Internal Capital Markets and Diversified Firms: Theory and Practice[1]

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Comments Welcome

Abstract

We analyze a unique dataset from a survey of CFOs of diversified firms to examine four areas of diversification and internal capital markets: causes and financing effects of corporate diversification, capital budgeting processes, capital investment methods, and reallocation policies in internal capital markets. CFOs see the main financial benefits of being diversified in lower costs of capital and higher debt capacities. Challenging the usual bottom-up view on capital allocation, firms' capital budgeting processes have typically also a top-down component: while top management relies on financial projections provided by divisions it also uses its own qualitative information. Top management is aware of agency and information problems at the divisional level and organizes the budgeting process to counteract managerial opportunism. Firms acknowledge that capital allocation decisions can frequently lead to a more evenly distributed allocation than pure financial criteria suggest.

JEL Classification: G31, G32

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1 Introduction

One of the main tasks of top management is to decide on how much capital to allocate to the firm's different lines of business. Such markets for capital within firms share many important frictions with external capital markets, such as conflicts of interest and different levels of information between the providers of capital (top management or, more generally, headquarters) and the recipients (divisional managers). However, one critical difference between internal and external capital markets is that top management holds ownership rights over the firm's resources. Thus, top management is in a position to reallocate resources at any time within the firm. The effect of ownership rights in internal capital markets on resource allocation is especially relevant for diversified firms, for which the internal capital market can be replaced by an external one. This replacement can be achieved by running the individual lines of business as separate standalone firms, each with access to the external capital market (Gertner, Scharfstein and Stein, 1994). Theoretical research has pointed out that internal capital markets can be more or less efficient in allocating capital than external capital markets (see, for example, the surveys by Stein, 2003; Maksimovic and Philips, 2007 and 2013; Gertner and Scharfstein, 2013). However, whereas external capital markets have been researched extensively empirically, empirical research on internal capital markets has remained scarce. One likely reason for this scarcity is that data availability is severely limited. This paper provides new empirical evidence on internal capital markets, overcoming some of the typical data limitations by using a unique survey data set of CFOs of European diversified firms.

In our survey, we seek answers to four types of questions about diversified firms:

1) What causes firms to diversify in the first place and do firms derive financing benefits from being diversified?
2) How do firms structure their internal capital market and which processes of allocating capital do they apply?
3) Which financial criteria do firms use to make allocation decisions?
4) Do firms frequently incorporate factors beyond pure financial performance in their capital allocation decisions and, if so, which factors are these and what are the reasons for their incorporation?

We design the survey questions based on the arguments put forward in academic theory. Thus, our survey results can be interpreted as a practitioners' assessment of academic theories pertaining to diversified firms.

Four key themes emerge from our analysis. First, CFOs view financial motives as relevant in the decision to diversify. Among those motives, risk management benefits in the form of lower earnings/cash flow volatility and reduced financial distress risk are the most important. The benefits of being diversified manifest themselves predominantly in lower costs of capital and higher debt capacities. Second, in contrast to the assumptions of most of the theoretical literature, the capital allocation process has not only bottom-up but also top-down components. Although firms rely on financial projections provided by divisions when allocating capital, they also use information only residing at headquarters, most notably top management's assessment of divisional managers' abilities. Third, top management is aware of agency problems in the budgeting process and undertakes measures to mitigate them. Specifically, CFOs

realize that financial projections in divisions' investment proposals may be biased. Important instruments to motivate divisional managers to forecast truthfully are requiring verifiable ("hard") information in investment proposals and tying divisional managers' compensation to the performance of the overall firm. Fourth, although CFOs typically state that top management uses its ability to deploy capital to divisions with favorable investment opportunities, many CFOs recognize that capital allocation decisions frequently lead to a more evenly distributed allocation than pure financial criteria (for example, net present value) suggest. One main reason for a relatively even capital allocation is that capital allocation conveys information about the future role of the division as part of the firm.

Further, examining the general organization of firms' process of investment approval reveals additional insights. Firms provide divisions with considerable discretion about how to spend the firm's money. On average, about 40% of capital expenditures do not require explicit investment approval by headquarters. Only if the investment amount exceeds a certain threshold, divisions typically require formal approval from headquarters. On average, three dozen proposals for large investments reach headquarters annually. Consistent with value maximization, the most commonly used financial investment criteria for investment analysis are net present value and internal rate of return. Payback period is also an important investment criterion, especially for diversified firms with unrelated businesses.

The paper is organized as follows. In Section 2, we explain the methodology, describe the dataset, and provide summary statistics. Section 3 analyzes the causes and financial consequences of corporate diversification. Section 4 focuses on corporate investment in internal capital markets. Section 5 concludes.

2 Methodology

2.1 Survey Design and Sample Selection

Our survey is the first focusing exclusively on internal capital markets and the diversified firm. In preparing the questionnaire, we reviewed the existing economics and finance literature and carefully extracted predictions and arguments to develop a draft survey.[2] We extensively pre-tested this draft with a group of CFOs through personal interviews to ensure consistent meaning of survey questions to all respondents. These interviews took 60-90 minutes. We also mailed the survey instrument to a group of academic experts in finance, marketing, and management science for review and feedback. The final four-page questionnaire was structured into five chapters that contained 88 questions. One of these chapters also collected demographic characteristics of the surveyed firms and their CFOs. The questionnaire took an average of 25 minutes to answer in our beta testing group. The final questionnaire is in the appendix.

For sample selection, we obtain data for the 2008 fiscal year. Following finance studies investigating European companies (e.g., La Porta, Lopez-de-Silanes, Shleifer, Vishny, 1997 and 1998; Lins and Servaes, 1999), we use Thomson Reuters Worldscope as the primary source of data. The focus of our research is

[2] A comprehensive overview of the theories that informed our survey instrument is provided in the appendix. We also provide brief summaries of each theory and link these theories to the corresponding questions.

on Western European companies from 11 major economies: the United Kingdom, Germany, France, Belgium, the Netherlands, Switzerland, Austria, Sweden, Finland, Norway, and Denmark. We restrict the sample to firms with sales of €10 million or more. Smaller firms are not likely to meet the requirements for the types of firms we have in mind for large parts of the questionnaire: firms that organize business activities in two or more (distinct) operating segments overseen by a corporate headquarters. We follow previous studies in defining firms as diversified if they operate segments in two different 3-digit SIC codes (Rajan, Servaes, and Zingales, 2000; Lang and Stulz, 1994; Berger and Ofek, 1995) and if they generate no more than 90% of total sales in one 3-digit SIC code (Maksimovic and Phillips, 2007). Additionally, companies were excluded if the sum of reported segment revenues differed from total revenue. Because many of the hypotheses are not applicable to pure financial firms, we excluded firms that generate the majority (more than 50%) of their revenues in SIC codes starting with 6.

2.2 Delivery and Response

We identified 992 diversified firms from 11 Western European countries that matched the selection criteria and mailed the questionnaire along with a personalized and signed cover letter. We obtained firm and CFO contact information from several data sources, primarily Thomson Reuters Worldscope, but also Bloomberg, Compustat, and Capital IQ. The questionnaire was sent on April 26, 2010. To increase the response rate, we offered participating financial executives an advanced report of the results. Additionally, we employed a team of graduate students for follow-up calls and re-mailing of a second copy of the questionnaire if requested. The survey design followed the principles proposed by Dillman (1978), Bradburn and Sudman (2004), Bednar and Westphal (2006), and Baruch and Holtom (2008). We requested the survey to be returned via fax, mail, or e-mail by May 7, 2010.

In all, 115 CFOs returned fully completed surveys, producing a response rate of 11.6%. Given the length of the survey, the response rate is high and comparable to those of similar studies, such as Graham and Harvey (2001) with 8.9%, Brounen, de Jong, and Koedijk (2004) with 4.8%, Graham, Harvey, and Rajgopal (2005) with 10.4%, Graham, Harvey, and Puri (2011) with 8.7%, or Dichev et al. (2013) with 5.4%.

2.3 Summary Statistics

Table A presents self-reported summary statistics of both the firms in our sample and the CFOs who returned useable surveys. The sample is balanced between small firms (42%, firms with €1 billion in sales or less) and large firms (58%, firms with more than €1 billion in sales). All firms in our sample operate at least two divisions. These divisions are active in several industries, including manufacturing (26%), construction (11%), retail and wholesale (9%), high-tech (9%), energy (8%), and transportation (7%), among others.[3] We also asked for personal characteristics of the financial executives. Nearly all of the financial executives are male (98%), more than half (55%) are 50 or younger, and 67% have an MBA or a doctoral degree. Consistent with previous studies (for instance, Graham and Harvey, 2001), our sample indicates that financial executives change jobs frequently – nearly 60% have been in their job for a maximum of five years.

[3] In Table A, we present the "major industries" in which the divisions of these firms are engaged. A "major industry" accounts for at least 10% of a firm's sales.

We use a number of control variables to perform univariate analyses on each survey question. We selected these variables based on the review of the literature to investigate heterogeneity across certain subsamples of the responding firms. Except for nominal variables, we use medians as the cut-off points to categorize firms (see Table B for the full set of variable definitions and their categories). For instance, the median firm in our sample operates three lines of business. Therefore, we define firms as having "few" lines of business (55%) when they report two or three different lines of business and as having "many" if they run four or more (45%). We also investigate whether the degree of relatedness in diversification has an impact on survey results. As a proxy for relatedness, we asked CFOs to indicate in which major industries their firm operates (retail and wholesale, mining, manufacturing, construction, transportation, energy, communication and media, banking and insurance, high-tech, healthcare and pharmaceuticals, and services/consulting).[4] We define firms as "unrelated diversified" firms (43%) if they operate in more than one major industry and as "related diversified" firms (57%) if they run business lines within one industry only. Because the firm's ability to secure external financing has direct impact on corporate investment, we asked CFOs if they perceive their companies as facing capital constraints when capital markets are operating normally. We thus can build subsamples of "capital-constrained" (30%) and "capital-unconstrained" firms (70%). Furthermore, we refer to firms as "high leverage" firms if their debt-to-asset ratio is larger than the sample median of 30% (44%) and as "low leverage" firms if their debt ratio is below (56%). Moreover, we consider the effect of long-term credit ratings. We classify firms into "high rating" firms (41%; ratings of A- and better) and "low rating" firms (59%; BBB+ and worse). We also measure the level of investment activity by the ratio of capital expenditures over total assets. We cut our sample at the median of 3.6% into "low" and "high". Finally, we build subsamples for CFO characteristics distinguishing between "young" (55%; age $\leq$ 50) and "mature" CFOs (45%; age > 50) as well as between "short" tenure (50%; four years and less in the CFO position) and "long" tenure CFOs (50%; five and more years).

In Table C, as suggested by Moore and Reichert (1983), we compare the characteristics of "surveyed" firms and "invited" firms.[5] Of our 115 responses, more than half (55%) were from German-speaking countries (Germany, Austria, and Switzerland), which is relatively more than the proportion of German-speaking countries among the overall selected sample (31%). Compared to the invited companies from Worldscope, the firms in our sample also have somewhat higher sales. This size disparity is not surprising given that survey response rates from large firms are frequently higher than those from small firms (Dennis, 2003).[6] While our sample may not fully represent the distribution of firms with respect to size, it may do well in capturing the behavior of the major firms in the economy. We also check variables with metric scales other than size (operating segments, debt ratio, capex ratio) and find no statistical difference between sample and population averages. Finally, we compare responses from early (the first

[4] The industry classification is from Graham and Harvey (2001) and their subsequent CFO surveys.

[5] One of the concerns that can threaten the validity of the survey method is that respondents may systematically differ from non-respondents (see, e.g., Armstrong and Overton, 1977; Wallace and Mellor, 1988).

[6] This tendency is also present in comparable surveys targeting financial executives (Graham, Harvey, and Rajgopal, 2005; Dichev et al., 2013).

50 percent) and late respondents (the last 50 percent) and find no meaningful statistical differences in responses across these groups.[7]

[Insert Table A here: Summary statistics]

[Insert Table B here: Definitions and data sources for control variables]

[Insert Table C here: Responding and non-responding firms: Firm characteristics]

[Insert Table D here: Correlation of control variables]

[7] We perform chi-square tests of differences in responses for both groups and each of the sixty-eight questions not related to demographics – three of them are statistically different across the two groups of firms at the 5% level.

3 Corporate Diversification, Financing, and Internal Capital Markets

3.1 Why Do Firms Diversify?

The question of why firms diversify has been widely discussed in the finance, industrial organization, and strategic management literatures. Some of the motives for diversification are consistent with value maximization, while others are not, implying that managers do not always act in the interest of financiers. Financial economists typically view a diversified firm as a set of individual operational units which are related by a headquarters that controls the firm's resources. Replacing an external capital market with such a powerful intermediary tends to reduce financing frictions which may not only enhance investment decisions (the "smarter money" effect), it may also increase a firm's financing capacity (the "more money" effect), which allows for a higher level of investment (see Stein, 2003, for a comprehensive summary). Varying a firm's level of diversification is also an instrument for managing risk. Diversification reduces a firm's probability of financial distress and thereby may allow the firm to avoid (direct and indirect) distress costs. Other value-enhancing motives for diversification are discussed outside finance as well ranging from market power to resource-efficiency arguments (for an overview, see Montgomery, 1994; Ramanujam and Varadarajan, 1989). Alternatively to the arguments of diversifying to maximize value, there is the view that agency problems may trigger managers to diversify at the expense of firm value. Managerial motives for diversification include general overinvestment incentives such as empire-building and perquisite consumption (Jensen, 1986 and 1993). Diversification may also provide managers with increased job security due to reduced bankruptcy risk (Amihud and Lev, 1981).

In the first section of our survey, we investigate the relative importance of these arguments for diversification. Because CFOs may be reluctant to admit to potentially value-reducing motives related to agency issues, we focus on examining arguments that are consistent with value maximization and the efficient use of resources. Specifically, we begin our survey by asking executives to indicate their level of agreement with each of these motives on a scale from 1 to 5, with 1 denoting "not important" and 5 denoting "highly important". Fig. 1 and Table 1 summarize the results.

Risk management is the dominant motive for corporate diversification. The highest proportion of respondents (78%) indicates that the "reduction of volatility in earnings/cash flows" is very or highly important.[8] This finding is consistent with a number of theories in accounting and finance. For instance, it is argued that less volatile earnings/cash flows reduce underinvestment (Froot, Scharfstein, and Stein, 1993), expected corporate taxes (Smith and Stulz, 1985), or the estimation risk for investors (Jorion, 1985; Xia, 2001). A second risk management motive, "reducing the risk of financial distress" (Smith and

[8] We perform McNemar tests for the analysis of paired dichotomous variables to examine whether ratings of sub-questions (for instance, Section A, Q1, a-h) are statistically different or whether differences arise by chance. For instance, the rating for the motive "reduction of volatility in earnings/cash flows" is statistically different from the ratings of all other motives in question 1. We conduct these pairwise tests throughout for all survey questions with answers that allow a rank order interpretation (Section A, Q1, Q3; Section B, Q3, Q4; Section C, Q11; Section D, Q5, Q6, Q8) and do not overemphasize their relative importance if ratings are statistically similar.

Stulz, 1985; Stulz, 1996), is also ranked highly, with 66% in agreement.[9] These two risk management motives are also ranked first among all sub-samples of firms in our survey.

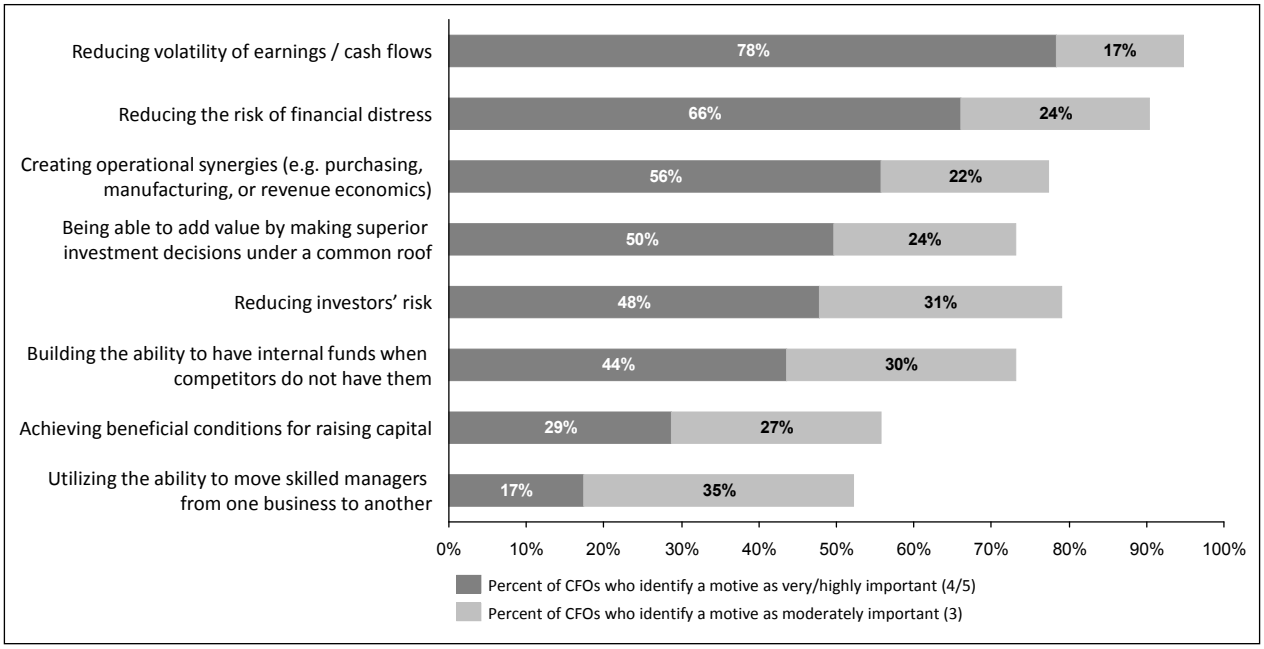

Fig. 1: *Survey evidence on the question (n=115): "How important are the following motives for operating more than one line of business for your company?"*

Firms may also diversify to utilize economies of scope and scale. Diversification may help to create such operational synergies in terms of cost and revenues because firms cannot easily sell indivisible resources such as brand names and managerial capabilities, or excess capacity of physical assets in the marketplace (Penrose, 1959; Teece, 1980, 1982; Prahalad and Hamel, 1990). Fifty-six percent of CFOs indicate that "creating operational synergies" is a very or highly important motive for operating multiple business lines.

We asked about another argument with a long tradition, namely whether better investment decisions are a motive to diversify. According to Alchian (1969), Weston (1970), Williamson (1975), and Stein (1997), internal capital markets can allocate capital more efficiently than the external capital market. Fifty percent of the respondents indicate that "making superior investment decisions under a common roof" is a very or highly important motive for corporate diversification. Hence, although firms acknowledge the benefits of within-firm capital allocation (as also shown below), survey evidence does not provide support that it is the primary economic rationale for the decision to diversify. The importance of this motive is more relevant for companies with many lines of business, as indicated in Table 1 (63.5% agreement among firms with many lines of business, 38.1% for the remaining firms).

