U.K., and in the Netherlands (with scores equaling 2.84, 2.04, and 2.23, respectively). Contrasting to Germany and France, where not a single firm considers this EPS effect. The marked differences between the more stock-market oriented countries versus Germany and France emphasize our earlier conclusion about the importance of the stock-market orientation.

In row (b) of Table A9 we present the scores on whether firms perceive equity as the least risky source of funds. Our results, which range between 1.42 for Germany and 2.00 for France, give a moderate support for Williamson's (1988) arguments that equity is a cheap form of financing in case low asset-specificity. Row (d) states that only a minority of firms considers stock as the cheapest source of funds.

Other factors affecting capital structure: Convertible debt

Convertible debt issues normally include a call or forced-conversion feature, which serves as an option, which can be exercised when valuable. Our results in row (g) of Table A10, report that managers of U.S. and U.K. firms like this feature, given their average score 2.29 and 3.00. CFOs of Continental European firms express lower appreciation for this call feature.

Other factors affecting capital structure: Foreign debt

Table A8, row (d) reports that foreign regulations are hardly relevant in the foreign debt decisions, as the scores remain low in all countries.

TABLES APPENDIX A

Table A1

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

	U.K.				Netherlands				Germany				France			
	% always or almost always	Mean	Shareholder Oriented		% always or almost always	Mean	Shareholder Oriented		% always or almost always	Mean	Shareholder Oriented		% always or almost always	Mean	Shareholder Oriented	
			Yes	No			Yes	No			Yes	No			Yes	No
(b) Internal rate of return	53.13	2.31	2,40	2,00	56.00	2.36	2,94	2,23	42.15	2.15	2,52	2,19	44.07	2.27	2,42	1,86
(a) Net present value	46.97	2.32	2,57	1,79	70.00	2.76	2,39	2,38	47.58	2.26	2,18	2,18	35.09	1.86	2,86	2,25
(f) Payback period	69.23	2.77	2,63	3.29**	64.71	2.53	2,57	2,62	50.00	2.29	2,33	2,25	50.88	2.46	2,38	2,81
(c) Hurdle rate	26.98	1.35	1,52	0.79*	41.67	1.98	2,03	2,00	28.81	1.61	1,45	1,66	3.85	0.73	1,17	0,59
(j) Sensitivity analysis	42.86	2.21	2,23	2,36	36.73	1.84	1,89	1,75	28.07	1.65	1,97	1,53	10.42	0.79	0,92	0,78
(d) Earnings multiple approach	39.06	1.81	1,91	1,46	26.53	1.61	1,75	1,17	20.51	1.25	1,55	1,15	33.33	1.70	1,83	1,71
(g) Discounted payback period	25.40	1.49	1,49	1,57	25.00	1.25	1,20	1,50	30.51	1.59	1,82	1,48	11.32	0.87	1,15	0,85
(l) We incorporate the "real options" of a project when evaluating it	29.03	1.65	1,50	1,79	34.69	1.49	1,42	1,83	44.04	2.24	2,33	2,25	53.06	2.20	2,18	2,30
(i) Accounting rate of return	38.10	1.79	1,89	1,64	25.00	1.40	1,29	1,75	32.17	1.63	1,64	1,64	16.07	1.11	1,62	0,97
(k) Value at risk	14.52	0.85	0,83	1,00	4.26	0.51	0,59	0,33	23.68	1.45	1,66	1,34	29.79	1.68	1,75	1,80
(e) Adjusted present value	14.06	0.78	0,83	0,64	8.16	0.78	0,86	0,42	7.83	0.71	0,88	0,65	14.55	1.11	1,50	1,06
(h) Profitability index	15.87	1.00	0,96	1,29	8.16	0.78	0,78	0,83	16.07	1.04	1,27	0,96	37.74	1.64	2,00	1,75

Table A2

Survey responses to the question "Does your firm estimate the cost of equity capital? If "yes", how do you determine your firm's cost of equity capital?"

U.K.

		Shareholder Oriented		Size		Public		Foreign Sales		Leverage		CEO MBA		CEO age		CEO Tenure	
		Yes	No	Small	Large	Yes	No	Yes	No	Low	High	Yes	No	>59	<59	Long	Short
(b)	Using the Capital Asset Pricing Model (the beta approach)	2,19	1,40	1,88	2,63	2,21	1,56	2,22	1,88	1,89	2,08	1,00	2,16	2,50	2,00	2,80	1.75**
(a)	With average historical returns on common stock	1,54	0,80	1,23	2.50*	1,67	1,00	1,11	1,93	1,59	1,42	2,00	1,14	1,75	1,43	1,67	1,39
(c)	Using the CAPM but including some extra "risk factors"□	1,56	1,20	1,24	2,13	1,48	1,56	1,33	1,60	1,79	0,91	1,00	1,50	1,00	1,52	2,22	1.17*
(f)	Back out from discounted dividend/earnings model	0,71	0,80	0,84	0.20**	0,76	0,75	0,59	0,92	0,88	0,42	0,67	0,74	0,33	0,78	1,00	0,64
(d)	Whatever our investors tell us they require	1,13	1,40	1,42	0.17***	1,17	1,43	0,83	1.64*	1,65	0,83	1,67	1,14	0,25	1.31**	0,33	1.52***
(e)	By regulatory decisions	0,65	1,80	1,08	0,33	0,87	1,29	0,56	1.46*	1,29	0,64	1,00	0,93	0,25	1.04*	0,33	1.18**