[9] The motives of "reducing the volatility of earnings/cash flows" and "reducing the risk of financial distress" are related but not identical. For example, the former includes also potential effects of smoother earnings outside of distress. The probability of financial distress may also be determined by factors other than the volatility of cash flows, for example, by the expected level of cash flows and expected default costs.

Economists have long argued that conglomerates have more market power than their focused counterparts (Edwards, 1955; Hill, 1982) and can use funds from one division as an instrument to affect competition in another division (Faure-Grimaud and Inderst, 2005; Cestone and Fumagalli, 2005; Boutin et al., 2013). "Being able to have internal funds when competitors do not have them" is important for 44% of CFOs. Particularly firms that characterize themselves as capital unconstrained indicate this motive as being highly important (53.8% versus 20.0% of capital-constrained companies). Affecting competition involves accepting lower near-term cash flows (Bolton and Scharfstein, 1990), which capital-unconstrained firms are more likely to be able to endure without risking financial distress.

We asked firms about financing advantages in diversified firms. Only 29% of CFOs indicate that "achieving beneficial conditions for raising capital" (Lewellen, 1971) is a motive for diversifying their companies in the first place. However, the next section demonstrates that whereas the relative importance of the co-insurance argument as a *motive* for diversification is moderate, its relevance as a *financing effect* once the firm is diversified is high.

[Insert Table 1 here]

3.2 The Financing Effects of Corporate Diversification

An important difference between a division of a diversified firm and a standalone firm is that corporate headquarters generally raises capital on behalf of its divisions and that capital is pooled at the firm level. This "single-lender property" coupled with ownership rights by headquarters is likely to affect a firms environment for financing investments (Stein, 2003). In this section, we focus on these financing implications of diversification. In our sample, 107 out of 115 firms raise capital at the headquarters level (see Table 2). In 16% of companies, divisions also raise funds by themselves.[10]

[Insert Table 2 here]

[Insert Table 3 here]

We asked CFOs about the effects of diversification when raising capital. Fig. 2 displays the results. Despite the conventional view that diversification does not affect the firm's cost of capital (see Brealey and Myers, 2003, or Ross, Westerfield, and Jaffe, 2006), more than two thirds (70%) of the CFOs indicate that the most important financial effect of diversification is "lower cost of capital." In this sense, CFOs' beliefs are in line with the recent argument of Hann, Ogneva, and Ozbas (2013) that diversification may reduce a firm's systematic risk. This reduction is possible because the risk of financial distress has a systematic component (see, for example, Almeida and Philippon, 2007) and co-insurance may enable the firm to reduce distress risk.

Additionally, the implications of debt co-insurance arguments (Lewellen, 1971) – "the ability to borrow more" – are important to a large proportion of the respondents (60%), which is surprising given the mixed empirical evidence on the validity of the "more-money" argument in previous studies. For

[10] See Kolasinski (2009) for an empirical examination of subsidiary debt in the context of internal capital markets. In our sample, firms that allow the decentralized issuing of capital face significantly higher debt ratios (with average debt ratios of 45%) compared to firms with centralized financing via headquarters (31%).

instance, Berger and Ofek (1995) and Comment and Jarrell (1995) find either no or weak associations between diversification and leverage. However, recent evidence from the financial crisis (Kuppuswamy and Villalonga, 2010) suggests that the "more-money" effect has been particularly value-enhancing during the financial crisis. Firms with higher debt ratios find this effect significantly more important (71.7% vs. 51.7%). In fact, all CFOs in our pre-testing group emphasize their higher debt capacity from diversification.[11]

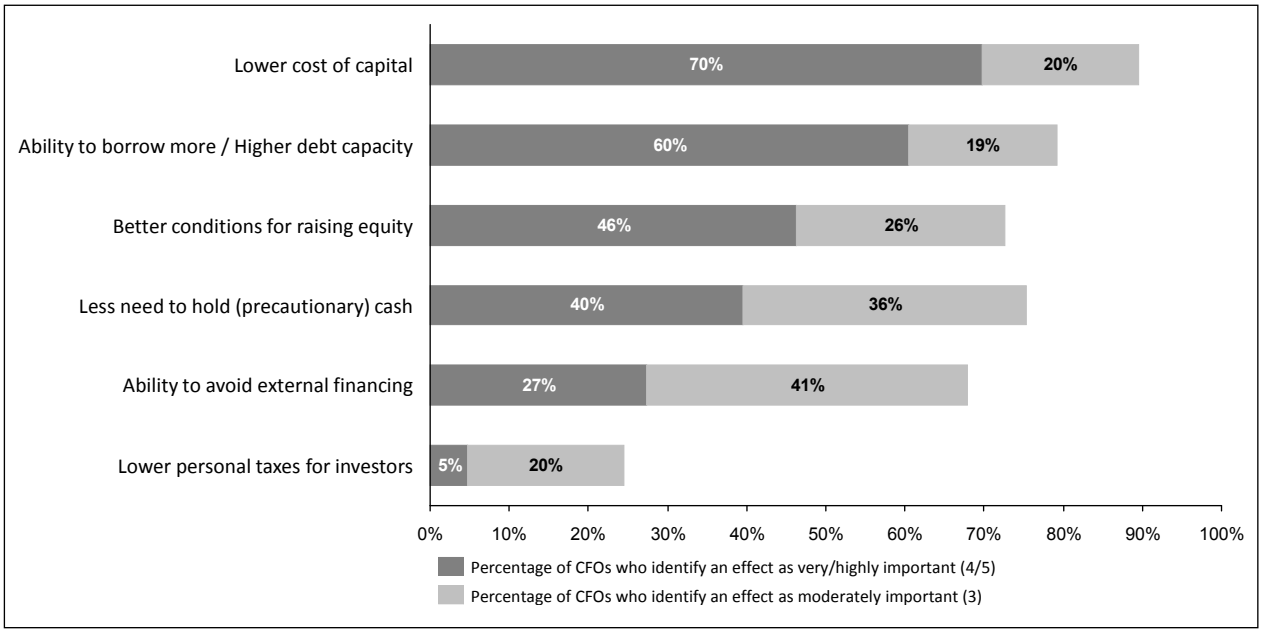

Fig. 2: Survey evidence on the question (n=106): "How important are the following effects of diversification for your company? Please answer compared to the situation where your divisions were stand-alone companies and had to raise funds by themselves."

Previous research also argues that diversification can affect the conditions for raising equity. Hadlock, Ryngaert, and Thomas (2001) posit that diversification helps to alleviate adverse selection problems in the context of equity issues. The argument is based on the notion that the errors the market makes in valuing divisions even out across the divisions of diversified firms. Forty-six percent of the CFOs believe diversification provides better conditions for raising equity. Interestingly, firms with less access to debt place greater value on this benefit for equity issuers (very or highly important for 51.9% of firms with a low rating and for 20.0% of firms with a high debt rating).

Moderate evidence supports the idea that diversified firms have "less need to hold (precautionary) cash." Forty percent of the CFOs find this cash-holding argument very or highly important. For example, Duchin (2010) argues that diversified firms carry less cash than their stand-alone peers due to smoother investment opportunities. Maybe somewhat surprisingly, CFOs rate the relative importance of diversified firms' "ability to avoid external financing" relatively low. However, this argument is more important for large firms, financially unconstrained firms, and firms with many business lines. This result appears

[11] One of these CFOs notes that the degree of diversification is a key factor for credit ratings (one proxy for debt capacity) in many industries.

plausible as especially small and financially constrained diversified firms are unlikely to pass up opportunities to access the external capital market.

4 Corporate Investment and Internal Capital Markets

4.1 The Design of Internal Capital Markets

In this section, we briefly outline the basic components and assumptions of the theoretical work on internal capital markets. Subsequently, we characterize their specific implications for the efficiency of within-firm capital allocation. The theories of internal capital markets largely build models of the diversified firm with two types of agents, headquarters and divisional management, and then focus on the interaction between these two. In this basic setting, internal and external capital markets differ in fundamental ways (see also Stein, 2003, for a comprehensive review). Headquarters has control rights and can intervene in business decisions (Grossman and Hart, 1986; Hart and Moore, 1990; Hart, 1995; Gertner, Scharfstein and Stein, 1994). Furthermore, headquarters raises funds, pools money, and makes the investment decision on behalf of divisions. These differences compared to the external capital market are particularly relevant for the diversified firm whose divisions are set up like stand-alone companies and for which the internal capital market could be replaced by an external capital market.

The interaction between headquarters and divisions can be characterized by information asymmetry, communication, and incentives. Headquarters generally has more information about its businesses compared to an outside investor because the residual control rights provide it with more incentives to monitor (Gertner, Scharfstein, and Stein, 1994) and because crucial information can be disclosed to the provider of finance (headquarters) without leaking it to the public (Cheung, 1982; Liebeskind, 1997, 2000). There is also general agreement that divisional managers are better informed about their businesses than headquarters. Communication between headquarters and divisions starts with divisions proposing capital projects and seeking funding from headquarters. Headquarters gathers investment proposals from all divisions and maximizes its utility by allocating resources accordingly (Williamson, 1975; Stein 1997). However, divisional managers may have preferences to build large empires (Jensen 1986, 1993; Hart and Moore, 1995) or may engage in wasteful influencing activities and lobbying as a result of the intra-firm bargaining for resources (Meyer, Milgrom, and Roberts, 1992; Scharfstein and Stein, 2000).

To examine the general differences between internal and external providers of finance, we first ask CFOs how strongly they agree with a set of statements that compare headquarters with an external investor (Fig. 3 and Table 4). CFOs strongly agree with the theoretical postulates. Compared to outside investors, headquarters has superior information about divisions' businesses (93%) and can directly intervene in the business (92%). Headquarters also cannot pre-commit to not renegotiate capital constraints (Bolton and Scharfstein, 1996; Dewatripont and Maskin, 1995). This argument is supported by 76% of CFOs who agree that headquarters may face "soft budget constraints" because it reacts more understandingly in the event a project faces financial difficulties.

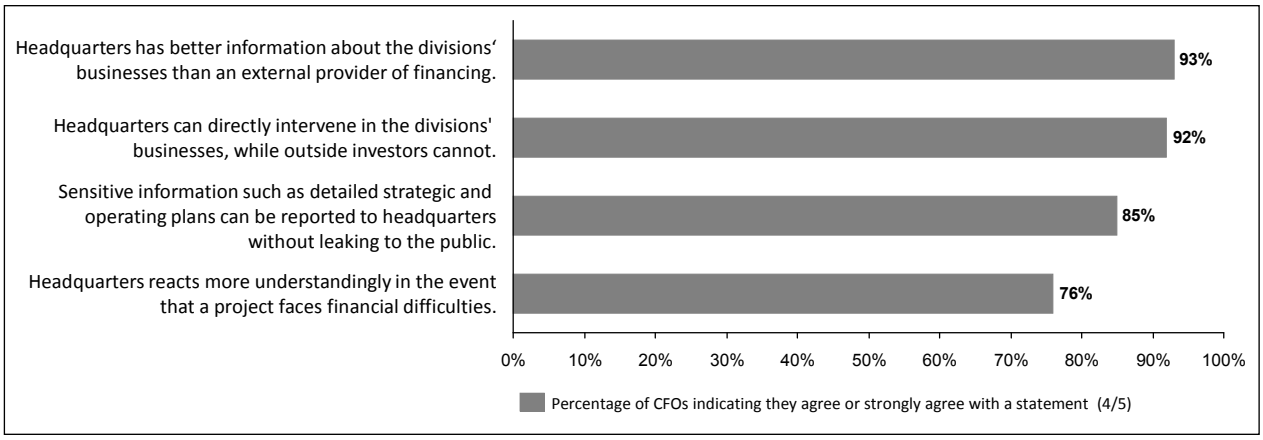

Fig. 3: Survey evidence on the question (n=106): "If your divisions were spun off as stand-alone firms, they would have to raise money in outside markets rather than going to headquarters for financing. How strongly would you agree with the following statements that compare your headquarters with an external investor directly providing financing to the divisions?"

We also look at the theorized characteristics of divisional management (Fig. 4 and Table 5). In line with theoretical research, 71% of CFOs strongly agree that divisional management is better informed, especially if diversification is unrelated (79.5% of unrelated diversified firms agree or strongly agree vs. 64.5% of related diversified firms). There is also agreement about the empire-building tendencies of divisional managers and about their attempts to influence headquarters' decisions on their own behalf. Interestingly, influencing activities by divisional management are more severe in unrelated diversified firms (68.2% vs. 46.8%) and in firms with a larger degree of information asymmetry between headquarters and divisional management (79.5% vs. 64.5%). We find little evidence for the argument that divisional managers would work harder if their divisions were spun off (11%); but interestingly, 62% of CFOs state that divisional managers would feel more responsible for the firm's attractiveness toward external capital markets (de Motta, 2003). Forty-three percent of financial executives argue that divisions would behave more entrepreneurial if divisional management were running their divisions as stand-alone companies (Gertner, Scharfstein, and Stein 1994; Aghion, Tirole 1997). CFOs of capital-constrained firms place greater emphasis on this argument.

[Insert Tables 4 and 5 here]

Finally, we raise the question about headquarters holding investment authority (Table 6). Aside from the fact that headquarters has decision making authority over major investments in nearly all firms (97%) (see also Myers, 1984; Bower, 1970; Stanley and Block, 1984; Harris and Raviv, 1996),[12] a noteworthy average of 39% of capital expenditures does not require explicit investment approval by headquarters. This number is significantly higher for large firms than for small firms (45.7% vs. 28.9%), indicating that large firms provide divisions with considerable discretion about how to spend the firm's money. There is no evidence that this fraction is influenced by the firm's total capital spending or investment intensity (measured by a firm's capital expenditure-to-assets ratio). As allocation of investment authority between

[12] In a sample of US multinational corporations in the 1980s, only 70% of respondents indicated the centralization of investment decisions (Stanley and Block, 1984).

headquarters and divisions has not received considerable attention thus far, we devote the subsequent section to this aspect of capital budgeting in internal capital markets.

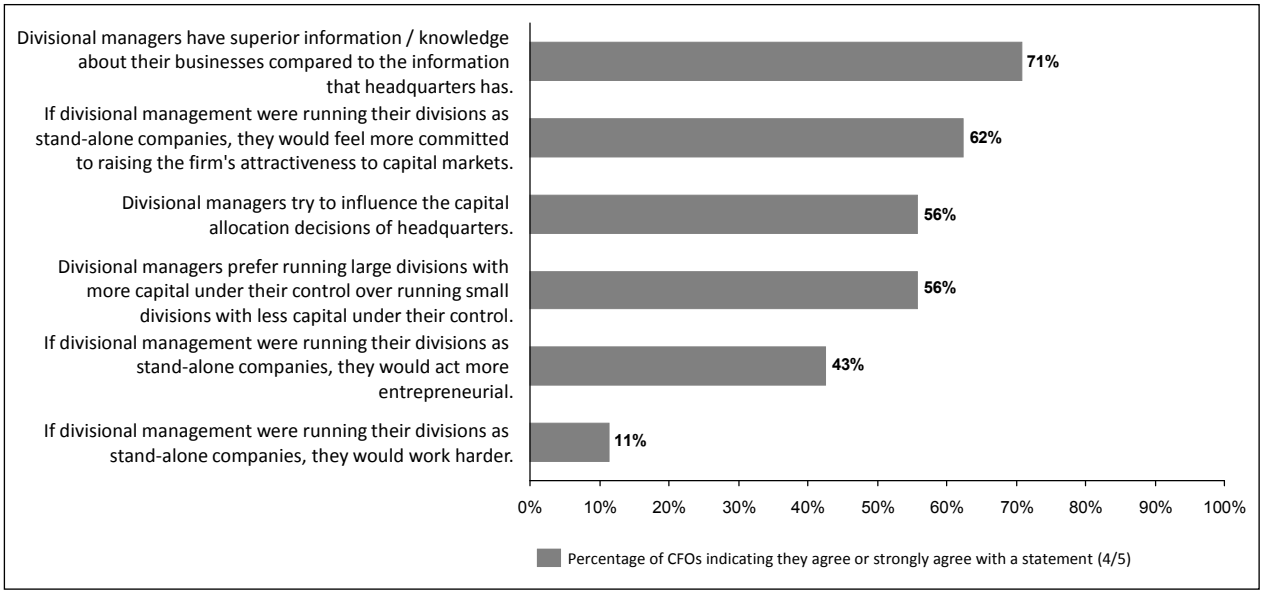

Fig. 4: Survey evidence on the question (n=106): "If another corporate manager made the following statements, how strongly would you agree or disagree with each of them when you think about the divisional management in your company?"

[Insert Table 6 here]

4.2 The Capital Investment Process in Internal Capital Markets

4.2.1 Project Authorization and the Delegation of Authority

Relatively little research on capital allocation addresses the question of the *optimal design* and the *organization* of the *capital allocation process*. In this section, we therefore look at the parts of the investment process that have been discussed in the finance literature[13] – the delegation of authority over investments, different layers of approval, and mechanisms for mitigating information biases. One characteristic of the capital budgeting process in multi-divisional firms is that there is *decentralized* bottom-up project initiation in the divisions but *centralized* capital allocation *authority* at the level of headquarters. Nevertheless, as previously noted, a large portion of a firm's capital expenditures does not require investment approval by headquarters. Multi-divisional firms partially delegate investment authority to their divisions in the capital budget process. The most common organizational practice related to such discretionary investment spending is the use of approval procedures that include *formal* investment thresholds (see also Bower, 1970, Ross, 1986, Brealey and Myers, 2003, p. 312): divisions are authorized to make investment decisions independently if capital expenditures are below a certain level, but headquarters' approval is required for large investments. These thresholds are an efficient way to solve agency and information problems between headquarters and divisional managers either by reducing auditing costs if the information is verifiable (Harris and Raviv, 1996, 1998) or by facilitating the separation of good and bad proposals if it is not (Marino and Matsusaka, 2005). Nearly all firms (97%) indicate the use of formal threshold levels.