Netherlands

		Shareholder Oriented		Size		Public		Foreign Sales		Leverage		CEO MBA		CEO age		CEO Tenure	
		Yes	No	Small	Large	Yes	No	Yes	No	Low	High	Yes	No	>59	<59	Long	Short
(b)	Using the Capital Asset Pricing Model (the beta approach)	2,32	3,00	1,89	3.33***	2,80	1,83	2,65	1,90	2,27	2,50	2,71	2,00	3,00	2,35	2,67	2,33
(a)	With average historical returns on common stock	1,52	0.25***	1,67	0,88	1,43	1,42	1,19	1,80	1,29	1,58	1,23	1,62	0,00	1,48	1,00	1,48
(c)	Using the CAPM but including some extra "risk factors"□	1,24	0,50	0,82	1,56	1,43	0,67	1,50	0.40**	1,07	1,09	1,46	0,69	0,00	1,12	1,50	1,04
(f)	Back out from discounted dividend/earnings model	0,73	1,20	0,89	0,56	0,40	1,23	0,89	0,60	0,33	1.31*	0,93	0,64	0,00	0,81	1,00	0,75
(d)	Whatever our investors tell us they require	2,26	0.40***	2,26	1.10*	1,44	2,38	1,89	1,80	2,00	1,69	1,73	2,00	3,50	1.74*	2,00	1,85
(e)	By regulatory decisions	0,36	0.00*	0,39	0,22	0,20	0,50	0,18	0,60	0,40	0,25	0,07	0,62	0,00	0,35	0,00	0.38**

Germany

		Shareholder Oriented		Size		Public		Foreign Sales		Leverage		CEO MBA		CEO age		CEO Tenure	
		Yes	No	Small	Large	Yes	No	Yes	No	Low	High	Yes	No	>59	<59	Long	Short
(b)	Using the Capital Asset Pricing Model (the beta approach)	1,19	1,47	0,93	2.83***	1,50	1,30	1,56	1,15	1,29	1,50	1,32	1,39	1,33	1,36	1,11	1,41
(a)	With average historical returns on common stock	1,21	0.97*	1,28	0.27***	1,73	0.77**	1,04	1,08	1,10	1,00	1,19	0,97	0,75	1,12	1,50	0,98
(c)	Using the CAPM but including some extra "risk factors"□	0,74	1,00	0,66	1.75**	0,56	1,02	1,00	0,79	0,87	0,94	1,08	0,74	0,67	0,94	1,50	0,76
(f)	Back out from discounted dividend/earnings model	0,72	0,50	0,71	0.10***	0,56	0,59	0,63	0,54	0,42	0,88	0,52	0,63	0,75	0,55	2,17	0.36**
(d)	Whatever our investors tell us they require	2,15	1,80	2,03	1,82	1,67	2,11	1,96	2.00*	2,06	1,83	2,50	1.59***	1,75	2,02	2,25	1,93
(e)	By regulatory decisions	0,41	0,19	0,26	0,30	0,23	0,29	0,09	0,43	0,36	0,13	0,37	0,20	0,57	0,22	0,40	0,26

France

		Shareholder Oriented		Size		Public		Foreign Sales		Leverage		CEO MBA		CEO age		CEO Tenure	
		Yes	No	Small	Large	Yes	No	Yes	No	Low	High	Yes	No	>59	<59	Long	Short
(b)	Using the Capital Asset Pricing Model (the beta approach)	2,40	1,82	1,56	3.33***	2,00	1,90	1,93	1,88	1,74	2,38	2,09	1.80*	1,74	3,00	2,35	1,36
(a)	With average historical returns on common stock	1,18	1,47	1,41	0,83	1,50	1,29	1,29	1,31	1,33	1,22	1,50	1,19	1,48	0.00***	1,44	1,13
(c)	Using the CAPM but including some extra "risk factors"□	1,70	1,47	1,23	2,00	2,00	1,35	1,47	1,31	1,25	1,78	1,69	1,20	1,48	0,75	1,42	1,36
(f)	Back out from discounted dividend/earnings model	0,80	0,69	0,78	0,33	0,50	0,70	0,79	0,60	0,62	0,88	0,82	0,61	0,80	0.00***	0,73	0,64
(d)	Whatever our investors tell us they require	2,00	1,53	1,73	1,33	3,50	1.53*	1,75	1,56	1,58	1,88	2,09	1,43	1,89	0.00***	1,72	1,57
(e)	By regulatory decisions	1,00	1,00	0,84	1,00	2,00	0,79	0,60	1,13	0,91	0,75	1,00	0,80	1,00	0.00***	0,88	0,86

Table A3

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…"

	U.S.						U.K.								Netherlands			
	% always or almost always	Mean	Foreign Sales Yes	Foreign Sales No	CEO Age >59	CEO Age <59	% always or almost always	Mean	Shareholder Oriented Yes	Shareholder Oriented No	Foreign Sales Yes	Foreign Sales No	CEO Age >59	CEO Age <59	% always or almost always	Mean	Shareholder Oriented Yes	Shareholder Oriented No
(a) The discount rate for our entire company	58.79	2.50	2,87**	2,33***	2,54	2,49	40.98	1.97	2,22	1.25*	2,54	1.54**	1,43	2,04	64.58	2.48	2,43	2,58
(d) A risk-matched discount rate for this particular project (considering both country and industry)	50.95	2.09	2,21	2,02	2,31	2,02*	23.73	1.17	1,23	0,82	1,77	0.70***	1,14	1,17	27.08	1.27	1,44	0,45
(b) The discount rate for the overseas market (country discount rate)	34.52	1.65	1,81	1,58	1,80	1,61	20.00	0.97	0,91	1,09	0,96	0,97	0,14	1.08***	14.89	1.09	0,86	1,73
(c) A divisional discount rate (if the project line of business matches a domestic division)	15.61	0.95	0,94	0,93	1,18	0,87**	17.24	0.91	0,98	0,73	1,20	0,70	0,17	1.00***	17.02	0.96	1,14	0,10***
(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	0,63	0,68	0,72	0,62	10.53	0.58	0,61	0,55	0,60	0,56	0,00	0.65***	2.13	0.26	0,31	0,00***

	Netherlands				Germany								France					
	Foreign Sales Yes	Foreign Sales No	CEO Age >59	CEO Age <59	% always or almost always	mean	Shareholder Oriented Yes	Shareholder Oriented No	Foreign Sales Yes	Foreign Sales No	CEO Age >59	CEO Age <59	Shareholder Oriented Yes	Shareholder Oriented No	Foreign Sales Yes	Foreign Sales No	CEO Age >59	CEO Age <59
(a) The discount rate for our entire company	2,50	2,45	4,00	2.41***	41.96	2.00	1,66	2.22*	2,31	1.74*	2,47	1,93	1,14	1,03	1,36	0,79	1,10	1,02
(d) A risk-matched discount rate for this particular project (considering both country and industry)	1,54	0,90	2,00	1,24	25.00	1.16	1,61	0.91**	1,74	0.68***	1,07	1,18	2,23	0.94**	1,22	1,13	0,70	1,27
(b) The discount rate for the overseas market (country discount rate)	1,32	0,74	3,00	1,00	14.85	0.92	1,03	0,91	1,40	0.50***	0,79	0,94	0,92	0,83	0,82	0,73	0,00	0,93***
(c) A divisional discount rate (if the project line of business matches a domestic division)	1,04	0,85	3,00	0,87	12.00	0.69	0,70	0,67	0,96	0.46**	0,57	0,71	1,31	0,56	0,87	0,58	0,00	0,85***
(e) A different discount rate for each component cashflow that has a different risk characteristic (e.g.: depreciation vs. operating cash flows)	0,29	0,21	0,00	0.27***	7.14	0.51	0,52	0,50	0,57	0,46	0,33	0,53	1,69	0.27***	0,48	0,72	0,00	0,77***

Table A4

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

	U.S.						U.K.						Netherlands					
	% always or almost always	Mean	Leverage		Target debt ratio		% always or almost always	Mean	Leverage		Shareholder Oriented		% always or almost always	Mean	Leverage		Shareholder Oriented	
			Low	High	Yes	No			Low	High	Yes	No			Low	High	Yes	No
(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	2.61	2.60	2.63	2.54	50.00	2.13	1.88	2.83**	2,13	2,00	51.06	2.32	2.41	2.17	2,33	2,27
(d) Our credit rating (as assigned by rating agencies)	57.10	2.46	2.29	2.64**	2.19	2.73***	27.42	1.48	1.36	1.63	1,48	1,54	34.04	1.53	1.14	2.17*	1,81	0,64
(h) The volatility of our earnings and cash flows	48.08	2.32	2.25	2.32	2.34	2.26	35.48	1.73	1.29	2.26**	1,60	2,08	42.55	2.06	2.14	1.94	2,28	1,36
(a) The tax advantage of interest deductibility	44.85	2.07	1.99	2.26**	2.03	2.13	30.16	1.68	1.41	2.21*	1,74	1,31	37.50	1.90	1.93	1.84	1,97	1,67
(e) The transactions costs and fees for issuing debt	33.52	1.95	1.94	1.87	2.02	1.89	25.40	1.68	1.29	2.11**	1,55	2,00	15.22	1.26	1.25	1.28	1,37	0,91
(c) The debt levels of other firms in our industry	23.40	1.49	1.36	1.70***	1.37	1.60**	16.13	1.11	1.12	1.00	1,15	1,00	26.53	1.37	0.87	2.16***	1,44	1,12
(b) The potential costs of bankruptcy, near-bankruptcy, or financial distress	21.35	1.24	1.16	1.37**	1.32	1.19	30.16	1.37	0.88	2.16***	1,28	1,92	27.08	1.42	1.38	1.47	1,53	1,08
(i) We limit debt so our customers/suppliers are not worried about our firm going out of business	18.72	1.24	1.34	1.20	1.27	1.24	34.43	1.62	1.27	2.06**	1,66	1,62	8.33	0.96	0.93	1.00	1,03	0,75
(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	1.18	0.83***	1.03	0.99	21.05	1.30	1.27	1.29	1,31	1,36	8.89	0.73	0.86	0.50	0,71	0,80
(j) We try to have enough debt that we are not an attractive takeover target	4.75	0.73	0.62	0.90***	0.71	0.77	0.00	0.58	0.53	0.71	0,53	0,82	2.13	0.38	0.24	0.61	0,47	0,09
(f) The personal tax cost our investors face when they receive interest income	4.79	0.68	0.68	0.63	0.73	0.58*	3.23	0.65	0.50	0.68	0,51	1.23*	4.35	0.61	0.68	0.50	0,69	0,36
(k) If we issue debt our competitors know that we are very unlikely to reduce our output/sales	2.25	0.40	0.33	0.47**	0.44	0.36	3.33	0.60	0.55	0.74	0,52	0,92	0.00	0.24	0.21	0.29	0,29	0,09
(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	0.22	0.49***	0.34	0.34	4.84	0.52	0.47	0.47	0,53	0,54	2.22	0.27	0.21	0.35	0,26	0,27
(l) A high debt ratio helps us bargain for concessions from our employees	0.00	0.16	0.13	0.19*	0.16	0.18	0.00	0.27	0.29	0.21	0.23	0.46	0.00	0.24	0.24	0.24	0,29	0,09