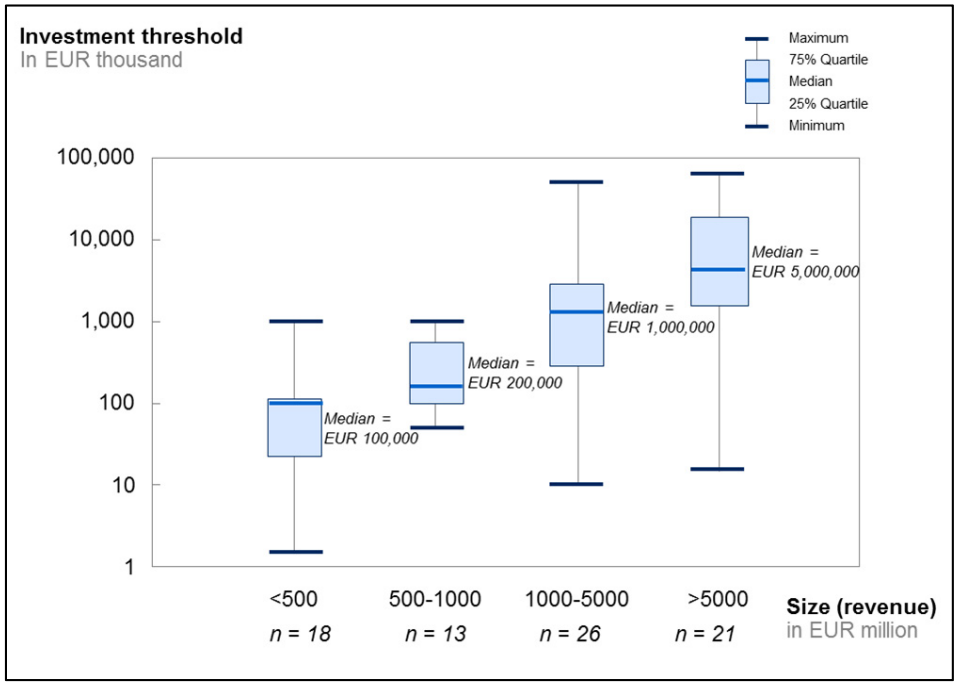

Fig. 5: Investment Thresholds and Firm Size

[13] For a comprehensive analysis of the budgeting process, we refer to Pinches (1982), who develops a four-stage process model of capital budgeting based on the framework of Mintzberg, Raisinghini, and Theoret (1976).

We asked for the threshold levels that trigger central approval.[14] Fig. 5 and Table 7 report the results. Threshold levels range from €0.001 to €65 million and are highly skewed. The mean (median) threshold levels are €5 million (€0.5 million). For our conditional analyses, we use nonparametric (Kruskal-Wallis and Mood) tests of differences in medians. Firm size is the major and most natural determinant, and threshold levels are significantly higher if firms are large. For instance, the median threshold level in the group of small firms is €100,000, whereas it is €2 million in the group of large firms. Untabulated analysis further reveals that threshold levels correlate with firms' investment intensity if firms are large. Median thresholds of large firms with strong investment opportunities are significantly higher than those of large firms with weaker investment opportunities (€4.5 vs. €1.0 million).

Table 7 also displays the number of investment proposals that operating divisions submit to headquarters in an average year. The number of proposals ranges between 2 and 300 projects,[15] with 20 proposals per year for the median firm and 36 proposals on average. Small firms have a median of 18 investment proposals, compared to 25 proposals in large firms. This relatively low number of proposals for the median firms is intuitive considering management time constraints. When headquarters insists on reviewing and approving major projects, it limits the scope of capital projects under investigation (see also Levy and Sarnat, 1994, p. 94). Even though one may expect that growth opportunities influence the number of investment proposals that reach headquarters, we find no evidence supporting this conjecture. Similarly, we do not find a significant relationship between the number of bottom-up proposals and the number of divisions. However, we do find that capital-constrained firms and high-debt-ratio firms produce more investment proposals. Similarly, the number of proposals is relatively higher for firms with self-imposed capital spending limits (capital rationing). These findings are robust for large firms after controlling for size. One possible explanation for these results is related to the communication of capital budgeting criteria (see also the results in Section 4.3.1). Firms with (externally or self-imposed) capital constraints may have difficulties communicating clear, *absolute* approval criteria to their divisions *ex ante* because divisions compete for the fixed capital budget, and, thus, headquarters must allocate capital based on the *relative* productivity of capital across divisions. Perhaps as a result, a higher number of proposals reaches headquarters for final approval. Regardless of the causes, competition for internal funds clearly increases the number of appropriation requests.

Additionally, we examine project acceptance rates and ask executives which percentage of these proposals receives final approval (see Table 8). The average acceptance rate for investment proposals is 78%.[16] This number is significant and does not vary when controlling for different firm characteristics.

Finally, we investigate whether investment committees are part of the decision-making process.[17] Such committees are relatively prevalent, with 62% of responding companies indicating that they have an investment committee. In unreported analysis, we find that firms that indicate high informational asymmetries between headquarters and divisions are more likely to employ such committees (see

[14] Only 81 out of 106 firms provided data on threshold levels, perhaps due to confidentiality concerns.
[15] We omit one outlier firm that reported an average of 4,500 appropriation requests per year.
[16] This number is consistent with Gitman and Forrester (1977), who obtain an acceptance rate of approximately 76%.
[17] We do not restrict attention to *board* committees. For instance, Klein (1998) finds that in 1993, only 40 boards of S&P 500 firms had standing investment committees.

Section 4.1; Q5b, responses 4 and 5; 68.1% vs. 44.8%). We conduct the analysis also separately for small and large firms. The relationship between informational asymmetries and the presence of a committee holds for small firms but not for large firms. Indeed, 69.2% of small firms that report high informational asymmetries implement such committees, compared to 28.6% of small firms that report low informational asymmetries. Thus, our results suggest that large firms institutionalize investment committees (67.7%) for reasons independent of the degree of informational asymmetries (or perhaps because asymmetries are generally higher than in small firms).

In summary, our findings imply that size is an important determinant of how the allocation of capital is organized. Large firms have a higher fraction of overall investment spending delegated to their divisions than small firms. Nevertheless, relatively more investment proposals reach the top management of large firms.[18] Divisions of large firms with (externally or self-imposed) capital constraints produce relatively more proposals. Investment committees are particularly more likely present in those small firms in which divisional managers have distinct knowledge about their businesses compared to the information that headquarters has.

[Insert Tables 7 and 8 here]

4.2.2 Incentives for Information Production and Capital Budgeting Practices

There is a general consensus among finance and accounting scholars that observed budgeting practices are largely a consequence of information and agency problems. Managers possess private information that is not readily available to top management. Because managers can have their own agendas (e.g., empire building, entrenchment, perk consumptions, disutility of effort), the preferences of managers and top management are likely to differ. This divergence of preferences may result in opportunistic behavior of divisional management in the budgeting process and distortion of information acquisition at the level of headquarters. For instance, managers can manipulate financial projections to achieve larger-than-efficient resource allocations or more favorable evaluation benchmarks (Schiff and Lewin, 1968; Antle and Fellingham, 1997; Bernardo, Cai, and Luo, 2001).[19]

Financial executives in our study are aware of these distortions and know that information from divisional management is likely to be biased. Nearly all executives (98.2%) report that divisions provide detailed financial information (such as cash flow forecasts or NPV calculations) as part of their investment proposals (see Table 9). More than half of these executives (50.9%) indicate that cash flow and NPV forecasts are higher or substantially higher than actual outcomes. Only approximately one third of the executives consider forecasts to be relatively reliable (see Table 10). Generally, firms can mitigate these information problems by providing incentives for truthful communication and efficient investment. Such incentives can be created by certain compensation schemes, budgeting mechanisms, or a combination of the two. To understand how firms alleviate these control problems, we examine the

[18] We are unable to pin down the interaction between potentially endogenously chosen thresholds, the amount of discretionary capital spending, and the number of investment proposals.

[19] For instance, Bower (1970, p. 13; 2005, p. 27) documents that the results achieved from investments in new products and sales expansions differ significantly from the initial forecasts.

relative importance of different budgeting practices that may elicit truthful revelation of private information.[20]

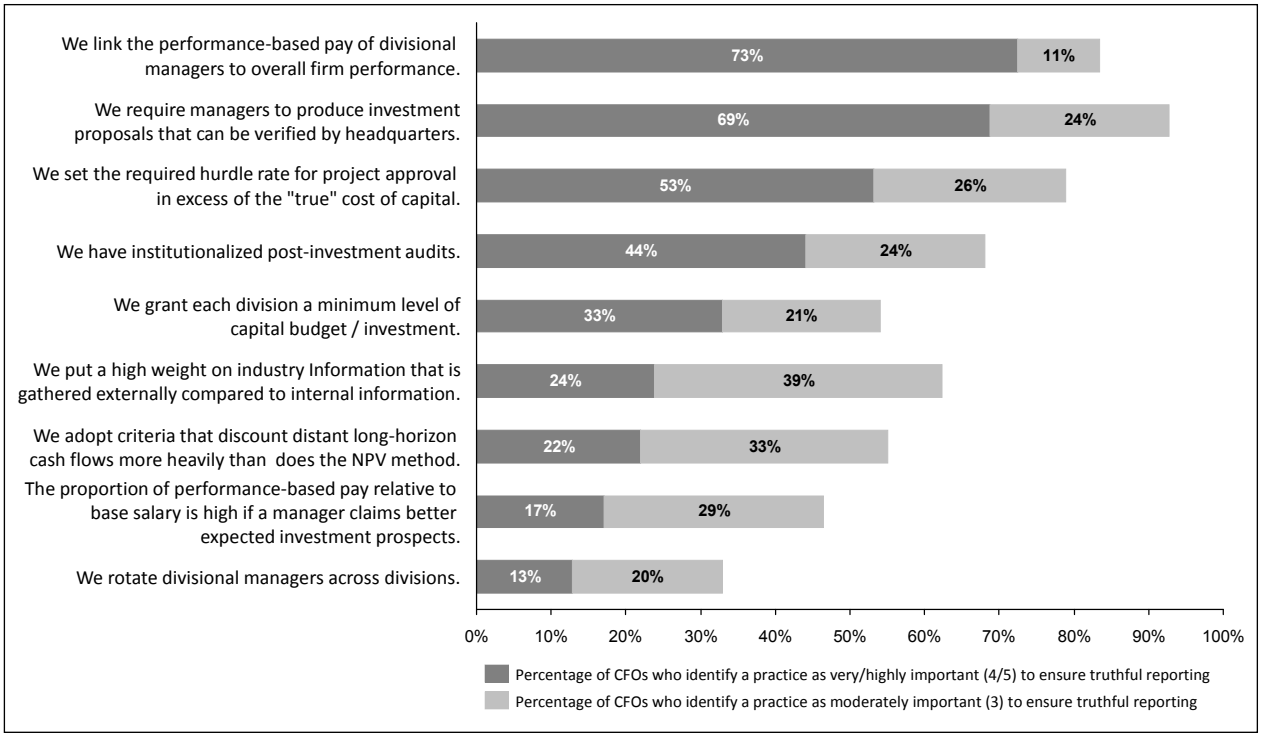

Fig. 6: Survey evidence on the question (n=109): "How important are the following business practices in your company to ensure that divisional managers provide truthful forecasts and do not overstate the attractiveness of investment projects? If you use these practices for other reasons and not for truthful reporting, please check "Not Important"."

[Insert Tables 9, 10, and 11 here]

The financial executives in our sample state that the most important control mechanism for motivating truthful representation in the budgeting process is making divisional managers' compensation a function of overall firm performance. Seventy-three percent of CFOs find this mechanism very or highly important. The finding is consistent with theories that abstract from considering managerial effort as a decision variable (and that therefore only partially account for agency considerations). These theories posit that sharing of the entire firm's profit with divisional management provides the appropriate incentives to achieve unbiased forecasts (Loeb and Magat, 1978; Groves and Loeb, 1979; Cohen and Loeb, 1984; Antle and Fellingham, 1997).

[20] Scholars in management accounting and finance have proposed a plethora of schemes to provide efficient information production under varying circumstances (see Haka, 2007 for a comprehensive literature review). We focus on a subset of mechanisms that appear to be common in practice or have been discussed in the context of the diversified firm. We do not examine more complex mechanisms, e.g., the Groves mechanism (Groves, 1973, 1976; Groves and Loeb, 1979), which may have little relevance in practice despite being theoretically superior under certain conditions. One reason for the infrequent adoption of such mechanisms is presented by Waller and Bishop (1990), who find that subjects fail to understand the Groves scheme's incentives even in experimental settings.

Another highly rated measure to enforce forecast accuracy is to require investment proposals with information that is verifiable by headquarters (68.8%) (see Stein, 2002). Headquarters can then audit the divisional manager at a cost to discover the true productivities of capital (Harris and Raviv, 1996 and 1998).

We also examine whether firms use inflated hurdle rates to correct for the misrepresentation of private information. This argument is related to the finance and accounting literature on capital rationing. Firms trade off foregone profit of marginally profitable projects with the costs of eliciting private information (informational rents) that must be paid to divisional managers (Antle and Eppen, 1985; Antle and Fellingham, 1997).[21] More than half (53.2%) of executives use inflated hurdle rates in excess of the "true" cost of capital to avoid misrepresentation of private information. Large (64.6% vs. 36.4%) and capital-unconstrained firms (61.3% vs. 35.3%) find this measure relatively more important.

Other methods of eliminating managers' misrepresentation of private information include *ex post* control mechanisms, such as institutionalized post-investment audits. These audits may "pay off mainly by helping managers to do a better job when it comes to the next round of investments" (Brealey and Myers, 2003, p. 313). *Ex post* information production may also be less costly than capital rationing to mitigate *ex ante* information problems (Antle and Eppen, 1985). Our results indicate that post-audits of investment projects are not prevalent. Only 44% of firms report using post-audits to reduce forecast bias. In this respect, our results are comparable to those of a survey of S&P 500 firms by Farragher, Kleiman, and Sahu (1999), who find that approximately half of respondents use post-audits to discipline the forecasting performance of managers.[22] The reluctance to employ post-audits may also be in line with evidence that firms are unwilling to abandon capital projects (Jensen, 1993) due, for instance, to career concerns of top management (Kanodia, Bushman, and Dickhaut, 1989; Staw, 1976). Interestingly, the auditing of capital projects is significantly more important for firms with many lines of business (62.0% vs. 28.8%) and firms with high capital expenditure-to-assets ratios (54.6% vs. 33.3%).

Other practices that may help firms to address information problems are less frequently important. For instance, Ozbas (2005) argues that rigid divisional capital budgets and job rotation programs can improve divisional managers' incentives for truthful communication with headquarters. Indeed, 33.0% and 12.8% of firms find these arguments significantly or highly important, respectively. Bernardo, Cai, and Luo (2001, 2004) propose explicit incentives for divisional managers. In the authors' optimal compensation contract, the proportion of performance-based pay relative to base salary is high if divisional managers claim better expected investment prospects. Such flexible and information-sensitive contract designs at the divisional level are important for approximately one fifth (17.4%) of firms.

[21] Most firms use hurdle rates that are significantly higher than the firm's real cost of capital (Poterba and Summers, 1992). Our findings suggest that in many firms, inflated hurdle rates are due to private information in the capital budgeting process and not (only) a consequence of the real-option-like characteristics of investments (Dixit and Pindyck, 1994). See also Jagannathan, Matsa, Meier, and Tarhan (2014) for a recent analysis of inflated hurdle rates and their motives.

[22] Generally, project monitoring audits and follow-ups have received less attention in the literature (see Haka, 2007). Among the arguments to explain the use of post-audits are their usefulness in improving forecasting abilities, triggering corrective actions, and providing incentives for information production (see Gordon and Smith, 1992; Brigham and Weston, 1993, p. 519, 522; Farragher, Kleiman, and Sahu, 1999; Baron and Besanko, 1984).

4.3 Capital Investment Methods in Internal Capital Markets

In the next section, we examine capital budgeting methods and decision rules, both formal and informal ones. In contrast to previous studies that investigate formal decision rules to evaluate projects (Graham and Harvey, 2001; Trahan and Gitman, 1996; Bierman, 1992), our focus is on dimensions that are specific to the diversified firm. Subsequently, we examine informal budgeting measures. Among these measures are the assessment of managerial abilities or strategic information of top management when allocating capital to certain businesses, and there is considerable anecdotal evidence that the use of these rules is common. We also study "corporate socialism," the much discussed hypothesis of a potential bias in capital allocation in internal capital markets (Scharfstein and Stein, 2000; Rajan, Servaes and Zingales, 2000; Matvos and Seru, 2014).

4.3.1 Financial Analysis, Formal Decision Rules, and Bottom-up Measures

We first asked CFOs to indicate the relative importance of the standard capital budgeting decision rules recommended by finance textbooks, including NPV, IRR, hurdle rate, payback period, sensitivity analysis, and real-option valuation methods. CFOs were asked to score how important they view the different budgeting techniques on a scale of 1 to 5, with 1 denoting "not important" and 5 denoting "very important." Our sample results are summarized in Fig. 7 and Table 13.

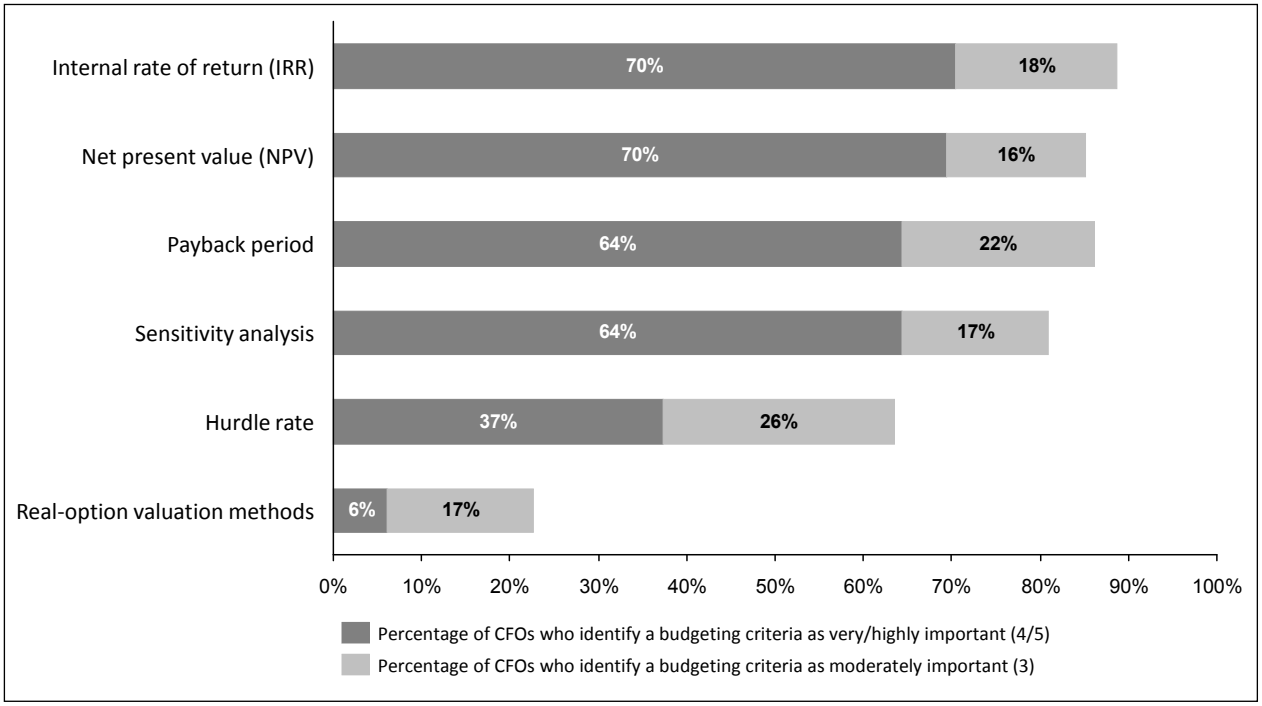

Fig. 7: Survey evidence on the question (n=115): "How important are the following financial criteria for your capital allocation decision?"

IRR, NPV, payback period, and sensitivity analyses are the most widely used techniques of CFOs to allocate funds across divisions of diversified firms. Approximately two thirds of our respondents rate this cluster of factors as important or highly important in their decisions to provide divisions with capital.

Only 37% of diversified firms find hurdle rates important. Interestingly, firms in our sample rarely apply real-option methods. Very few firms, only seven in the sample (6%), find real-option methods very or highly important in evaluating investment projects. The overall results about the budgeting techniques employed are in line with Graham and Harvey's (2001) survey of US Compustat firms. Our study also confirms the authors' findings on the importance of the payback period despite its shortcomings (e.g., no discounting of cash flows, bias toward short-lived projects).

[Insert Table 13 here]

However, the relative importance of individual budgeting techniques is different for the cross-section of firms. The analysis puts forth a set of novel results, particularly related to diversified firms with unrelated businesses. Unrelated diversifiers rank payback period as the most important budgeting technique (81.6%), with NPV as the next closest at 67.3%. IRR is relatively less important (59.2%) for these firms. One possible explanation for the prominence of the payback technique for firms with unrelated businesses is related to the degree of information problems between the corporate center and its business divisions. If divisions operate in unrelated businesses, informational asymmetries are likely more pronounced because headquarters is frequently less knowledgeable about the foundations of divisional investment proposals. Therefore, headquarters may want to adopt payback rules to place more weight on near-term cash flows that can signal the true project quality in the short run and thus contradict a divisional manager's *ex ante* evaluation of a capital project at an early stage (see also Bernardo, Cai, and Luo, 2001). If cash flows are below forecasts, the firm can force corrective actions, such as abandoning poorly performing investments. Hence, our findings may suggest that the payback criterion can protect especially firms with unrelated businesses against problems of informational asymmetry. We find further evidence for this postulate in unreported analysis. The payback period is rated as the most important technique among firms that indicate a strong informational advantage in favor of divisional managers (68.0% vs. 48.4%).

We also look at the importance of IRR and control for the relatedness of divisions. The relatively low prominence of IRR for unrelated diversified firms relative to related diversified firms (59.2% vs. 78.8%) may stem from the incompleteness of the criterion when comparing unrelated businesses (say, of a conglomerate) whose systematic risks differ significantly. Whereas the (isolated) use of IRR can be acceptable if systematic risks of competing projects are similar, its application may be particularly costly if businesses differ significantly, which is likely in the case of diversified firms with unrelated businesses.[23]

Furthermore, our survey reveals that firms with low credit ratings are significantly more likely to find payback periods important (74.2% vs. 31.8%). To the extent that ratings proxy for financial capacity, our result suggests that capital-constrained firms may emphasize liquidity in their budgeting decision and rank projects according to their ability to generate cash quickly (see Pike, 1983; Weston and Brigham 1993, p. 69). Our finding may also indicate that firms with low financial capacity use the payback period as an additional *constraint* that projects must meet rather than as a *criterion* that implies funding (Weingartner, 1969).

[23] See Gup and Norwood III (1982), Fuller and Kerr (1981), or Weston (1973) for the use of divisional costs of capital in multi-division firms.

Conditional analysis further reveals that hurdle rates are relatively less important for firms that report capital constraints (45.0% vs. 20.0%). This result is intuitive and corresponds to the results in Section 4.2.1. When resources are limited, projects compete for their share of a fixed amount of capital. Therefore, firms are not able to undertake all NPV-positive projects, and the approval decision should be based on the relative profitability of the projects. However, because hurdle rates are the minimum rates of return that capital projects must meet to receive *guaranteed* funding, it may be less useful for capital-constrained firms (unless the firm can *ex ante* increase hurdle rates up to the efficient point). Finally, CFO characteristics are important for the budgeting measure of choice. CFOs with short tenures find NPV (79.3% vs. 59.6%) and sensitivity analyses (74.1% vs. 54.4%) relatively more important than their peers with long tenures.

4.3.2 Informal Decision Rules and Top-Down Measures

We also asked CFOs explicitly about the informal decision rules that they apply in their capital allocation decisions and find surprising results (see Fig. 8 and Table 14). Remarkably, CFOs rate the three most important "soft" measures affecting capital allocation *larger* in absolute magnitude than all of the financial measures mentioned above. Overall, these three rules are perceived as nearly similar in relevance, namely, "strategic information of headquarters" (82.6%), the "assessment of divisional managers' abilities" (79.1%), and the "ability to execute projects" (79.1%). When including these soft factors as well, IRR (70.4%) and NPV (69.6%), the most prominent financial measures, rank only fourth and fifth.

Whereas the absolute magnitude of these findings may seem surprising at first sight, it likely captures the notion that the capital investment process reflects not only the *bottom-up* view of divisional management (through investment proposals) but also the *top-down* perspective of a firms' corporate center (see also Brealey and Myers, 2003, p. 314).[24] The finance literature has focused on this notion only recently. There is extensive literature on how information and agency problems influence the bottom-up budgeting process because division managers have better information about their businesses than their superiors, but it is also headquarters that uses its own "strategic information" in the investment process (Almazan, Chen, and Titman, 2013; Hoang and Ruckes, 2014). Such informational advantages of headquarters may result from top management's activities beyond the realm of the firm (Mintzberg, 1975) or from its ability to see the "big picture" across all its division. This ability implies better information on such issues as potential spillovers, strategic intentions, or implications on the corporation as a whole. Regardless of the source of strategic information, top management uses this information extensively in the budgeting process. Unreported analysis further reveals that relying on headquarters' strategic information in the budgeting process is more important if influencing activities at the level of divisional management to provide them with more capital are high (see Section 4.1; Q5e, responses 4 and 5; 88.1% vs. 72.3%).

[24] As Brealey and Myers (2003, p. 314) note, "A firm's capital investment choices should reflect both bottom-up and top-down processes. (...) Plant and division managers, who do most of the work in bottom-up capital budgeting, may not see the forest for the trees. Strategic planners may have a mistaken view of the forest because they do not look at the trees one by one" (see also Bower, 1970, p. 334-338 and Roberts, 2005, p. 397).

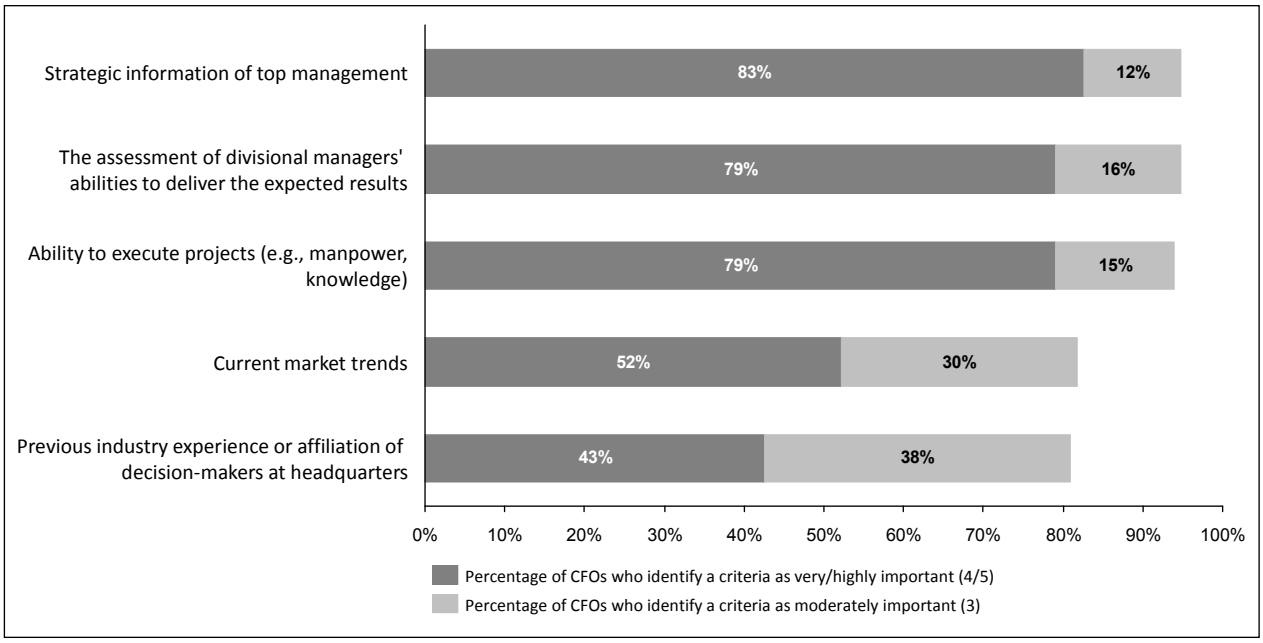

Fig. 8: Survey evidence on the question (n=115): "How important are the following factors that go beyond pure financial criteria for your capital allocation decision?"

Another important factor is the firm's "assessment of divisional managers' abilities" to deliver expected results. Seventy-nine percent of CFOs find this argument very or highly important. This finding is interesting. Although there is anecdotal evidence that headquarters' opinion about divisional managers' ability (to successfully implement an approved project or to cautiously compile proposals) is crucial in the investment process (Ross, 1986; Bower, 2005),[25] relatively little is known about its role in the budgeting process. One exception is related work by Graham, Harvey, and Puri (2011), who find that the reputation of the divisional manager is the second most important factor in the investment process after NPV.[26] Additionally, Hoang and Ruckes (2014) suggest that top management holds a private assessment of its divisional managers' level of ability to successfully implement new projects. We further find that in diversified firms with unrelated divisions, the proportion of CFOs perceiving such assessments as very or highly important is significantly higher than in firms with related divisions (87.8% vs. 72.7%). So, headquarters appears to rely strongly on additional human-capital-related signals if lines of businesses are relatively diverse and therefore informational asymmetries between divisions and the corporate center can be high (see above).

[25] Bower (2005, p. 31) writes, "It is the track record of the general manager in the middle who signs the proposal that determines the way the projections and calculations it contains are regarded. In fact, when they pick up a proposal, top managers usually look first for the name on the signature line before reading anything else. […]." Bower (2005, p. 31-32) further notes that "particularly in multi-business or high-technology companies, […] top management may have little basis […] of the detailed foundations of the proposal. […] Top corporate officers behave like bankers who provide funds based on the reliability of the borrowers." See also Carter (1971, p. 426).

[26] The role of divisional managers' characteristics in the budgeting process was studied only recently. Duchin and Sosyura (2013) examine the effect of divisional managers' social connections to the CEO on capital allocations. See also Glaser, Lopez-De-Silanes, and Sautner (2013) who show that the political power of divisional managers influences the distribution of cash windfalls across divisions.

Another 79% of survey participants state that the "ability to execute projects" is very or highly important, indicating that operative and non-capital constraints are equally relevant. This result is consistent with the arguments provided by Levy and Sarnat (1982, p. 96) and Pike (1983) as well as with field evidence from Bromiley (1986, p. 129). These studies argue that the supply of profitable investments can exceed a company's ability to implement them due to, for instance, the limited supply of skilled labor or senior management's capacity to approve and review projects. Therefore, both capital access and the availability of implementation resources can significantly influence investment. In this respect, (good) projects compete not only for their share of a potentially limited capital budget, but also for scarce non-capital resources that are potentially devoted to other projects.

Furthermore, more than half (52%) of the respondents consider following "current market trends" very or highly important. This evidence is moderately strong, and the finding is consistent with "herding" arguments. Decision makers look at the decisions previously made by other decision makers because of reputational concerns (Scharfstein and Stein, 1990) or because previous movers have relevant information (Banerjee, 1992; Bikhchandani, Hirshleifer and Welch, 1992).[27] Following market trends is significantly less important for pure conglomerates, i.e., firms with unrelated diversification (40.8% vs. 60.6%). This result may reflect that ignoring market trends is relatively more costly for related diversified firms (whose market opportunities are positively correlated across divisions) if market opportunities realize positively and competitors succeed.

Finally, 43% of the CFOs indicate that "previous industry experience or affiliation of decision makers at headquarters" plays an important role for capital allocation. Even though we cannot pinpoint the directional effect (i.e., favoritism vs. reverse favoritism), the finding is consistent with the recent discussion in Xuan (2009) in the sense that job histories of decision makers are important determinants of internal capital allocation. The result is particularly interesting given that executives confess potentially *undesirable behavior* during the budgeting process.[28]

[Insert Table 14 here]

[27] Several CFOs in our pre-testing group stress the importance of following long-term industry trends.

[28] Bertrand and Mullainathan (2001) discuss the behavior of survey participants in the context of social desirability.

4.4 Within-Firm Capital Reallocation Policies in Internal Capital Markets

We devote the final part of this paper to within-firm capital reallocation. Because headquarters has ownership rights, it is able to redistribute capital across divisions to channel financial resources into their most productive uses. To examine the (re)allocative efficiency of internal capital markets, we explicitly ask how frequently firms engage in so-called "winner-picking" (Gertner, Scharfstein and Stein, 1994; Stein, 1997) by moving financial resources from divisions that are generating strong cash flow to divisions with less cash flow but strong investment opportunities in order to achieve the highest capital productivity (Section D, Q4; 1=never, 2=rarely, 3=sometimes, 4=often, 5=always). The survey evidence provides strong support for winner-picking across divisions. Indeed, 84% of CFOs report that they sometimes, often, or always use the ability to redeploy cash flows toward divisions with relatively favorable investment opportunities. Furthermore, 52% of firms always or often "winner-pick," and only 1.7% of firms say they never do so. Thus, our evidence is consistent with empirical evidence that headquarters uses its ownership rights to make value-enhancing reallocations across divisions (Guedj and Scharfstein, 2004; Khanna and Tice, 2001). Firms that frequently (i.e., sometimes, often, or always) engage in winner-picking also generate a higher number of investment proposals in the investment process (see Section 4.2.1). In the group of firms that generate many proposals, 94% engage in winner-picking, compared to 75% in the group of firms that generate few.

Despite these apparent benefits of internal capital markets, some studies posit that multi-divisional firms allocate capital inefficiently among business units. For instance, Rajan, Servaes, and Zingales (2000), Ozbas and Scharfstein (2010), and Matvos and Seru (2014) argue that firms frequently favor divisions with poor growth opportunities at the expense of those with good opportunities and therefore seem to knowingly move capital allocation toward an even distribution across divisions ("corporate socialism"). However, because these empirical studies are not free of measurement and endogeneity issues[29], the debate about *whether* and *why* firms potentially engage in such investment behavior has not been resolved. With our survey instrument, we are able to bypass some of these issues. We investigate both questions (prevalence and causes) and devote the final part of this paper to corporate socialism.

We first examine the *existence* of socialism in internal capital markets. We ask CFOs on a scale of 1 to 5 about how frequently they allocate financial resources more evenly than pure financial criteria suggest (1=never, 2=rarely, 3=sometimes, 4=often, 5=always) and obtain interesting results. According to our study, a large proportion of diversified firms acknowledges and practices corporate socialism. Nearly half (47%) of the financial executives sometimes, often, or always cross-subsidize with a balanced capital allocation across divisions. Furthermore, 23% of the respondents indicate that they never engage in corporate socialism. These numbers contrast with recent results from Graham, Harvey, and Puri (2011), who find that 6-18% of CFOs engage in corporate socialism.[30] Therefore, our findings suggest that

[29] See Maksimovic and Phillips (2007) and Maksimovic and Phillips (2013) for a comprehensive discussion of these issues in the literature on internal capital markets.

[30] Their question design is somewhat different, however. Graham, Harvey, and Puri (2010) ask, "Which of the following factors are important in your allocation of capital across divisions?" The survey response "Moving towards an even balance of capital allocation across divisions" is meant to capture the notion of corporate socialism. In their study, 7% (6%) of U.S. CEOs (CFOs) and 14% (18%) of non-U.S. CEOs (CFOs) say a balanced

socialism is prevalent and not a statistical artifact of the data. Additionally, our results are relatively homogeneous across firms, and there is no difference in the prevalence of socialism conditional on firm or CEO characteristics.

We further examine the pervasiveness of socialism conditional on firms engaging frequently in winner-picking. We distinguish between "infrequent" winner-pickers (Section D, Q4; 1=never, 2=rarely) and "frequent" winner-pickers (3=sometimes, 4=often, 5=always) as well as between "light" balancers (Section D, Q7; 1=never, 2=rarely, 3=sometimes) and "strong" balancers (4=often, 5=always). Whereas 47% of firms in the overall sample engage in "strong" balancing, "frequent" winner-pickers are more likely to do so relative to "infrequent" winner-pickers (52% vs. 22%). This result sheds additional light on the deeper connection of these phenomena. Rather than viewing them as mutually exclusive, they must be interpreted as correlates. Firms with a very active internal capital market are more likely to frequently engage in cross-subsidization.

We also investigate whether divisional managers of firms that balance capital investment are delegated more investment authority via higher initial discretionary divisional budgets. We find no statistical evidence for this conjecture.

[Insert Table 15 here]

Second, to further investigate the *causes* of cross-subsidization, we examine the previously discussed subsample of "strong" balancers and inquire about the intentions for their investment behavior.

Several studies have attempted to explain biases in capital allocation. Most of them view these biases as evidence of agency problems or rent-seeking at the level of divisional or corporate managers. Some of these studies argue that managers of divisions with weak investment opportunities have power over headquarters to achieve larger-than-efficient capital allocations because of either lower opportunity costs to improve their outside options (Scharfstein and Stein, 2000) or their ability to act opportunistically by investing in inefficient projects that protect the division from subsequent expropriation (Rajan, Servaes, and Zingales, 2000). Bernardo, Luo, and Wang (2006) offer the alternative theoretical explanation that capital misallocation can be part of an incentive mechanism to elicit private information from divisional managers about investment proposals in the budgeting process. Other studies find that capital misallocation can result from factors unrelated to agency considerations. Goel, Nanda, and Naranayan (2004) argue that due to career concerns, CEOs have incentives to invest in divisions in mature industries whose cash flows are likely more precise and thus better signals of the CEO's abilities. To the extent that informativeness and divisional productivity are negatively correlated, the theory predicts a capital allocation bias in favor of lower-productivity divisions. Finally, Hoang and Ruckes (2014) posit a more optimistic (and potentially value-enhancing) story of socialism in the sense that "informational effects" of capital allocation cause firms to allocate capital more evenly than pure financial criteria would suggest. The authors argue that capital allocation conveys headquarters' private information about capital productivity to managers of a multi-divisional firm. If such information provides effort incentives to managers, headquarters has a strong interest to conceal its information

allocation is important. However, their study does not display responses by country. Thus, numbers are not directly comparable. Additionally, the authors cannot distinguish between diversified and focused firms.

with a relatively even capital allocation. We ask the subsample of "strong" balancers how important these motives are in their decisions to cross-subsidize. Fig. 9 summarizes the results.