Table A4 - continued

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

	always	Mean	Low	High	Yes	No	always	Mean	Low	High	Yes	No
(g) Financial flexibility (we restrict debt so we have enough internal funds available to pursue new projects when they come along)	47.83	2.17	2.21	2.09	2,06	2,21	37.25	1.84	1.81	2.00	2,23	1,85
(d) Our credit rating (as assigned by rating agencies)	38.60	1.85	1.71	2.07	2,00	1,79	30.19	1.58	1.60	1.50	2,31	1,46
(h) The volatility of our earnings and cash flows	30.97	1.67	1.75	1.56	1,62	1,64	34.78	1.54	1.50	1.83	2,33	1.32*
(a) The tax advantage of interest deductibility	21.05	1.28	1.23	1.36	1,56	1,18	29.63	1.57	1.57	1.60	1,92	1,50
(e) The transactions costs and fees for issuing debt	26.32	1.50	1.39	1.67	1,62	1,44	21.15	1.42	1.33	1.80	2,15	1.23*
(c) The debt levels of other firms in our industry	14.04	1.14	1.07	1.24	1,38	1,06	12.96	1.24	1.25	1.20	1,46	1,06
(b) The potential costs of bankruptcy, near-bankruptcy, or financial distress	7.08	0.65	0.56	0.78	0,67	0,65	24.07	1.22	1.09	1.89	1,31	1,23
(i) We limit debt so our customers/suppliers are not worried about our firm going out of business	15.04	1.10	1.06	1.16	1,21	1,06	31.91	1.62	1.53	2.14	1,83	1,65
(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	19.27	1.06	1.24	0.77*	1,83	0.67***	22.73	1.27	1.13	2.17*	1,42	1,10
(j) We try to have enough debt that we are not an attractive takeover target	2.68	0.48	0.27	0.80***	0,47	0,49	6.52	0.61	0.53	1.17	1,00	0,45
(f) The personal tax cost our investors face when they receive interest income	6.31	0.75	0.75	0.75	0,97	0,63	10.00	0.84	0.80	1.00	1,08	0,84
(k) If we issue debt our competitors know that we are very unlikely to reduce our output/sales	2.68	0.43	0.33	0.58	0,48	0,40	2.22	0.40	0.31	1.00**	0,33	0,37
(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	0.93	0.31	0.28	0.36	0,41	0,26	7.32	0.63	0.66	0.50	0,92	0,44
(l) A high debt ratio helps us bargain for concessions from our employees	0.92	0.30	0.28	0.34	0,41	0,25	0.00	0.41	0.32	1.00	0,25	0,43

Table A5

Survey responses to the question "What other factors affect your firm's debt policy?"

	U.S.						U.K.						Netherlands					
			Size		Dividend				Size		Dividend				Size		Dividend	
	% always or almost always	Mean	Small	Large	Yes	No	% always or almost always	Mean	Small	Large	Yes	No	% always or almost always	Mean	Small	Large	Yes	No
(c) We issue debt when interest rates are particularly low	46.35	2.22	2.07	2.40**	2.37	1.98***	29.31	1.53	1.43	2.11	1.80	1.00**	14.89	1.19	1,14	1,40	1,14	1,33
(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	2.16	25.42	1.44	1.44	1.44	1.71	0.96**	34.69	1.69	1,67	1,80	1,58	2,00
(d) We use debt when our equity is undervalued by the market	30.79	1.56	1.37	1.76***	1.65	1.37*	16.07	1.02	0.87	1.78**	1.39	0.36***	6.38	0.62	0,49	1,10	0,63	0,58
(g) Changes in the price of our common stock	16.38	1.08	0.91	1.25***	1.14	0.95	8.93	0.82	0.69	1.63*	1.09	0.41***	4.44	0.60	0,49	1,00	0,68	0,36
(e) We delay issuing debt because of transactions costs and fees	10.17	1.06	1.25	0.83***	0.97	1.20**	3.64	0.75	0.74	0.75	1.00	0.38***	2.13	0.40	0,38	0,50	0,46	0,25
(f) We delay retiring debt because of recapitalization costs and fees	12.43	1.04	1.04	1.05	1.13	0.93*	0.00	0.53	0.47	0.88	0.66	0.36	2.13	0.55	0,54	0,60	0,57	0,50
(b) Using debt gives investors a better impression of our firm's prospects than issuing stock	9.83	0.96	0.85	1.05*	1.00	0.84	8.77	0.91	0.88	1.11	1.12	0.59*	2.08	0.65	0,68	0,50	0,69	0,50
(h) We issue debt when we have accumulated substantial profits	1.14	0.53	0.50	0.55	0.55	0.50	3.57	0.55	0.54	0.63	0.79	0.18***	2.22	0.49	0,47	0,56	0,47	0,55

Table A5 - continued

Survey responses to the question "What other factors affect your firm's debt policy?"