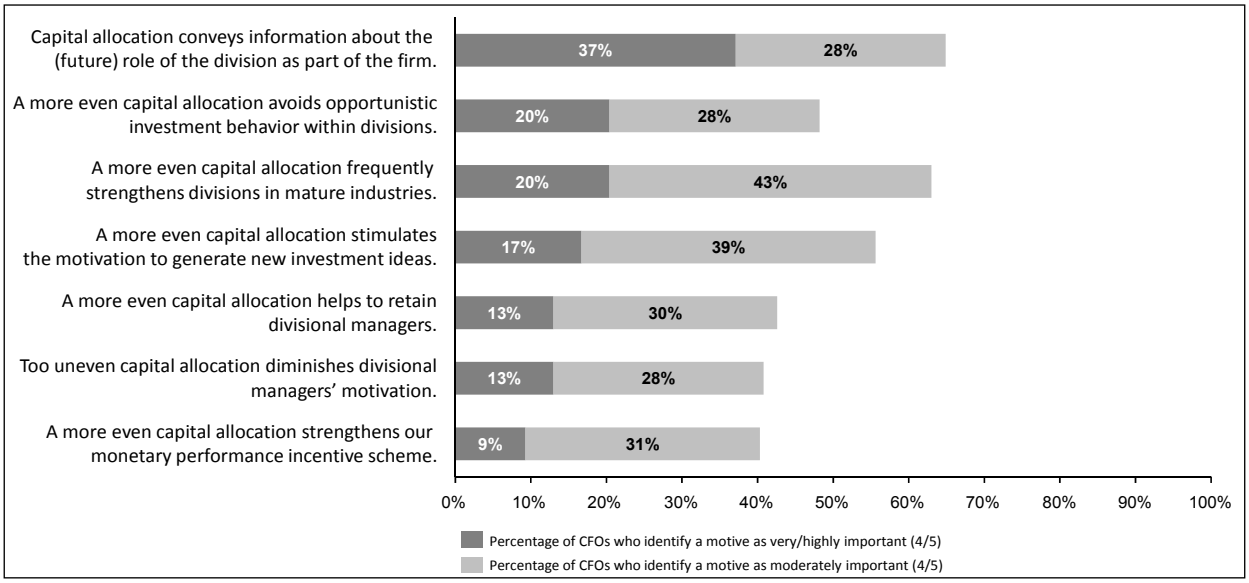

Fig. 9: Survey evidence on the question (n=54): "Please think about situations where you have decided to allocate capital more evenly than pure financial criteria suggested. How important were the following factors for your allocation?"

Overall, our findings suggest that *for the average firm,* the explanatory power of the existing theories is moderate to low. In unreported analyses, we find that 30% (n=16) of the firms in the subsample do not find any of the current theories very or highly important in explaining their investment behavior. 32% of firms indicate the importance of one explanation, and 26% of firms indicate the importance of two explanations. These results suggest a broad heterogeneity of causes, and, more positively, one may argue that multiple and different theories are needed to explain socialism.

The argument related to Hoang and Ruckes' (2014) theory of corporate socialism is most frequently important for diversified firms. Of the 47% of firms that engage in cross-subsidization across divisions, more than one third state that "capital allocation conveys information about the (future) role of the division as part of the firm" (37.0%), suggesting that financial executives acknowledge the communication aspect of capital budgets.

All other arguments follow in their relative importance. We do emphasize that their ratings cluster and ratings are not statistically different from each other. Rajan, Servaes, and Zingales' (2000) argument that an even capital allocation can avoid opportunistic investment behavior is important for 20% of executives. Interestingly, firms with high discretionary budgets are more likely to find the argument important (29.7% vs. 4.8%). In fact, it is the most important rationale for socialism at these firms.[31] Perhaps firms with little protection against the implementation of inefficient investments in the Rajan et al. sense (that is, projects that protect divisions from the redistribution of surplus to other divisions) have higher divisional budgets, which results in a more balanced capital allocation. Likewise, avoiding

[31] In unreported analysis, we find that a large fraction of 58% of total capital expenditures is part of an initial divisional budget at these firms (compared to 32% in firms with low discretionary budgets).

opportunistic investment behavior via balanced allocations of capital is relatively more important for firms with many business lines (29.7% vs. 6.0%). A similar proportion of 20% of CFOs state that a relatively even capital allocation strengthens divisions in mature industries as suggested by Goel, Nanda, and Naranayan (2004). This motive is relatively more important for firms with high investment intensity (30.0% vs. 8.3%). In addition, thirteen percent of firms use a more even capital allocation to "retain divisional managers" (one of several implications of Scharfstein and Stein, 2000). Finally, at 9% of firms, Bernardo, Luo, and Wang's (2006) notion that "a more even capital allocation strengthens a firm's monetary performance incentive scheme" causes corporate socialism. Consistent with the authors' predictions, firms with unrelated diversification find the argument relatively more important than firms with related diversification (16.7% vs. 3.3%).

[Insert Table 16 here]

5 Conclusion

The results of our survey complement existing large-sample evidence based on externally available data and may provide directions for future work. Not only does the survey allow to obtain unique information about the structure and process of internal capital allocation, it is also able to address qualitative issues and establishes assessments from the perspective of financial executives.

We are able to draw a number of key conclusions from our analysis. First, among the motives for diversification risk management (in the form of lower earnings/cash flow volatility and reduced financial distress risk) is most important. Financial benefits of being diversified are lower costs of capital and increased debt capacities. Second, for investment projects, firms require formal approval from headquarters above a certain size. These thresholds provide divisional management with substantial discretion over the firm's overall capital expenditures. Third, CFOs are aware that divisional managers' have strong incentives to provide biased forecasts in the capital allocation process. To combat such behavior, firms use many instruments that research in finance and accounting posits. The most important business practices are requiring verifiable information in investment proposals and tying divisional managers' compensation to overall firm performance. Fourth, NPV and IRR are the most commonly used financial investment criteria. However, informal criteria are similarly important. For instance, firms use information only residing at headquarters when allocating capital, most notably top management's assessment of divisional managers' abilities. This finding also challenges the traditional bottom-up view of capital allocation. Finally, firms recognize that they engage in winner-picking but frequently also allocate capital more evenly than pure financial criteria suggest. One of the reasons for this behavior is that headquarters' capital allocation decisions may convey information about its divisions' role as part of the firm.

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B Appendix – Questionnaire

Karlsruhe Institute of Technology

Survey on Diversification from a Financial Perspective

THANK YOU for taking the time to complete the survey. We estimate that the survey will take about **15 minutes**. Please note that we will not share your responses with anyone. We will use only aggregate results and will do so exclusively for research purposes. Individual responses are strictly confidential. To ensure the high quality of this study, we would highly appreciate your filling out the entire questionnaire.

Please fax your responses to **(+49) 721 608-9145** or **(+49) 721 359-200** by **MAY 7**. Alternatively, mail to: Prof. Martin Ruckes - Karlsruhe Institute of Technology, Institute of Finance, Banking, and Insurance, Kaiserstr. 12, 76131 Karlsruhe, Germany. For further questions, please email martin.ruckes@kit.edu or call +49 721 608 3427.

Section A: Motives for Diversification

1. How important are the following *motives* for operating more than one line of business *for your company* (1 = not important at all, 5 = highly important)? *Note: Some of these motives will be further investigated below.*

	Not important 1	2	3	4	Highly important 5
a) Creating operational synergies (e.g. purchasing, manufacturing, or revenue economies)	☐	☐	☐	☐	☐
b) Utilizing the ability to move skilled managers from one business to another	☐	☐	☐	☐	☐
c) Achieving beneficial conditions for raising capital	☐	☐	☐	☐	☐
d) Being able to add value by making superior investment decisions under a common roof	☐	☐	☐	☐	☐
e) Reducing the risk of financial distress	☐	☐	☐	☐	☐
f) Reducing investors' risk	☐	☐	☐	☐	☐
g) Building the ability to have internal funds when competitors do not have them	☐	☐	☐	☐	☐
h) Reducing volatility of earnings / cash flows	☐	☐	☐	☐	☐
i) Other: _____	☐	☐	☐	☐	☐

Section B: Financing Effects of Diversification

1. Does headquarters raise funds on behalf of the divisions? ☐ **Yes** ☐ **No**
(if "No", please continue with **Section C**)

2. Do divisions *also* raise funds by themselves? ☐ **Yes** ☐ **No, never** ☐ **No, only in exceptional situations**

3. How important are the following *effects of diversification* for *your company*? *Please answer compared to the situation where your divisions were stand-alone companies and had to raise funds by themselves.*

	Not important 1	2	3	4	Highly important 5
a) Lower cost of capital	☐	☐	☐	☐	☐
b) Ability to borrow more / Higher debt capacity	☐	☐	☐	☐	☐
c) Better conditions for raising equity	☐	☐	☐	☐	☐
d) Less need to hold (precautionary) cash	☐	☐	☐	☐	☐
e) Ability to avoid external financing	☐	☐	☐	☐	☐
f) Lower personal taxes for investors	☐	☐	☐	☐	☐
g) Other: _____	☐	☐	☐	☐	☐

4. If your divisions were spun off as stand-alone firms, they would have to raise money in outside markets rather than going to headquarters for financing. How strongly would you agree with the following statements that *compare your headquarters with an external investor* directly providing financing to the divisions?

	I strongly disagree 1	2	3	4	I strongly agree 5
a) Headquarters reacts more understandingly in the event that a project faces financial difficulties.	☐	☐	☐	☐	☐
b) Headquarters can directly intervene in the divisions' businesses, while outside investors cannot.	☐	☐	☐	☐	☐
c) Headquarters has better information about the divisions' businesses than an external provider of financing.	☐	☐	☐	☐	☐
d) Sensitive information such as detailed strategic and operating plans can be reported to headquarters without leaking to the public.	☐	☐	☐	☐	☐

5. **If another corporate manager made the following statements, how strongly would you agree or disagree with each of them when you think about the *divisional management in your company*?**

	I strongly disagree 1	2	3	4	*I strongly agree* 5
a) If divisional management were running their divisions as stand-alone companies, they would *act more entrepreneurial*.	☐	☐	☐	☐	☐
b) If divisional management were running their divisions as stand-alone companies, they would *work harder*.	☐	☐	☐	☐	☐
c) If divisional management were running their divisions as stand-alone companies, they would *feel more committed to raising the firm's attractiveness to capital markets*.	☐	☐	☐	☐	☐
d) Divisional managers have superior information / knowledge about their businesses compared to the information that headquarters has.	☐	☐	☐	☐	☐
e) Divisional managers try to influence the capital allocation decisions of headquarters.	☐	☐	☐	☐	☐
f) Divisional managers prefer running large divisions with more capital under their control over running small divisions with less capital under their control.	☐	☐	☐	☐	☐

Section C: Headquarters and Investment Decisions

1. **Does headquarters have the decision-making authority regarding major investments?** ☐ **Yes** ☐ **No** (if "No", please continue with **Section D**)

2. **Does your company use an *investment committee* for some of these decisions?** ☐ **Yes** ☐ **No**

3. **Is *approval from headquarters* required *beyond a certain size* of investment?** ☐ **Yes** ☐ **No** (if "No", please continue with **Question 4**)
   If yes, from which project size *(threshold amount)* on does the authority to make decisions reside with headquarters? _____ €

4. **In an average year, how many *investment proposals* are submitted to headquarters for approval?** _____

5. **On average, how many of these *obtain approval*?** _____

6. **On average, how many proposals receive *close scrutiny* by headquarters?** _____

7. **What is the *total amount* of *capital expenditures* of your company in an average year?**
   ☐ <1 million € ☐ 1 million €– 10 million € ☐ 10 million €– 50 million € ☐ 50 million €– 100 million € ☐ 100 million €– 500 million € ☐ 500 million €– 1 billion € ☐ >1 billion €

8. **What percentage of this total amount *does not* require explicit approval by the headquarters (e.g., because it is part of an initial divisional budget)?** _____ %

9. **Does divisional management provide financial information such as cash flow forecasts or NPV calculations as part of their investment proposals?** ☐ **Yes** ☐ **No** (if "no", please continue with **Question 11**)

10. **From your personal experience: *On average*, the forecasts provided in investment proposals are …**

. . . substantially higher than actual outcomes		*. . . in accordance with actual outcomes*		*. . . substantially lower than actual outcomes*
☐	☐	☐	☐	☐

11. **How important are the following *business practices* *in your company* to ensure that divisional managers provide *truthful forecasts* and *do not overstate* the attractiveness of investment projects?**
    If you use these practices for other reasons and not for truthful reporting, please check "Not Important."

. . . for truthful reporting	*Not important* 1	2	3	4	*Highly important* 5
a) We link the performance-based pay of divisional managers to overall firm performance.	☐	☐	☐	☐	☐
b) We adopt criteria (e.g., payback rules) that discount distant long-horizon cash flows more heavily than does the NPV method.	☐	☐	☐	☐	☐
c) We rotate divisional managers across divisions.	☐	☐	☐	☐	☐
d) We set the required hurdle rate for project approval in excess of the "true" cost of capital.	☐	☐	☐	☐	☐
e) The proportion of performance-based pay relative to base salary is high if a divisional manager claims *better* expected investment prospects.	☐	☐	☐	☐	☐
f) We put a relatively high weight on industry information that is gathered externally compared to internal information.	☐	☐	☐	☐	☐
g) We require divisional managers to produce investment proposals with information that can be verified by headquarters.	☐	☐	☐	☐	☐
h) We grant each division a minimum level of capital budget / investment.	☐	☐	☐	☐	☐
i) We have institutionalized post-investment audits.	☐	☐	☐	☐	☐
j) Other: _____	☐	☐	☐	☐	☐

12. From your perspective, how ***effective*** are ***monetary incentives***, such as bonuses, in stimulating ***divisional managers'*** . . .

	Very ineffective 1	2	3	4	Very effective 5
a) …motivation to work hard?	☐	☐	☐	☐	☐
b) …searching for long-term investment opportunities?	☐	☐	☐	☐	☐

Section D: Headquarters and Allocation of Capital

1. When capital markets are operating normally, is your company ***capital constrained***? In other words: Does your financing capacity ***limit*** your ability to pursue attractive ***investment projects***? ☐ Yes ☐ No

2. Does your company's top management impose ***a limit on total investments*** of the firm by a predetermined, fixed budget? ☐ Yes ☐ No

3. Is the capital allocation to a division restricted by the division's ***own*** generated cash flow? ☐ Yes ☐ No

4. Diversified firms may use the ability to move funds from divisions that are generating ***strong cash flow*** to divisions with ***less cash flow but strong investment opportunities***. How frequently do you use this ability in order to achieve the highest capital productivity?

☐ Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always

5. How important are the following ***financial criteria*** for your capital allocation decision?

	Not important 1	2	3	4	Highly important 5
a) Net present value (NPV)	☐	☐	☐	☐	☐
b) Internal rate of return (IRR)	☐	☐	☐	☐	☐
c) Hurdle rate	☐	☐	☐	☐	☐
d) Payback period	☐	☐	☐	☐	☐
e) Sensitivity analysis	☐	☐	☐	☐	☐
f) Real-option valuation methods	☐	☐	☐	☐	☐
g) Other: _____	☐	☐	☐	☐	☐

6. How important are the following ***factors*** that ***go beyond pure financial criteria*** for your capital allocation decision?

	Not important 1	2	3	4	Highly important 5
a) The assessment of divisional managers' abilities to deliver the expected results	☐	☐	☐	☐	☐
b) Previous industry experience or affiliation of decision-makers at headquarters	☐	☐	☐	☐	☐
c) Strategic information of top management	☐	☐	☐	☐	☐
d) Ability to execute projects (e.g., manpower, knowledge)	☐	☐	☐	☐	☐
e) Current market trends	☐	☐	☐	☐	☐
f) Other: _____	☐	☐	☐	☐	☐

7. How frequently do you allocate financial resources ***more evenly across divisions*** than pure financial criteria (e.g., NPV) suggest?

☐ Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always

(if "Never" please continue with the **Closing Section**)

8. Please think about situations where you have decided to ***allocate capital more evenly*** than pure financial criteria suggested. How important were the following factors for your allocation?
Please check "Not important", if a statement does not apply.

	Not important 1	2	3	4	Highly important 5
a) Too uneven capital allocation diminishes divisional managers' motivation.	☐	☐	☐	☐	☐
b) Capital allocation conveys information about the (future) role of the division as part of the firm.	☐	☐	☐	☐	☐
c) A more even capital allocation stimulates divisional managers' motivation to generate new investment ideas.	☐	☐	☐	☐	☐
d) A more even capital allocation helps to retain divisional managers.	☐	☐	☐	☐	☐
e) A more even capital allocation avoids opportunistic investment behavior within divisions.	☐	☐	☐	☐	☐
f) A more even capital allocation frequently strengthens divisions in mature industries.	☐	☐	☐	☐	☐
g) A more even capital allocation strengthens our monetary performance incentive scheme.	☐	☐	☐	☐	☐
h) Other: _____	☐	☐	☐	☐	☐

Closing Section – Valuation of Diversified Companies

1. On average, by what percentage do you feel your stock is ***misvalued*** because you run a ***diversified company*** (-20% means 20% undervalued; 0 means correctly valued; +10% means 10% overvalued)?
   Write NONE if your company has no publicly traded shares. _____ %

Closing Section – Company-related Characteristics

1. Annual sales revenue at my company is in the range of:
   ☐ < 25 million € ☐ 25 million €– 100 million € ☐ 100 million €– 500 million € ☐ 500 million €– 1 billion € ☐ 1 billion €– 5 billion € ☐ 5 billion €– 10 billion € ☐ >10 billion €

2. How many lines of business (i.e., distinct operating divisions such as autos, food, and retail) is your company running? _____

3. What broad industries are you working in?
   (Check only if an industry accounts for at least 10% of total sales. Fill in multiple squares if needed.)
   ☐ Retail and Wholesale ☐ Transport ☐ Tech (Software / Biotech / etc.)
   ☐ Mining ☐ Energy ☐ Healthcare / Pharmaceutical
   ☐ Construction ☐ Communication / Media ☐ Consulting / Service
   ☐ Manufacturing ☐ Bank / Finance / Insurance ☐ Other: _____

4. What is the highest / lowest ***expected sales growth rate*** among your divisions?
   Division expecting the highest sales growth: _____ % (e.g., 15% p.a.)
   Division expecting the lowest sales growth: _____ % (e.g., 1% p.a.)

5. The following questions help us understand your ownership structure.
   a) Ownership ☐ Public ☐ Private
   b) If all options were exercised, what percentage of your company's equity would be owned by the ***top 3 managers*** (e.g., 5%)? _____ %
   c) Does a ***single investor*** own ***more than 10%*** of your company's equity? ☐ Yes ☐ No

6. What is your ***credit issuer rating*** (e.g., AA-, B+)? Write NONE if debt is not rated. _____

7. What is your ***debt-to-asset ratio*** (e.g., 0.2, 0.3)? _____

Closing Section — CFO Demographics

1. Gender of CFO: ☐ Male ☐ Female

2. Age of CFO: _____

3. Tenure (time in current job) of CFO: _____

4. Educational background of CFO (Fill in multiple squares if needed):
   ☐ Undergraduate (or domestic equivalent)
   ☐ Non-MBA Master's (or domestic equivalent)
   ☐ MBA
   ☐ Dr. / PhD
   ☐ Other: _____

5. In which country is your firm based?
   ☐ Germany ☐ Netherlands ☐ Belgium ☐ Denmark
   ☐ France ☐ Austria ☐ Sweden ☐ Norway
   ☐ United Kingdom ☐ Switzerland ☐ Finland

6. Do you have further comments?

Check if you would like to receive an exclusive report of this study.
☐ Yes, I would like to receive a copy

a) *We need your email or postal address if you want a copy. Please note: we will store your contact details separately from the questionnaire responses. The confidentiality of your responses is very important to us.*

b) *Each questionnaire holds a unique tracking number. This number is only used to identify those companies that have not yet responded. It is recorded separately from the responses of the survey. If you do not want the number to be recognizable, please feel free to blacken it.* 1589

THANK YOU for completing this survey! Please fax your responses to [redacted]

C Theoretical Concepts and Questionnaire

Table C.1: Motives for Diversification – Theoretical Concepts and Questionnaire
How important are the following motives for operating more than one line of business for your company?

A	Question 1	Theory / Concept	Author	Argument
(a)	Creating operational synergies (e.g. purchasing, manufacturing, or revenue economies)	Resource-based view	Penrose (1959); Panzar, Willig (1981); Teece (1980, 1982)	"Economies of scope" and "economies of scale": Excess resources (tangible assets) cannot be sold easily in the marketplace and require expansion in scope or scale to exploit them; also: indivisibility of intangible assets, such as brand names.
(b)	Utilizing the ability to move skilled managers from one business to another	Internal labor transfer	-	Internal labor market, argument from practitioners in pre-testing group.
(c)	Achieving beneficial conditions for raising capital	More-money effect	Lewellen (1971); Hadlock et al. (2001); Stein (2003)	More-money effect (Stein, 2003), see also below.
(d)	Being able to add value by making superior investment decisions under a common roof	Smarter-money effect	Williamson (1975); Stein (1997); Stein (2003)	Smarter-money effect (Stein, 2003). Headquarters adds value by incorporating residual control and monitoring incentives. Headquarters generates more information and can engage in winner-picking.
(e)	Reducing the risk of financial distress	Financial distress cost	Corollary of Smith, Stulz (1985)	Given imperfectly correlated divisions' cash flows, diversification is a way to decrease the probability and therefore the cost of financial distress.
(f)	Reducing investors' risk	Portfolio selection	Corollary of Smith, Stulz (1985); Stulz (1996)	Diversification can eliminate idiosyncratic risk. This may benefit investors if they cannot diversify more efficiently by themselves (e.g. large shareholders) or do not want to (e.g. family ownership).
(g)	Building the ability to have internal funds when competitor's do not have them	Financial strength in product markets	Bernheim, Whinston (1990); Edwards (1955); Montgomery (1994); Inderst, Müller (2003)	Related to "market-power-view": Firms diversify because of the ability of predatory pricing in other divisions ("deep pockets").
(h)	Reducing volatility of earnings / cash flows	Risk management	Graham, Harvey, Rajgopal (2005)	Argument from practitioners in pre-testing group. See also Graham, Harvey, Rajgopal (2005): "An overwhelming 96.9% of the survey respondents indicate that they prefer a smooth earnings path." Idea: diversification into businesses with imperfectly correlated cash flows. Some overlap to other arguments above.

Table C.2: Financing Effects of Diversification - Theoretical Concepts and Questionnaire

B	Question 2	Theory / Concept	Author	Argument
(1)	Does headquarters raise funds on behalf of the divisions?	Provider of finance	Stein (2003)	Headquarters as the single centralized provider of finance.
(2)	Do divisions also raise funds by themselves?	Internal labor transfer	Kolasinski (2009); Cestone, Fumagalli (2005)	If "No": Kolasinski (2009): Subsidiary debt mitigates "corporate socialism".

Table C.3: Financing Effects of Diversification – Theoretical Concepts and Questionnaire
How important are the following effects of diversification for your company? Please answer compared to the situation where your divisions were stand-alone companies and had to raise funds by themselves.

B	Question 3	Theory / Concept	Author	Argument
(a)	Lower cost of capital	Lower cost of capital	Hann, Ogneva, Ozbas (2013)	Integrating imperfectly correlated cash flows can lead to a reduction of systematic risk and hence lead to a lower cost of capital.
(b)	Ability to borrow more / Higher debt capacity	Coinsurance-effect	Lewellen (1971); Inderst, Müller (2003); Comment, Jarrell (1995); Stein (1997)	Lewellen (1971): The debt capacity of diversified firms is increased because of coinsurance across imperfectly correlated divisions. Also, Stein (1997): Unused borrowing capacity of one division may be used to raise additional financing.
(c)	Better conditions for raising equity	Information div. hypothesis (Superior issuing)	Hadlock, Ryngaert, Thomas (2001)	Risk pooling helps to alleviate Myers and Majluf (1984) adverse selection problems in the external equity market. Price effects in the case of issuing equity are less severe.
(d)	Less need to hold (precautionary) cash	Less cash holding	Duchin (2010)	Diversified firms can hold less cash because diversification reduces the ex-ante probability of financing shortages that might lead to underinvestment.
(e)	Ability to avoid external financing	Costly external funding	Henderson (1970, 1979); Liebeskind (2000); Rajan (1994); Matsusaka, Nanda (2002)	Matsusaka, Nanda (2002): Internal capital markets (ICMs) give firms a real option to finance their investment opportunities with internal funds to avoid the (transaction) costs of external financing; also: ICMs enhance the reliability of the capital supply and make the project funding independent of market conditions.
(f)	Lower personal taxes for investors	Tax advantage	Bhide (1990)	Owning multiple businesses allows a diversified company to transfer cash from units with excess funds to units facing cash deficits without the tax payment that might result if the transfer were to be made between two independent companies.

Table C.4: Financing Effects of Diversification – Theoretical Concepts and Questionnaire

If your divisions were spun off as stand-alone firms, they would have to raise money in outside markets rather than going to headquarters for financing. How strongly would you agree with the following statements that compare your headquarters with an external investor directly providing financing to the divisions?

B	Question 4	Theory / Concept	Author	Argument
(a)	Headquarters reacts more understandingly in the event that a project faces financial difficulties.	Soft budget constraints	Bolton, Scharfstein (1996); Dewatripont, Maskin (1995)	Bolton and Scharfstein investigate the benefits and costs of a small number of creditors. Transferred to an ICM setting, the CEO's inability to pre-commit not to renegotiate with divisional managers leads to a "soft budget constraint" for them.
(b)	Headquarters can directly intervene in the divisions' businesses, while outside investors cannot.	Control rights	Grossman, Hart (1986); Hart, Moore (1990); Hart (1995)	Headquarters can unilaterally decide what to do with the firm's assets, while the same is not true of a banker if the firm is not currently in default.
(c)	Headquarters has better information about the divisions' businesses than an external provider of financing.	More monitoring	Gertner, Scharfstein, Stein (1994); Stein (1997)	Even if internal and external providers of capital have the same ability to monitor, internal providers will choose to monitor more intensively (compared to a bank, for example) because of residual control rights.
(d)	Sensitive information such as detailed strategic and operating plans can be reported to headquarters without leaking to the public.	Keeping secrets	Liebeskind (2000, 1997); Cheung (1982)	Internal funding is valuable as crucial information has to be transferred to external investors in the case of external funding.

Table C.5:Financing Effects of Diversification - Theoretical Concepts and Questionnaire

If another corporate manager made the following statements, how strongly would you agree or disagree with each of them when you think about divisional management in your company?

B	Question 5	Theory / Concept	Author	Argument
(a)	If divisional management were running their divisions as stand-alone companies, they would act more entrepreneurial.	Entrepreneurial incentives	Gertner, Scharfstein, Stein (1994); Aghion, Tirole (1997)	Divisional managers' entrepreneurial incentives are reduced in multi-business companies as a consequence of headquarters intervening to often in the form of "winner-picking". The missing entrepreneurial incentives are correlated with the proportion of centralized decision-making.
(b)	If divisional management were running their divisions as stand-alone companies, they would work harder.	Effort incentives	Brusco, Panunzi (2005)	“Winner-picking” (i.e. optimizing capital allocation ex post and after managerial effort has been exerted) reduces effort incentives ex-ante if managers are empire-builders. also see: Milgrom (1988), Milgrom and Roberts (1988), Meyer, Milgrom, and Roberts (1992)
(c)	If divisional management were running their divisions as stand-alone companies, they would feel more committed to raising the firm's attractiveness to capital markets.	Free-rider problem	de Motta (2003)	Divisional managers may free-ride on the perception of the multi-divisional firm as a whole when accessing external capital markets.
(d)	Divisional managers have superior information / knowledge about their businesses compared to the information that headquarters has.	Information asymmetry	Proxy for informational asymmetry	Their specific human capital and expertise in the corporation make divisional managers very knowledgeable, which acts as a proxy for informational asymmetry.
(e)	Divisional managers try to influence the capital allocation decisions of headquarters.	Influencing activities	Meyer, Milgrom, Roberts (1992)	Divisional managers waste their time and effort in their attempt to influence the CEO.
(f)	Divisional managers prefer running large divisions with more capital under their control over running small divisions with less capital under their control.	Empire-building	Jensen (1986, 1993)	A basic assumption of ICM-theory concerns "empire building tendencies by divisions": managers may have an excessive taste for running large firms or large divisions.

Table C.6: Headquarters and Investment Decisions – Theoretical Concepts and Questionnaire

C	Questions	Theory / Concept	Author	Argument
(1)	Does headquarters have the decision-making authority regarding major investments?	Decision-making authority	Grossman, Hart (1986); Hart, Moore (1990); Hart (1995)	Control rights of headquarters.
(2)	Does your company use an investment committee for some of these decisions?	Investment committee	-	-
(3)	Is approval from headquarters required beyond a certain size of investment? If "Yes", from which project size (threshold amount) on does the authority to make decisions reside with headquarters?	Threshold amount	Harris, Raviv (1996); Gitman, Forrester (1977); Ross (1986)	-
(4)	In an average year, how many investment proposals are submitted to headquarters for approval?	Number of proposals	-	-
(5)	On average, how many of these obtain approval?	Approval rate	-	-
(6)	On average, how many proposals receive close scrutiny by headquarters?	Proposals under detailed investigation	-	-
(7)	What is the total amount of capital expenditures of your company in an average year?	Total CAPEX	-	-
(8)	What percentage of this total amount does not require explicit approval by the headquarters (e.g., because it is part of an initial divisional budget)?	% of CAPEX w/o approval	-	-

Table C.7: Headquarters and Investment Decisions – Theoretical Concepts and Questionnaire

C	Questions	Theory / Concept	Author	Argument
(9)	Does divisional management provide financial information such as cash flow forecasts or NPV calculations as part of their investment proposals?	Financial forecasts	Bower (1970)	Bottom-up budgeting process
(10)	From your personal experience: On average, the forecasts provided in investment proposals are … ...substantially higher / …in accordance / …substantially lower than actual outcomes	Quality of forecasts	See below – section on business practices to ensure truthful reporting.	Divisional managers have incentives to misrepresent their private information.

Table C.8: Headquarters and Investment Decisions – Theoretical Concepts and Questionnaire
From your perpective, how effective are monetary incentives, such as bonuses, in stimulating divisional managers'…

C	Question 12	Theory / Concept	Author	Argument
(a)	...motivation to work hard?	Effort incentives	-	-
(b)	...searching for long-term investment opportunities?	Innovation incentives	-	-

Table C.9: Headquarters and Investment Decisions – Theoretical Concepts and Questionnaire
How important are the following business practices in your company to ensure that divisional managers provide truthful forecasts and do not overstate the attractiveness of investment projects? If you use these practices for other reasons and not for truthful reporting, please check "Not Important".

C	Question 11	Theory / Concept	Author	Argument
(a)	We link the performance-based pay of divisional managers to overall firm performance.	Compensation contracts	Loeb and Magat (1978); Cohen and Loeb (1984)	Capital allocation is more efficient and less biased when divisional managers' compensation is linked to the performance of the entire company.
(b)	We adopt criteria (e.g., payback rules) that discount distant long-horizon cash flows more heavily than does the NPV method.	Budgeting Techniques	Bernardo, Cai, Luo (2001)	Future research question from Bernardo, Cai, and Luo (2001).
(c)	We rotate divisional managers across divisions.	Management rotation	Ozbas (2005)	Management rotation programs are used to reduce rent-seeking behavior. The incentives to misreport are smaller for a manager with bad assets if there is some chance that he might be assigned to more profitable assets. Only truthful reporting would bring about a new assignment.
(d)	We set the required hurdle rate for project approval in excess of the "true" cost of capital.	Hurdle Rate	Antle and Eppen (1985); Harris et. al. (1982); Poterba and Summers (1995); Antle and Fellingham (1997)	In general: The tradeoff is foregone NPV versus informational rent (slack, effort and private benefit). Antle and Eppen: To mitigate the effects of the manager's having private information, firms promise to pay off the manager when he reports returns above a hurdle rate. The optimal hurdle rate balances inefficiencies from slack (private benefit) and rationing (foregone NPV) in an ex ante sense.
(e)	The proportion of performance-based pay relative to base salary is high if a divisional manager claims better expected investment prospects.	Compensation contracts	Bernardo, Cai, Luo (2001, 2004)	Headquarters can reduce a manager's incentives to overstate project quality by allocating more capital and giving more incentive-based pay (relative to fixed wages) when the manager reports higher project quality. Reverse causality: Managers receive greater performance-based pay because they manage higher-quality projects; greater performance-based pay does not cause firm value to increase.
(f)	We put a relatively high weight on industry information that is gathered externally compared to internal information.	External information	Wulf (2009)	Headquarters rely more on noisy external information than on internal information, which are distortable through influence activities. High (industry-) q divisions (which is public information) receive relatively more capital. Note that this should be less prevalent if the "external" q is intrinsically noisier, for example in pharmaceuticals.

Table C.9: Continued

C	Question 11	Theory / Concept	Author	Argument
(g)	We require divisional managers to produce investment proposals with information that can be verified by headquarters.	Hard information	Stein (2002); Harris and Raviv (1996 and 1998)	In multi-business firms, information must be credibly transmittable. Headquarters must be able to verify information.
(h)	We grant each division a minimum level of capital budget / investment.	Minimum Budget	Ozbas (2005)	Making a portion of the capital budget non-contingent can reduce the intensity of internal competition and reduce gains from exaggeration by bad managers.
(i)	We have institutionalized post-investment audits.	Auditing	Antle, Eppen (1985)	Auditing represents the possibility of reviewing investment outcomes and might be less costly than capital rationing as a way to address information asymmetry and moral hazard.

Table C.10: Headquarters and Allocation of Capital – Theoretical Concepts and Questionnaire

D	Questions	Theory / Concept	Author	Argument
(1)	When capital markets are operating normally, is your company capital constrained? In other words: Does your financing capacity limit your ability to pursue attractive investment projects.	Capital constraints (external)	-	Capital constrained or unconstrained. Relevant to the importance of winner-picking.
(2)	Does your company's top management impose a limit on total investments of the firm by a predetermined, fixed budget?	Capital constraints (internal)	Gitman, Forrester (1977); Ross (1986); Zhang (1997)	The CFOs in our pre-testing group stressed the importance of a "limit placed on investing by top management" (see also Gitman and Forrester, 1977). Also, Ross (1986) shows in a sample of twelve firms that six of them used capital rationing in which projects compete for a fixed budget. Zhang (1997): If investment funds are limited, managers with shirking tendencies are less tempted to misreport project quality, since doing so reduces funding. Limited investment spending creates a competition for funds among managers.
(3)	Is the capital allocation to a division restricted by the division's own generated cash flow?	Winner-Picking	Stein (1997)	Important characteristic of an internal capital market.
(4)	Diversified firms may use the ability to move funds from divisions that are generating strong cash flow to divisions with less cash flow but strong investment opportunities. How frequently do you use this ability in order to achieve the highest capital productivity?	Winner-Picking	Stein (1997)	Headquarters has the ability and the incentives to reallocate resources between divisions and to add value by picking superior investment projects.

Table C.11: Headquarters and Allocation of Capital – Theoretical Concepts and Questionnaire
How important are the following financial criteria for your capital allocation decisions?

D Question 5	Theory / Concept	Author	Argument
(a) Net present value (NPV)	Budgeting criteria	-	Questions help to introduce the subsequent question. Measures the relative importance of different budgeting criteria in diversified firms (see also: Graham, Harvey, 2001).
(b) Internal rate of return (IRR)	Budgeting criteria	-	
(c) Hurdle rate	Budgeting criteria	-	
(d) Payback period	Budgeting criteria	-	
(e) Sensitivity analysis	Budgeting criteria	-	
(f) Real-option valuation methods	Budgeting criteria	-	

Table C.12: Headquarters and Allocation of Capital – Theoretical Concepts and Questionnaire
How important are the following factors that go beyond pure financial criteria for your capital allocation decision?

D Question 6	Theory / Concept	Author	Argument
(a) The assessment of divisional managers' abilities to deliver the expected results	Managerial abilities	Hoang, Ruckes (2014)	Argument related to Ross' (1986) field analysis of 12 firms, which indicates that a divisional manager's investment projects are more often approved when he has delivered larger returns in the past. Also, this item is in the spirit of "Informed Headquarters" (Hoang, Ruckes, 2014).
(b) Previous industry experience or affiliation of decision-makers at headquarters	Empire-building / Bridge-Building	Shleifer, Vishny (1989); Xuan (2009)	Empire-building argument (Shleifer, Vishny, 1989): CEOs prefer to invest in industries where they have more personal experience, as this makes them indispensable. Bridge-building argument (Xuan, 2009): Specialist CEOs use the capital budget as a bridge-building tool to elicit cooperation from powerful divisional managers in previously unaffiliated divisions.
(c) Strategic information of top management	Strategic information	Hoang, Ruckes (2014)	Headquarters has informational advantages regarding strategic intentions, possible spillovers, and political developments, among others. These advantages result from top managers' activities beyond the realm of the firm, e.g. board memberships, activities in professional associations, or the use of personal contact networks.
(d) Ability to execute projects (e.g., manpower, knowledge)	Capability to implement	Bromiley (1986)	Bromiley (1986, p.129) emphasizes that "manpower and the ability to implement projects could constrain investment when funds and good projects are available".
(e) Current market trends	Trends	Scharfstein, Stein (1990); Banerjee (1992); Bikhchandani, Hirshleifer, Welch (1992)	Some CFOs in our pre-testing group (Deutsche Bahn AG, Deutsche Telekom AG, EnBW AG) stressed the importance of following long-term trends and the industry. Related to herding arguments.

Table C.13: Headquarters and Allocation of Capital – Theoretical Concepts and Questionnaire
Socialism

D	Question 7	Theory / Concept	Author	Argument
(1)	How frequently do you allocate financial resources more evenly across divisions than pure financial criteria (e.g. NPV) suggest?	Socialistic Cross-Subsidization	*See below – section on corporate socialism.*	Headquarters cross-subsidizes relatively „weak“ divisions at the expense of „strong“ divisions.