	Germany						France					
			Size		Dividend				Size		Dividend	
	% always or almost always	Mean	Small	Large	Yes	No	or almost always	Mean	Small	Large	Yes	No
(c) We issue debt when interest rates are particularly low	32.76	1.87	1,86	1,92	1,88	1,86	24.49	1.33	1,24	1,75	1,33	1,31
(a) We issue debt when our recent profits (internal funds) are not sufficient to fund our activities	54.31	2.30	2,30	2,31	2,26	2,34	23.53	1.24	1,07	2,00	1,23	1,25
(d) We use debt when our equity is undervalued by the market	6.31	0.45	0,39	0,92	0,49	0,41	8.16	0.80	0,68	1,38	0,76	0,88
(g) Changes in the price of our common stock	2.80	0.46	0,43	0,67	0,46	0,46	4.65	0.65	0,66	0,63	0,68	0,60
(e) We delay issuing debt because of transactions costs and fees	5.26	0.75	0,68	1.23*	0,86	0,64	8.33	0.71	0,68	0,88	0,59	0,94
(f) We delay retiring debt because of recapitalization costs and fees	7.02	0.89	0,88	0,92	0,89	0,88	4.35	0.59	0,61	0,50	0,48	0,80
(b) Using debt gives investors a better impression of our firm's prospects than issuing stock	4.31	0.75	0,78	0,54	0,81	0,69	11.76	1.06	1,02	1,25	1,09	1,00
(h) We issue debt when we have accumulated substantial profits	5.45	0.62	0,62	0,62	0,67	0,57	4.65	0.58	0,54	0,75	0,57	0,50

Table A6: Multivariate Probit regression output for capital budgeting

	Capital Budgeting		Cost of Capital		CAPM		Discount rate	
	Full Sample	EU	Full Sample	EU	Full Sample	EU	Full Sample	EU
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Constant	0.58	0.58	0.04	0.04	-0.91	-0.91	-0.61	-0.61
	(2.68)	(2.68)	(0.19)	(0.19)	(-4.17)	(-4.17)	(-2.99)	-2.98
Germany-dummy	-0.51	-0.51	-0.21	-0.21	-1.30	-0.31	-0.09	-0.09
	(-2.16)	(-2.16)	(-0.97)	(-0.97)	(-1.30)	(-1.30)	(-0.40)	(-0.40)
France-dummy	-0.67	-0.67	-0.03	-0.03	0.16	0.16	-0.19	-0.19
	(-2.51)	(-2.51)	(-0.11)	(-0.11)	(0.61)	(0.61)	(-0.75)	(-0.75)
U.K.-dummy	-0.25	-0.25	-0.14	0.14	0.10	0.10	-0.01	-0.01
	(-0.94)	(-0.94)	(-0.58)	(-0.58)	(0.37)	(0.37)	(-0.03)	(-0.03)
U.S.-dummy	1.06	-	0.02	-	0.62	-	0.53	-
	(3.77)		(0.10)		(2.48)		(2.26)	
Size	1.45	1.45	1.10	1.10	1.22	1.22	0.59	0.59
	(4.06)	(4.06)	(4.57)	(4.57)	(5.75)	(5.75)	(2.78)	(2.78)
MBA	0.16	0.16	-0.01	-0.01	0.16	0.16	0.32	0.32
	(1.00)	(1.00)	(-0.09)	(-0.09)	(0.91)	(0.91)	(1.93)	(0.05)
Size x U.S.-dummy	-0.62	-	-0.12	-	-0.16	-	-0.21	-
	(-1.17)		(-0.42)		(-0.62)		(-0.80)	
MBA x U.S.-dummy	-0.15	-	-0.10	-	-0.02	-	-0.26	-
	(-0.46)		(-0.46)		(-0.09)		(-1.18)	
N	652	303	648	313	601	313	578	283
McFadden R-squared	0,28	0,09	0,09	0,06	0,20	0,12	0,06	0,04
Akaike info criterion	0,72	0,72	1,26	1,34	1,11	1,01	1,32	1,25

The dummy for capital budgeting has value one if at least one response to the questions a, b, e or g of Table 2 exceeds 2, or zero otherwise. The dummy for cost of capital equals one if respondents indicate that they calculate the cost of capital, and zero otherwise. The dummy for CAPM has value one if at least one response to the questions b or c of Table 3 exceeds 2, and zero otherwise. The dummy for discount rate equals one if at least one response to the question c, d or e of Table 5 exceeds 2, or zero otherwise. The dummies of the control variables size, MBA, and shareholder orientation are defined as in Table 1. The McFadden R-squared is the likelihood ratio index and is an analogue to the R-squared reported inlinear regression models. The Akaike info criterion provides a measure of information that strikes a balance between this measure of goodness of fit andparsimonious specification of the model, the lower the value the better the fit of the model. Coefficient estimates marked with *, **, *** are statisticallysignificant at a 10%, 5%, and 1% confidence level.

Table A7: Multivariate Probit regression output for capital structure

	Flexibility		Target		Tax advantage		Bankruptcy costs	
	Full Sample	EU	Full Sample	EU	Full Sample	EU	Full Sample	EU
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Constant	-0.38	-0.66	0.07	0.07	-0.48	-0.48	0.18	0.18
	(-1.17)	(-2.63)	(0.30)	(0.30)	(-1.42)	(-1.42)	(0.55)	(0.55)
Germany-dummy	0.12	0.12	0.02	0.02	-0.43	-0.43	-0.45	-0.45
	(0.52)	(0.52)	(0.07)	(0.07)	(-1.79)	(-1.79)	(-1.98)	(-1.98)
France-dummy	-0.29	-0.29	-0.78	-0.78	-0.01	-0.01	0.12	0.12
	(-1.09)	(-1.09)	(-2.98)	(-2.98)	(-0.01)	(-0.01)	(0.45)	(0.45)
U.K.-dummy	0.13	0.13	-0.31	-0.31	-0.10	-0.10	-0.08	-0.08
	(0.53)	(0.53)	(-1.19)	(-1.19)	(-0.38)	(-0.38)	(-0.34)	(-0.34)
U.S.-dummy	0.44	-	0.38	-	-0.30	-	-0.14	-
	(1.57)		(1.41)		(-1.00)		(-0.48)	
Leverage	-0.15	-0.15	0.69	0.69	-0.05	-0.05	-0.05	-0.05
	(-0.89)	(-0.89)	(3.84)	(3.84)	(-0.25)	(-0.25)	(-0.28)	(-0.28)
Target leverage	0.33	0.33	-	-	0.64	0.64	0.62	0.62
	(1.89)	(1.89)			(3.11)	(3.11)	(3.41)	(3.41)
Size	0.24	0.24	0.85	0.85	0.74	0.74	0.13	0.13
	(1.02)	(1.02)	(3.18)	(3.18)	(3.27)	(3.27)	(0.56)	(0.56)
Dividend	0.60	0.59	0.39	0.39	0.01	0.01	-0.00	-0.00
	(3.54)	(3.54)	(2.44)	(2.44)	(0.04)	(0.04)	(-0.02)	(-0.02)
Leverage x U.S.-dummy	0.01	-	-0.16	-	0.21	-	0.18	-
	(0.05)		(-0.61)		(0.88)		(0.80)	
Target leverage x U.S.-dummy	-0.28	-	-	-	-0.48	-	-0.51	-
	(-1.00)				(-1.60)		(-1.84)	
Size x U.S.-dummy	-0.17	-	-0.74	-	-0.10	-	-0.39	-
	(-0.61)		(-2.18)		(-0.33)		(-1.38)	
Dividend x U.S.-dummy	-0.21	-	0.21	-	0.32	-	0.08	-
	(-0.90)		(0.84)		(1.29)		(0.32)	
N	563	275	616	313	570	280	562	268
McFadden R-squared	0.06	0.07	0.15	0.14	0.12	0.10	0.04	0.05
Akaike info criterion	1.35	1.35	1.01	1.18	1.21	1.12	1.38	1.36

Table A8

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?"

	US		UK		Netherlands		Germany		France	
	% always or almost always	Mean	% always or almost always	Mean	% always or almost always	Mean	% always or almost always	Mean	% always or almost always	Mean
(c) Providing a "natural hedge" (e.g.: if the foreign currency devalues, we are not obligated to pay interest in own currency)	85.84	3.15	90.91	3.09	38.46	1.54	41.18	2.00	37.50	1.75
(b) Keeping the "source of funds" close to the "use of funds"□	63.39	2.67	72.73	2.55	50.00	1.93	45.45	1.88	50.00	2.00
(a) Favourable tax treatment relative to the UK (e.g.: different corporate tax rates)	52.25	2.26	36.36	2.27	42.86	2.00	39.39	1.79	25.00	1.00
(e) Foreign interest rates may be lower than domestic interest rates	44.25	2.19	9.09	1.36	58.33	2.42	60.61	2.64	25.00	1.38
(d) Foreign regulations require us to issue debt abroad	5.50	0.63	0.00	0.64	23.08	1.00	6.45	0.65	0.00	0.63

Table A9

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?"

	US		UK		Netherlands		Germany		France	
	% always or almost always	Mean	% always or almost always	Mean	% always or almost always	Mean	% always or almost always	Mean	% always or almost always	Mean
(m) Earnings per share dilution	68.55	2.84	39.13	2.04	53.85	2.23	0.00	0.42	0.00	0.00
(k) The amount by which our stock is undervalued or overvalued by the market	66.94	2.69	52.17	2.17	38.46	1.69	41.67	1.92	33.33	2.00
(a) If our stock price has recently risen, the price at which we can issue is "high"□	62.60	2.53	52.00	2.24	46.15	1.77	33.33	1.50	40.00	1.40
(c) Providing shares to employee bonus/stock option plans	53.28	2.34	56.00	2.44	46.15	1.92	41.67	2.17	0.00	1.40
(e) Maintaining target debt-to-equity ratio	51.59	2.26	40.00	1.72	61.54	2.85	8.33	1.08	60.00	2.80
(j) Diluting the holdings of certain shareholders	50.41	2.14	30.43	1.70	38.46	1.85	8.33	0.83	33.33	1.67
(b) Stock is our "least risky" source of funds	30.58	1.76	24.00	1.76	30.77	1.62	25.00	1.42	40.00	2.00
(g) Whether our recent profits have been sufficient to fund our activities	30.40	1.76	43.48	1.91	35.71	1.86	50.00	1.83	40.00	2.00
(f) Using a similar amount of equity as is used by other firms in our industry	22.95	1.45	13.04	1.00	15.38	1.08	8.33	0.92	20.00	1.80
(h) Issuing stock gives investors a better impression of our firm's prospects than using debt	21.49	1.31	18.18	1.41	15.38	1.31	16.67	1.42	0.00	0.33
(l) Inability to obtain funds using debt, convertibles, or other sources	15.57	1.15	18.18	1.00	46.67	1.67	0.00	0.17	0.00	0.00
(d) Common stock is our cheapest source of funds	14.05	1.10	12.00	1.28	0.00	0.92	16.67	1.33	50.00	2.00
(i) The capital gains tax rates faced by our investors (relative to tax rates on dividends)	5.00	0.82	4.76	0.71	14.29	1.00	8.33	0.83	33.33	1.33

Table A10

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?"