Table C.14: Headquarters and Allocation of Capital – Theoretical Concepts and Questionnaire
Please think about situations where you have decided to allocate capital more evenly than pure financial criteria suggested. How important were the following factors for your allocation?

D Question 8	Theory / Concept	Author	Argument
(a) Too uneven capital allocation diminishes divisional managers' motivation.	Socialism	*Brusco, Panunzi (2005)*	Motivation for providing high effort cannot be retained in a strong form of winner-picking.
(b) Capital allocation conveys information about the (future) role of the division as part of the firm.	Socialism	*Hoang, Ruckes (2014)*	Somehow related to Hoang and Ruckes (2014) - without specifying stakeholders.
(c) A more even capital allocation stimulates divisional managers' motivation to generate new investment ideas.	Socialism	*Inderst, Laux (2005)*	The incentives for generating new investment opportunities are reduced in a strong form of winner-picking.
(d) A more even capital allocation helps to retain divisional managers.	Socialism	*Scharfstein, Stein (2000)*	Weaker divisions' managers are given more compensation because they have stronger incentives to rent-seek (=increase outside options in the job market). If the CEO is himself an agent of outside investors, he would prefer to pay this added compensation in the form of capital because this may be less personally costly.
(e) A more even capital allocation avoids opportunistic investment behavior within divisions.	Socialism	*Rajan, Servaes, Zingales (2000)*	Divisional managers invest in defensive projects that protect them from the redistribution of surplus to other divisions.
(f) A more even capital allocation frequently strengthens divisions in mature industries.	Socialism	*Goel, Nanda, Naranyan, 2004; also: Hellwig (2000, 2001)*	Goel, Nanda, and Naranyan, 2004: Career concerns model à la Holmström (1982). Divisions whose cash flows are more informative about managerial talent (mature businesses) are subsidized at the expense of less informative ones (young and emerging businesses). Hellwig: “Old”, established divisions happen to wield the most influence in the organization.
(g) A more even capital allocation strengthens our monetary performance incentive scheme.	Socialism	*Bernardo, Luo, Wang (2006)*	Headquarters' decisions are made under optimal compensation considerations; a "quality hurdle" must be taken by stronger divisions because of an information rent paid for truthful reporting and because of the more costly effort incentives in strong (high-quality) divisions.

D Tables and Figures

Table A
Summary statistics based on the survey responses

	Percent	Count
Annual sales revenue (€ millions)		
10-25	3.5%	4
25-100	7.8%	9
100-500	16.5%	19
500-1,000	13.9%	16
1,000-5,000	29.6%	34
5,000-10,000	7.0%	8
> 10,000	21.7%	25
	100.0%	**115**
No. lines of business		
2	26.1%	30
3	28.7%	33
4	23.5%	27
> 4	21.7%	25
	100.0%	**115**
Industry		
Manufacturing	25.9%	51
Construction	11.2%	22
Retail and Wholesale	9.1%	18
Tech (Software, Biotech)	9.1%	18
Energy	7.6%	15
Transport	6.6%	13
Consulting, Service	6.6%	13
Pharma, Healthcare	5.6%	11
Communication, Media	3.6%	7
Mining	1.0%	2
Bank, Finance, Insurance	1.0%	2
Other	12.7%	25
Credit rating		
AAA, AA	7.8%	9
A	11.3%	13
BBB	18.3%	21
BB, B	8.7%	10
No Rating	53.9%	62
	100.0%	**115**
Ownership		
public	82.6%	95
private	17.4%	20
	100.0%	**115**
Managerial ownership (%)		
0 to 1	67.8%	78
> 1	32.2%	37
	100.0%	**115**
Single investor owns more than 10% of companys equity		
Yes	74.8%	86
No	25.2%	29
	100.0%	**115**

	Percent	Count
CAPEX (€ millions)		
< 1	1.7%	2
1-10	18.3%	21
10-50	26.1%	30
50-100	14.8%	17
100-500	14.8%	17
500-1,000	10.4%	12
>1,000	13.9%	16
	100.0%	**115**
Debt-to-asset ratio (%)		
≤ 15	21.7%	25
> 15 to 30	34.8%	40
> 30 to 50	24.3%	28
> 50	19.1%	22
	100.0%	**115**
Country		
Germany	35.7%	41
United Kingdom	10.4%	12
Switzerland	10.4%	12
France	8.7%	10
Austria	8.7%	10
Sweden	8.7%	10
Netherlands	5.2%	6
Norway	4.3%	5
Belgium	3.5%	4
Denmark	2.6%	3
Finland	1.7%	2
	100.0%	**115**
CFO tenure (years)		
≤ 2	25.2%	29
3 to 4	25.2%	29
5 to 6	15.7%	18
7 to 8	11.3%	13
≥ 9	22.6%	26
	100.0%	**115**
CFO age (years)		
< 40	8.7%	10
40 to 50	46.1%	53
51 to 59	34.8%	40
> 59	10.4%	12
	100.0%	**115**
Gender of CFO		
male	98.3%	113
female	1.7%	2
	100.0%	**115**
CFO education		
College degree	4.3%	5
Non-MBA Master's	28.7%	33
MBA	49.6%	57
Dr. / PhD	17.4%	20
	100.0%	**115**

Table A reports summary statistics of responding firms and their CFOs. The data is drawn from 115 completed questionnaires. Variables and their categories are defined in Table D. Because firms can operate in several industries, observations for Industry sum up to more than 115.

Table B
Definitions and data sources for variables used in cross-sectional analysis

Control variable	Subsample 1	Definition 1	Subsample 2	Definition 2	Source
Size	small	≤ EUR 1bn revenue	large	> EUR 1bn revenue	Annual sales revenue at my company is in the range of? (Question 1, Closing Section)
Lines of business	few	≤ 3	many	> 3	How many lines of business is your company running? (Question 2, Closing Section)
Diversification	related	1 primary industry	unrelated	>2 primary industries	What broad industries are you working in? (Question 3, Closing Section)
Capital constraints	no	unconstrained	yes	constrained	When capital markets are operating normally, is your company capital constrained? (Question 1, Section D)
Diversity in investment prospects	no	spread ≤ 0.1	yes	spread > 0.1	What is the highest/lowest expected sales growth rate among your divisions? (Question 4a and 4b, Closing Section)
Capex ratio	low	≤ 3.6%	high	>3.6%	What is the total amount capital expenditures of your company in an average year? (Question 7, Section C)
Debt ratio	low	≤ 30%	high	> 30%	What is your debt-to-asset ratio (e.g., 0.2, 0.3)? (Question 7, Closing Section)
Equity	public	public firms	private	private firms	Ownership? (Question 5a, Closing Section)
Managerial ownership	low	≤ 1%	high	> 1%	If all options were exercised, what percentage of your company's equity would be owned by the top 3 managers (e.g., 5%)? (Question 5b, Closing Section)
Rating	low	A- or better	high	BBB+ or worse	What is your credit issuer rating (e.g., AA-, B+)? Write NONE if debt is not rated. (Question 6, Closing Section)
Age (year)	young	≤ 50 years	mature	> 50 years	Age of CFO? (Question 2, CFO Demographics)
Tenure (year)	short	≤ 4 years	long	> 4 years	Tenure (time in current job) of CFO (Question 3, CFO Demographics)
Education	MBA, PhD.	MBA, PhD.	others	Undergraduate, Non-MBA Master's	Highest educational background? (Question 4, CFO Demographics)

This table defines the variables used in the cross-sectional analyses. We divide the total sample into two groups using the medians as cut-off points for all variables except for Diversification (one/many major industries), Capital constraints (yes/no), Equity (public/private), and Education (MBA and PhD/other). The industry definition follows Graham, Harvey, and Rajgopal (2005). The last column shows from which survey sections the variables are drawn.

Table C
Responding and non-responding firms: Firm characteristics

Characteristics	Invitations	Invitations (%)	Received	Received (%)	p-value	Significance level
	n	*p*	*n*	*p*		
Country						
Germany	212	21.4%	41	35.7%	*0.00*	***
Austria	30	3.0%	10	8.7%	*0.00*	***
Switzerland	66	6.7%	12	10.4%	*0.10*	
United Kingdom	243	24.5%	12	10.4%	*0.00*	***
Sweden	79	8.0%	10	8.7%	*0.77*	
Netherlands	37	3.7%	6	5.2%	*0.40*	
Belgium	29	2.9%	4	3.5%	*0.72*	
Norway	44	4.4%	5	4.3%	*0.96*	
France	175	17.6%	10	8.7%	*0.01*	**
Denmark	33	3.3%	3	2.6%	*0.67*	
Finland	44	4.4%	2	1.7%	*0.16*	
Total	**992**	**100.0%**	**115**	**100.0%**	**0.00**	****
Number of operating Segments						
2 segments	200	20.2%	30	26.1%	*0.11*	
3-4 segments	529	53.3%	60	52.2%	*0.80*	
≥ 5 segments	263	26.5%	25	21.7%	*0.25*	
Total	**992**	**100.0%**	**115**	**100.0%**	**0.22**	
Annual revenue						
< 25 million €	72	7.3%	4	3.5%	*0.10*	
25-100 million €	174	17.5%	9	7.8%	*0.00*	***
100-500 million	284	28.6%	19	16.5%	*0.01*	**
€ 0.5-1 billion	115	11.6%	16	13.9%	*0.07*	*
€1-5 billion	200	20.2%	34	29.6%	*0.11*	
€5-10 billion	53	5.3%	8	7.0%	*0.23*	
> 10 billion €	94	9.5%	25	21.7%	*0.00*	***
Total	**992**	**100.0%**	**115**	**100.0%**	**0.00**	****
Capex ratio						
Low (≤ 3.6%)	406	41.3%	57	49.6%	*0.07*	*
High (> 3.6%)	576	58.7%	58	50.4%	*0.07*	*
missing	10		0			
Total	**992**	**100.0%**	**115**	**100.0%**	**0.07**	**
Debt ratio						
Low (≤ 0.3)	466	52.1%	65	56.5%	*0.34*	
High (> 0.3)	429	47.9%	50	43.5%	*0.34*	
missing	97		0			
Total	**992**	**100.0%**	**115**	**100.0%**	**0.34**	

***, **, * denotes a significant difference at the 1 %, 5 % and 10 % level, respectively.
This table reports statistics of the 115 "surveyed" firms and the 992 "invited" firms that we selected from Worldscope. The analysis is based on the variables Country, Number of operating segments, Annual revenue, Equity, Capex-to-asset ratio, and Debt ratio. Demographic characteristics of the "invited" firms are obtained from Worldscope. Demographic characteristics for the "surveyed firms" are obtained from the questionnaire. Variables and their categories are defined in Table D.
Chi-square tests for goodness of fit across all categories of the six variables are conducted to test whether the distribution of each variable in the sample of "surveyed" firms follows the patterns in the population of "invited" firms. The six values in the last column and row of each table (in bold) report the p-values. In addition, one-proportion z-tests (here: also equivalent to chi-square tests) are conducted to compare the proportion of "surveyed" firms in a particular category to the proportion of "invited" firms.

Table D
Correlations of control variables of the survey

	Size (small to large)	Lines of business (few to many)	Diversification (related to unrelated)	Capital constrained (no to yes)	Diversity in invest. prospects (no to yes)	CAPEX Ratio (low to high)	Debt ratio (low to high)	Equity (public to private)	Managerial ownership (low to high)	Rating (high to low)	Age (young to mature)	Tenure (short to long)
Lines of business (few to many)	0.202**											
Diversification (related to unrelated)	- 0.020	0.136										
Capital constrained (no to yes)	- 0.322***	0.007	- 0.035									
Diversity in invest. prosp. (no to yes)	- 0.065	0.093	0.107	- 0.033								
Capex Ratio (low to high)	0.078	- 0.078	- 0.06	- 0.062	- 0.085							
Debt ratio (low to high)	- 0.182**	0.014	- 0.011	0.144	- 0.142	0.133						
Equity (public to private)	0.109	0.136	0.022	0.095	0.138	0.180*	- 0.125					
Managerial ownership (low to high)	- 0.196*	0.034	0.162	0.152	0.010	0.013	0.035	- 0.051				
Rating (high to low)	0.054	- 0.003	0.336**	- 0.103	0.096	- 0.351**	0.074	- 0.041	- 0.118			
Age (young to mature)	0.131	- 0.018	0.065	0.007	0.005	- 0.008	- 0.127	0.090	- 0.014	- 0.197		
Tenure (short to long)	0.063	0.008	0.095	0.025	0.098	0.044	0.043	0.004	0.175	- 0.029	0.392***	
Educ. MBA Dr. (MBA, Dr. to others)	- 0.118	0.105	- 0.045	0.017	0.156	- 0.006	0.092	0.019	0.165	- 0.089	- 0.081	- 0.031

Table C reports the correlations (φ/mean square contingency) for Size, Lines of business, Diversification, Diversity in investment prospects, Debt ratio, Equity, Managerial ownership, Rating, Age, Tenure, Education (firm and CFO) characteristics. Variables and their categories are defined in Table D.

***, **, * denotes a significant difference at the 1 %, 5 % and 10 % level, respectively.

Table 1, Section A, Question 1

Motives for Diversification

Survey responses to the question: How important are the following motives for operating more than one line of business for your company?

Panel A

	Section A, Question 1	Obs.	Mean	% very or highly important	% somewhat or not important	Statistical differences of proportions in rows
(1)	Reducing volatility of earnings / cash flows	115	3.97	78.3	5.2	2-8
(2)	Reducing the risk of financial distress	115	3.74	66.1	9.6	1, 4-8
(3)	Creating operational synergies (e.g. purchasing, manufacturing, or revenue economies)	115	3.49	55.7	22.6	1, 7-8
(4)	Being able to add value by making superior investment decisions under a common roof	115	3.29	49.6	27.0	1-2, 7-8
(5)	Reducing investors' risk	115	3.31	47.8	20.9	1-2, 7-8
(6)	Building the ability to have internal funds when competitors do not have them	115	3.15	43.5	27.0	1-2, 7-8
(7)	Achieving beneficial conditions for raising capital	115	2.80	28.7	44.3	1-6, 8
(8)	Utilizing the ability to move skilled managers from one business to another	115	2.59	17.4	47.8	1-7

Panel B

	% very or highly important	Size		Lines of business		Diversification		Capital constrained		Diversity in investment prospects		CAPEX / Assets		Debt ratio	
		small	large	few	many	related	unrelated	no	yes	no	yes	low	high	low	high
(1)	78.3	75.0	80.6	76.2	80.8	77.3	79.6	82.5	68.6*	83.6	76.7	86.0	70.7**	80.0	76.0
(2)	66.1	68.8	64.2	68.3	63.5	69.7	61.2	67.5	62.9	67.3	65.1	66.7	65.5	69.2	62.0
(3)	55.7	56.3	55.2	52.4	59.6	56.1	55.1	53.8	60.0	50.9	58.1	61.4	50.0	61.5	48.0
(4)	49.6	47.9	50.7	38.1	63.5***	50.0	49.0	51.3	45.7	43.6	51.2	50.9	48.3	46.2	54.0
(5)	47.8	54.2	43.3	41.3	55.8	51.5	42.9	50.0	42.9	47.3	41.9	47.4	48.3	49.2	46.0
(6)	43.5	33.3	50.7*	41.3	46.2	42.4	44.9	53.8	20.0***	41.8	44.2	43.9	43.1	43.1	44.0
(7)	28.7	22.9	32.8	25.4	32.7	30.3	26.5	32.5	20.0	30.9	30.2	33.3	24.1	26.2	32.0
(8)	17.4	16.7	17.9	17.5	17.3	15.2	20.4	18.7	14.3	23.6	11.6	17.5	17.2	20.0	14.0

Panel B (continued)

	% very or highly important	Equity		Managerial ownership		Rating		Age		Tenure		Education	
		public	private	low	high	high	low	young	mature	short	long	MBA, Dr.	others
(1)	78.3	80.0	70.0	79.5	75.7	81.8	83.9	79.4	76.9	82.8	73.7	77.9	78.9
(2)	66.1	65.3	70.0	64.1	70.3	68.2	58.1	73.0	57.7*	69.0	63.2	71.4	55.3*
(3)	55.7	54.7	60.0	52.6	62.2	54.5	54.8	58.7	51.9	55.2	56.1	48.1	71.1**
(4)	49.6	51.6	40.0	50.0	48.6	40.9	54.8	46.0	53.8	46.6	52.6	46.8	55.3
(5)	47.8	49.5	40.0	46.2	51.4	40.9	41.9	57.1	36.5**	50.0	45.6	50.6	42.1
(6)	43.5	40.0	60.0	46.2	37.8	40.9	45.2	49.2	36.5	50.0	36.8	46.8	36.8
(7)	28.7	31.6	15.0	32.1	21.6	27.3	38.7	25.4	32.7	31.0	26.3	26.0	34.2
(8)	17.4	14.7	30.0	16.7	18.9	27.3	9.7*	17.5	17.3	19.0	15.8	16.9	18.4

Ratings are based on a five-point Likert scale from 1 (not important) to 5 (highly important).

Panel A reports summary statistics for the responses from all responding firms. We report the mean score, the percentage of respondents that find a motive very (4) or highly important (5), and the percentage of respondents that find a motive somewhat (2) or not important (1). The last column reports results from McNemar tests (for the analysis of multiple proportions drawn from a single sample) to examine whether ratings of each pair of sub-questions are statistically different. For instance, the rating in row 1 ("reduction of volatility in earnings/cash flows"; % very or highly important) is statistically different from the ratings in rows 2-8.

Panel B splits the sample by various characteristics and compares the proportion of respondents that answered 4 (very important) and 5 (highly important) across subsamples using chi-square tests (and for small expected frequencies Fisher's exact tests). See Table D for column/variable definitions and data sources. ***, **, or * denote statistical significance of differences in proportions across groups at the 1 %, 5 % and 10 % level, respectively.

Table 2, Section B

Financing Effects of Diversification

Survey responses

Panel A

	Section B, Questions	Obs.	% Yes	% No
(1)	Does headquarters raise funds on behalf of the divisions?	115	93.0	7.0
(2)	Do divisions also raise funds by themselves?	107	15.9	84.1

Panel B

	% Yes	Size		Lines of business		Diversification		Capital constrained		Diversity in investment prospects		CAPEX / Assets		Debt ratio	
		small	large	few	many	related	unrelated	no	yes	no	yes	low	high	low	high
(1)	93.0	89.6	95.5	93.7	92.3	95.5	89.8	93.7	91.4	96.4	95.3	93.0	93.1	93.8	92.0
(2)	15.9	25.6	9.4**	16.9	14.6	15.9	15.9	13.3	21.9	11.3	24.4*	9.4	22.2*	8.2	26.1**

Panel B (continued)

	% Yes	Equity		Managerial ownership		Rating		Age		Tenure		Education	
		public	private	low	high	high	low	young	mature	short	long	MBA, Dr.	others
(1)	93.0	93.7	90.0	93.6	91.9	90.9	87.1	93.7	92.3	94.8	91.2	93.5	92.1
(2)	15.9	15.7	16.7	15.1	17.6	5.0	18.5	22.0	8.3**	14.5	17.3	16.7	14.3

Ratings are based on a two-point (yes/no) scale.