	US		UK		Netherlands		Germany		France	
	% always or almost always	Mean	% always or almost always	Mean	% always or almost always	Mean	% always or almost always	Mean	% always or almost always	Mean
(a) Convertibles are an inexpensive way to issue "delayed" common stock	58.11	2.49	50.00	2.50	66.67	2.83	40.00	2.60	25.00	1.50
(f) Our stock is currently undervalued	50.68	2.34	33.33	2.17	33.33	2.17	80.00	3.20	0.00	0.25
(g) Ability to "call" or force conversion of convertible debt if/when we need to	47.95	2.29	80.00	3.00	16.67	1.17	20.00	1.20	12.50	1.63
(e) Avoiding short-term equity dilution	45.83	2.18	33.33	2.17	83.33	3.17	0.00	1.00	37.50	2.13
(h) To attract investors unsure about the riskiness of our company	43.84	2.07	0.00	1.00	50.00	2.33	60.00	2.40	16.67	0.67
(c) Convertibles are less expensive than straight debt	41.67	1.85	50.00	2.33	50.00	1.83	75.00	3.00	12.50	1.38
(d) Other firms in our industry successfully use convertibles	12.50	1.10	0.00	0.80	16.67	1.67	0.00	0.60	12.50	0.75
(b) Protecting bondholders against unfavourable actions by managers or stockholders	1.41	0.62	20.00	1.00	0.00	0.67	0.00	0.80	0.00	0.38

Appendix B: The Survey

1. How frequently does your firm use the following techniques when deciding which projects or acquisitions to pursue? (scale 0-4; never-always)
    a. Net Present Value (NPV)
    b. Internal Rate of Return (IRR)
    c. Hurdle Rate
    d. Earnings multiple approach
    e. Adjusted Present Value (APV)
    f. Payback Period
    g. Discounted payback period
    h. Profitability index
    i. Accounting Rate of Return (or Book rate of return on assets)
    j. Sensitivity analysis (e.g.: "good" vs. "fair" vs. "bad")
    k. Value at risk (VaR) or other simulation analysis
    l. We incorporate the "real options" of a project when evaluating it
    m. Other...

2. 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.... (scale 0-4; never-always)
    a. The discount rate for our entire company
    b. The discount rate for the overseas market (country discount rate)
    c. A divisional discount rate (if the project line of business matches a domestic division)
    d. A risk-matched discount rate for this particular project (considering both country and industry)
    e. A different discount rate for each component cashflow that has a different risk characteristic (e.g.: depreciation vs. operating cash flows)

3. Does your firm estimate the cost of equity capital? (Yes (No (if "no", please skip to #4) If "yes", how do you determine your firm's cost of equity capital? (scale 0-4; never-always)
    a. With average historical returns on common stock
    b. Using the Capital Asset Pricing Model (CAPM, the beta approach)
    c. Using the CAPM but including some extra "risk factors"
    d. Whatever our investors tell us they require
    e. By regulatory decisions
    f. Back out from discounted dividend/earnings model, e.g.: price=div./(cost of cap. growth)
    g. Other....

4. When valuing a project, do you adjust either the discount rate or cash flows for the following risk factors? (4 options: disc.rate; cash flow; both; neither)
    a. Risk of unexpected inflation
    b. Interest rate risk (change in general level of interest rates)
    c. Term structure risk (change in the long-term vs. short term interest rate)
    d. GDP or business cycle risk
    e. Commodity price risk
    f. Foreign exchange risk
    g. Distress risk (probability of bankruptcy)
    h. Size (small firms being riskier)
    i. "Market-to-book" ratio (ratio of market value of firm to book value assets)
    j. Momentum (recent stock price performance)
    k. Other...

5. What factors affect your firm's choice between short-and long-term debt? (scale 0-4; not important-very important)
    a. We issue short term when short term interest rates are low compared to long term rates
    b. Matching the maturity of our debt with the life of our assets
    c. We issue short-term when we are waiting for long-term market interest rates so decline
    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
    e. We expect our credit rating to improve, so we borrow short-term until it does
    f. Borrowing short-term reduces the chance that our firm will want to take on risky projects
    g. We issue long-term debt to minimize the risk of having to refinance in "bad times"
    h. Other...

6. What was your firm's approximate (trailing) Price/Earnings ratio over the past 3 years?..... (e.g.: 18)

7. What is the credit rating for your firm's debt? Write NONE if debt not rated.... (e.g.: AA-, B+)

8. Has your firm seriously considered issuing debt in foreign countries? (Yes (No (If "no", please skip to #9) If "yes", what factors affect your firm's decisions about issuing foreign debt? (scale 0-4; not important-very important)
    a. Favourable tax treatment relative to the U.K. (e.g.: different corporate tax rates)
    b. Keeping the "source of funds" close to the "use of funds"
    c. Providing a "natural hedge" (e.g.: if the foreign currency devalues, we are not obligated to pay interest in British pounds)
    d. Foreign regulations require us to issue debt abroad
    e. Foreign interest rates may be lower than domestic interest rates
    f. Other....

9. Has your firm seriously considered issuing convertible debt? (Yes (No (If "no", please skip to #10) If "yes", what factors affect your firm's decisions about issuing convertible debt? (scale 0-4; not important- very important)
    a. Convertibles are an inexpensive way to issue "delayed" common stock
    b. Protecting bondholders against unfavourable actions by managers or stockholders
    c. Convertibles are less expensive than straight debt
    d. Other firms in our industry successfully use convertibles
    e. Avoiding short-term equity dilution
    f. Our stock is currently undervalued
    g. Ability to "call" or force conversion of convertible debt if/when we need to
    h. To attract investors unsure about the riskiness of our company
    i. Other...

10. Has your firm seriously considered issuing common stock? (Yes (No (if "no", please skip to #11) If "yes", what factors affect your firm's decisions about issuing common stock? (scale 0-4; not important-very important)
    a. If our stock price has recently risen, the price at which we can issue is "high"
    b. Stock is our "least risky" source of funds
    c. Providing shares to employee bonus/stock option plans
    d. Common stock is our cheapest source of funds
    e. Maintaining target debt-to-equity ratio
    f. Using a similar amount of equity as is used by other firms in our industry
    g. Whether our recent profits have been sufficient to fund our activities
    h. Issuing stock gives investors a better impression of our firm's prospects than using debt
    i. The capital gains tax rates faced by our investors (relative to tax rates on dividends)
    j. Diluting the holdings of certain shareholders

k. The amount by which our stock is undervalued or overvalued by the market
l. Inability to obtain funds using debt, convertibles, or other sources
m. Earnings per share dilution
n. Other...

11. Does your firm have a target range for your debt ratio?
☐ No target range
☐ Flexible target range
☐ Somewhat tight target range
☐ Strict target range

12. What factors affect how you choose the appropriate amount of debt for your firm? (scale 0-4; not important-very important)
a. The tax advantage of interest deductibility
b. The potential costs of bankruptcy, near-bankruptcy, or financial distress
c. The debt levels of other firms in our industry
d. Our credit rating (as assigned by rating agencies)
e. The transactions costs and fees for issuing debt
f. The personal tax cost our investors face when they receive interest income
g. Financial flexibility (we restrict debt so we have enough internal funds available to pursue new projects when they come along)
h. The volatility of our earnings and cash flows
i. We limit debt so our customers/suppliers are not worried about our firm going out of business
j. We try to have enough debt that we are not an attractive takeover target
k. If we issue debt our competitors know that we are very unlikely to reduce our output/sales
l. A high debt ratio helps us bargain for concessions from our employees
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
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
o. Other...

13. What other factors affect your firm's debt policy? (scale 0-4; not important-very important)
    a. We issue debt when our recent profits (internal funds) are not sufficient to fund our activities
    b. Using debt gives investors a better impression of our firm's prospects than issuing stock
    c. We issue debt when interest rates are particularly low
    d. We use debt when our equity is undervalued by the market
    e. We delay issuing debt because of transactions costs and fees
    f. We delay retiring debt because of recapitalization costs and fees
    g. Changes in the price of our common stock
    h. We issue debt when we have accumulated substantial profits
    i. Other...

14. What is your firm's approximate long-term debt/total assets ratio?.....% (e.g.: 40%)

15. Please tick one square from each category that best describes your company
    a. Sales Revenue
        ☐ < £ 16 million
        ☐ £ 16 - 64 million
        ☐ £ 65 - 320 million
        ☐ £ 321 - 640 million
        ☐ £ 641 million - 3,2 billion
        ☐ > £ 3,2 billion
    b. Foreign Sales
        ☐ 0%
        ☐ 1 - 24%
        ☐ 25 - 49%
        ☐ ≥ 50%
    c. Industry
        ☐ Retail and Wholesale
        ☐ Mining, Construction
        ☐ Manufacturing
        ☐ Transport./Energy
        ☐ Communication/Media
        ☐ Bank/Finance/Insurance
        ☐ Tech (software/biotech/etc.)
    d. Ownership
        ☐ Public
        ☐ Private

e. Pay Dividends
   - ☐ Yes
   - ☐ No

f. Regulated Utility
   - ☐ Yes
   - ☐ No

g. If all options were exercised, what percent of common stock would be owned by the top three officers?
   - ☐ < 5%
   - ☐ 5 - 10%
   - ☐ 10 - 20%
   - ☐ > 20%

h. CEO Education
   - ☐ Undergraduate
   - ☐ MBA
   - ☐ non-MBA masters
   - ☐ > masters degree
   - ☐ Other…

i. Age of CEO
   - ☐ < 40
   - ☐ 40 - 49
   - ☐ 50 - 59
   - ☐ ≥ 60

j. CEO tenure (time in current job)
   - ☐ < 4 years
   - ☐ 4 - 9 years
   - ☐ > 9 years

16. Which goals are important for your firm? (scale 0 – 4; not important – very important)
    a. Maximize profits (e.g. ROA, ROE or EPS)
    b. Maximize dividends
    c. Maximize sustainable growth (book value, sales)
    d. Market position, service, quality
    e. Cost control, productivity, efficiency
    f. Knowledge
    g. Optimize solvability
    h. Maximize shareholder wealth
    i. Continuity
    j. Independence and self-suffificiency
    k. Optimize working environment
    l. Social responsibility/environment
    m. Other, ……

17. Which stakeholders are important for your firm? (scale 0 – 4; not important – very important)
    a. Customers
    b. Suppliers of goods/services
    c. Employees
    d. Management
    e. The general public
    f. Shareholders
    g. Suppliers of debt
    h. Other, …..

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