Panel A reports summary statistics for the responses from all responding firms. We report the percentage of respondents that answer yes and no.

Panel B splits the sample by various characteristics and compares the proportion of respondents that answered yes across subsamples using chi-square tests (and for small expected frequencies Fisher's exact tests). See Table D for column/variable definitions and data sources. ***, **, or * denote statistical significance of differences in proportions across groups at the 1 %, 5 % and 10 % level, respectively.

Tabelle 3, Section B, Question 3

Financing Effects of Diversification

Survey responses to the question: How important are the following effects of diversification for your company? Please answer compared to the situation where your divisions were stand-alone companies and had to raise funds by tl

Panel A

	Section B, Question 3	Obs.	Mean	% very or highly important	% somewhat or not important	Statistical differences of proportions in rows
(1)	Lower cost of capital	106	3.81	69.8	10.4	3-6
(2)	Ability to borrow more / Higher debt capacity	106	3.51	60.4	20.8	3-6
(3)	Better conditions for raising equity	106	3.26	46.2	27.4	1-2, 5-6
(4)	Less need to hold (precautionary) cash	106	3.16	39.6	24.5	1-2, 5-6
(5)	Ability to avoid external financing	106	2.87	27.4	32.1	1-4, 6
(6)	Lower personal taxes for investors	106	1.82	4.7	75.5	1-5

Panel B

	% very or highly important	Size		Lines of business		Diversification		Capital constrained		Diversity in investment prospects		CAPEX / Assets		Debt ratio	
		small	large	few	many	related	unrelated	no	yes	no	yes	low	high	low	high
(1)	69.8	65.1	73.0	69.0	70.8	71.0	68.2	73.0	62.5	75.5	65.9	67.3	72.2	66.7	73.9
(2)	60.4	62.8	58.7	53.4	68.8	56.5	65.9	62.2	56.3	62.3	58.5	57.7	63.0	51.7	71.7**
(3)	46.2	46.5	46.0	41.4	52.1	46.8	45.5	48.6	40.6	45.3	43.9	50.0	42.6	41.7	52.2
(4)	39.6	44.2	36.5	39.7	39.6	35.5	45.5	40.5	37.5	41.5	29.3	38.5	40.7	38.3	41.3
(5)	27.4	16.3	34.9**	19.0	37.5**	21.0	36.4*	33.8	12.5**	30.2	24.4	26.9	27.8	33.3	19.6
(6)	4.7	4.7	4.8	3.4	6.2	6.5	2.3	5.4	3.1	3.8	4.9	7.7	1.9	5.0	4.3

Panel B (continued)

	% very or highly important	Equity		Managerial ownership		Rating		Age		Tenure		Education	
		public	private	low	high	high	low	young	mature	short	long	MBA, Dr.	others
(1)	69.8	71.6	61.1	68.1	73.5	70.0	66.7	71.2	68.1	74.5	64.7	69.0	71.4
(2)	60.4	63.6	44.4	59.7	61.8	60.0	51.9	61.0	59.6	63.6	56.9	60.6	60.0
(3)	46.2	47.7	38.9	48.6	41.2	20.0	51.9**	52.5	38.3	52.7	39.2	46.5	45.7
(4)	39.6	36.4	55.6	41.7	35.3	50.0	33.3	40.7	38.3	45.5	33.3	39.4	40.0
(5)	27.4	26.1	33.3	26.4	29.4	35.0	25.9	32.2	21.3	29.1	25.5	29.6	22.9
(6)	4.7	5.7	0.0	5.6	2.9	10.0	0.0*	1.7	8.5*	3.6	5.9	7.0	0.0

Ratings are based on a five-point Likert scale from 1 (not important) to 5 (highly important).

Panel A reports summary statistics for the responses from all responding firms. We report the mean score, the percentage of respondents that find a factor very (4) or highly important (5), and the percentage of respondents that find a factor somewhat (2) or not important (1). The last column reports results from McNemar tests (for the analysis of multiple proportions drawn from a single sample) to examine whether ratings of each pair of sub-questions are statistically different. For instance, the rating in row 1 ("lower cost of capital"; % very or highly important) is statistically different from the ratings in rows 3-6.

Panel B splits the sample by various characteristics and compares the proportion of respondents that answered 4 (very important) and 5 (highly important) across subsamples using chi-square tests (and for small expected frequencies Fisher's exact tests). See Table D for column/variable definitions and data sources. ***, **, or * denote statistical significance of differences in proportions across groups at the 1 %, 5 % and 10 % level, respectively.

Table 4, Section B, Question 4

Financing Effects of Diversification

Survey responses to the question: If your divisions were spun off as stand-alone firms, they would have to raise money in outside markets rather than going to headquarters for financing. How strongly would you agree with the following statements that compare your headquarters with an external investor directly providing financing to the divisions?

Panel A

	Section B, Question 4	Obs.	Mean	% agree or strongly agree	% disagree or strongly disagree	Statistical differences of proportions in rows
(1)	Headquarters has better information about the divisions' businesses than an external provider of financing.	106	4.45	93.4	2.8	3-4
(2)	Headquarters can directly intervene in the divisions' businesses, while outside investors cannot.	106	4.39	91.5	2.8	4
(3)	Sensitive information such as detailed strategic and operating plans can be reported to headquarters without leaking to the public.	106	4.32	84.9	4.7	1
(4)	Headquarters reacts more understandingly in the event that a project faces financial difficulties.	106	3.90	76.4	8.5	1-2

Panel B

	% agree or strongly agree	Size		Lines of business		Diversification		Capital constrained		Diversity in investment prospects		CAPEX / Assets		Debt ratio	
		small	large	few	many	related	unrelated	no	yes	no	yes	low	high	low	high
(1)	93.4	97.7	90.5	93.1	93.8	91.9	95.5	91.9	96.9	92.5	92.7	90.4	96.3	93.3	93.5
(2)	91.5	97.7	87.3*	89.7	93.8	90.3	93.2	90.5	93.8	92.5	87.8	90.4	92.6	91.7	91.3
(3)	84.9	81.4	87.3	81.0	89.6	85.5	84.1	82.4	90.6	86.8	78.0	84.6	85.2	81.7	89.1
(4)	76.4	79.1	74.6	70.7	83.3	72.6	81.8	74.3	81.2	66.0	87.8**	78.8	74.1	76.7	76.1

Panel B (continued)

	% agree or strongly agree	Equity		Managerial ownership		Rating		Age		Tenure		Education	
		public	private	low	high	high	low	young	mature	short	long	MBA, Dr.	others
(1)	93.4	92.0	100.0	90.3	100.0*	85.0	88.9	96.6	89.4	94.5	92.2	91.5	97.1
(2)	91.5	90.9	94.4	88.9	97.1	95.0	81.5	89.8	93.6	89.1	94.1	95.8	82.9**
(3)	84.9	84.1	88.9	81.9	91.2	90.0	81.5	81.4	89.4	80.0	90.2	85.9	82.9
(4)	76.4	73.9	88.9	75.0	79.4	75.0	81.5	71.2	83.0	74.5	78.4	78.9	71.4

Ratings are based on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

Panel A reports summary statistics for the responses from all responding firms. We report the mean score, the percentage of respondents that agree (4) or strongly agree (5) with a statement, and the percentage of respondents that disagree (2) or strongly disagree (1) with a statement. The last column reports results from McNemar tests (for the analysis of multiple proportions drawn from a single sample) to examine whether ratings of each pair of sub-questions are statistically different. For instance, the rating in row 1 ("Headquarters has better information about the divisions' businesses than an external provider of financing."; % very or highly important) is statistically different from the ratings in rows 3-4.

Panel B splits the sample by various characteristics and compares the proportion of respondents that answered 4 (agree) and 5 (strongly agree) across subsamples using chi-square tests (and for small expected frequencies Fisher's exact tests). See Table D for column/variable definitions and data sources. ***, **, or * denote statistical significance of differences in proportions across groups at the 1 %, 5 % and 10 % level, respectively.

Table 5, Section B, Question 5

Financing Effects of Diversification

Survey responses to the question: If another corporate manager made the following statements, how strongly would you agree or disagree with each of them when you think about the divisional management in your company?

Panel A

	Section B, Question 5	Obs.	Mean	% agree or strongly agree	% disagree or strongly disagree	Statistical differences of proportions in rows
(1)	Divisional managers have superior information / knowledge about their businesses compared to the information that headquarters has.	106	3.72	70.8	11.3	3-6
(2)	If divisional management were running their divisions as stand-alone companies, they would feel more committed to raising the firm's attractiveness to capital markets.	106	3.58	62.3	15.1	5-6
(3)	Divisional managers try to influence the capital allocation decisions of headquarters.	106	3.52	55.7	14.2	1, 6
(4)	Divisional managers prefer running large divisions with more capital under their control over running small divisions with less capital under their control.	106	3.48	55.7	22.6	1, 6
(5)	If divisional management were running their divisions as stand-alone companies, they would act more entrepreneurial.	106	3.11	42.5	30.2	1-2, 6
(6)	If divisional management were running their divisions as stand-alone companies, they would work harder.	106	2.27	11.3	63.2	1-5

Panel B

	% agree or strongly agree	Size		Lines of business		Diversification		Capital constrained		Diversity in investment prospects		CAPEX / Assets		Debt ratio	
		small	large	few	many	related	unrelated	no	yes	no	yes	low	high	low	high
(1)	70.8	65.1	74.6	69.0	72.9	64.5	79.5*	74.3	62.5	75.5	65.9	65.4	75.9	68.3	73.9
(2)	62.3	58.1	65.1	67.2	56.3	71.0	50.0**	58.1	71.9	56.6	63.4	55.8	68.5	61.7	63.0
(3)	55.7	58.1	54.0	60.3	50.0	46.8	68.2**	51.4	65.6	60.4	56.1	50.0	61.1	55.0	56.5
(4)	55.7	55.8	55.6	48.3	64.6*	53.2	59.1	51.4	65.6	49.1	68.3*	55.8	55.6	48.3	65.2*
(5)	42.5	44.2	41.3	48.3	35.4	38.7	47.7	33.8	62.5***	45.3	36.6	42.3	42.6	41.7	43.5
(6)	11.3	11.6	11.1	12.1	10.4	11.3	11.4	12.2	9.4	7.5	12.2	13.5	9.3	8.3	15.2

Panel B (continued)

	% agree or strongly agree	Equity		Managerial ownership		Rating		Age		Tenure		Education	
		public	private	low	high	high	low	young	mature	short	long	MBA, Dr.	others
(1)	70.8	69.3	77.8	72.2	67.6	75.0	85.2	69.5	72.3	74.5	66.7	71.8	68.6
(2)	62.3	59.1	77.8	62.5	61.8	60.0	77.8	57.6	68.1	61.8	62.7	57.7	71.4
(3)	55.7	53.4	66.7	54.2	58.8	60.0	74.1	54.2	57.4	63.6	47.1*	53.5	60.0
(4)	55.7	55.7	55.6	54.2	58.8	65.0	70.4	55.9	55.3	56.4	54.9	47.9	71.4**
(5)	42.5	44.3	33.3	37.5	52.9	45.0	37.0	42.4	42.6	52.7	31.4**	39.4	48.6
(6)	11.3	12.5	5.6	12.5	8.8	10.0	7.4	11.9	10.6	16.4	5.9*	14.1	5.7

Ratings are based on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

Panel A reports summary statistics for the responses from all responding firms. We report the mean score, the percentage of respondents that agree (4) or strongly agree (5) with a statement, and the percentage of respondents that disagree (2) or strongly disagree (1) with a statement. The last column reports results from McNemar tests (for the analysis of multiple proportions drawn from a single sample) to examine whether ratings of each pair of sub-questions are statistically different. For instance, the rating in row 1 ("Divisional managers have superior information / knowledge about their businesses compared to the information that headquarters has."; % very or highly important) is statistically different from the ratings in rows 3-6.

Panel B splits the sample by various characteristics and compares the proportion of respondents that answered 4 (agree) and 5 (strongly agree) across subsamples using chi-square tests (and for small expected frequencies Fisher's exact tests). See Table D for column/variable definitions and data sources. ***, **, or * denote statistical significance of differences in proportions across groups at the 1 %, 5 % and 10 % level, respectively.

Table 6, Section C

Headquarters and Investment Decisions

Survey responses

Panel A

	Section C, Questions	Obs.	% Yes	% No
(1)	Does headquarters have the decision-making authority regarding major investments?	112	97.3	2.7
(2)	Does your company use an investment committee for some of these decisions?	109	62.4	37.6
(3)	Is approval from headquarters required beyond a certain size of investment?	109	97.2	2.8

Panel B

	% Yes	Size		Lines of business		Diversification		Capital constrained		Diversity in investment prospects		CAPEX / Assets		Debt ratio	
		small	large	few	many	related	unrelated	no	yes	no	yes	low	high	low	high
(1)	97.3	95.7	98.5	96.7	98.0	96.9	97.9	96.2	100.0	96.2	100.0	96.4	98.2	95.3	100.0
(2)	62.4	54.5	67.7	54.2	72.0*	61.3	63.8	65.3	55.9	66.7	55.8	63.0	61.8	59.0	66.7
(3)	97.2	95.5	98.5	96.6	98.0	98.4	95.7	97.3	97.1	100.0	93.0*	98.1	96.4	98.4	97.9

Panel B (continued)

	% Yes	Equity		Managerial ownership		Rating		Age		Tenure		Education	
		public	private	low	high	high	low	young	mature	short	long	MBA, Dr.	others
(1)	97.3	97.8	94.7	96.1	100.0	100.0	100.0	96.7	98.0	96.4	98.2	96.0	100.0
(2)	62.4	61.5	66.7	64.4	58.3	57.1	70.0	64.4	60.0	61.1	63.6	66.7	54.1
(3)	97.2	100.0	83.3***	98.6	94.4	95.2	100.0	94.9	100.0	98.1	96.4	100.0	91.9**

Ratings are based on a two-point (yes/no) scale.

Panel A reports summary statistics for the responses from all responding firms. We report the percentage of respondents that answer yes and no.

Panel B splits the sample by various characteristics and compares the proportion of respondents that answered yes across subsamples using chi-square tests (and for small expected frequencies Fisher's exact tests). See Table D for column/variable definitions and data sources. ***, **, or * denote statistical significance of differences in proportions across groups at the 1 %, 5 % and 10 % level, respectively.

Table 7, Section C

Headquarters and Investment Decisions

Survey responses

Panel A

	Section C, Questions	Obs.	Mean	Median	Min/max
(3)	If approval from headquarters is required beyond a certain size of investment, from which project size (threshold amount) on does the authority to make decisions reside with headquarters? (Mio €)	81	5.15	0.5	0.001/65
(4)	In an average year, how many investment proposals are submitted to headquarters for approval? (n)	105	78.8	20.0	2/4500
(4a)	In an average year, how many investment proposals are submitted to headquarters for approval? (adjusted) (n)	104	36.3	20.0	2/300

Panel B

	Median	Size		Lines of business		Diversification		Capital constrained		Diversity in investment prospects		CAPEX / Assets		Debt ratio	
		small	large	few	many	related	unrelated	no	yes	no	yes	low	high	low	high
(3)	0.50	0.1	2***	0.4	1.0	0.6	0.5	1.0	0.15*	0.6	0.5	0.2	1**	1.0	0.2**
(4)	20.0	17.5	25**	18.8	25.0	20.0	20.0	20.0	32.5**	25.0	20*	20.0	20.0	17.5	25**
(4a)	20.0	17.5	25**	17.5	25.0	20.0	20.0	18.8	32.5**	25.0	20**	20.0	20.0	17.5	25**

Panel B (continued)

	Median	Equity		Managerial ownership		Rating		Age		Tenure		Education		Winner-Picking	
		public	private	low	high	high	low	young	mature	short	long	MBA, Dr.	others	no	yes
(3)	0.50	0.5	3.8	1.0	0.1***	5.0	1.2	0.5	0.6	1.0	0.5	1.0	0.5	0.20	0.60
(4)	20.0	20.0	20.0	22.5	17.5	25.0	18.8	20.0	20.0	20.0	20.0	20.0	20.0	10.0	25***
(4a)	20.0	20.0	20.0	20.0	17.5	22.5	18.8	20.0	20.0	20.0	20.0	20.0	20.0	10.0	25***

Respondents were asked to enter a threshold amount and the number of investment proposals in an average year.
Panel A reports summary statistics for the responses from all responding firms. We report the mean score, the median, the minimum and the maximum.
Panel B splits the sample by various characteristics and compares the medians across subsamples using Kruskal-Wallis and Mood tests of differences in medians. See Table D for column/variable definitions and data sources.
***, **, or * denote statistical significance of differences in proportions across groups at the 1 %, 5 % and 10 % level, respectively.

Table 8, Section C

Headquarters and Investment Decisions

Survey responses

Panel A

	Section C, Questions	Obs.	Mean	Median	Min/max
(5)	On average, how many of these obtain approval? (%)	105	77.7	80.0	17/100
(6)	On average, how many proposals receive close scrutiny by headquarters? (%)	92	68.6	72.5	0/100
(8)	What percentage of the total amount of capital expenditures of your company in an averagy year does not require explicit approval by the headquarters (e.g., because it is part of an initial divisional budget)? (%)	105	38.8	40.0	0/95

Panel B2

	Mean	Size		Lines of business		Diversification		Capital constrained		Diversity in investment prospects		CAPEX / Assets		Debt ratio	
		small	large	few	many	related	unrelated	no	yes	no	yes	low	high	low	high
(5)	77.7	76.3	78.8	77.0	78.7	77.3	78.3	79.1	75.0	77.1	76.7	74.4	81.0*	78.6	76.6
(6)	68.6	74.5	65.0	69.6	67.5	65.4	72.9	70.0	65.6	67.2	67.2	67.1	70.1	70.0	67.0
(8)	38.8	28.9	45.7***	38.8	38.9	40.4	36.7	42.0	32.1*	38.7	38.4	35.7	41.8	44.5	31.3**

Panel B2 (continued)

	Mean	Equity		Managerial ownership		Rating		Age		Tenure		Education		Winner-Picking	
		public	private	low	high	high	low	young	mature	short	long	MBA, Dr.	others	no	yes
(5)	77.7	76.8	82.1	79.0	76.0	76.8	73.4	77.7	77.8	76.8	78.6	76.2	80.9	75.5	78.2
(6)	68.6	68.6	68.7	66.0	74.0	65.1	66.3	70.2	66.8	71.1	66.0	66.3	73.5	64.4	69.5
(8)	38.8	38.2	41.9	42.0	33.0	43.8	40.1	37.7	40.0	38.2	39.3	41.0	34.3	40.1	38.6

Respondents were asked to enter percentages.

Panel A reports summary statistics for the responses from all responding firms. We report the mean score, the median, the minimum and the maximum.

Panel B splits the sample by various characteristics and compares the mean score across subsamples using standard differences of means tests. See Table D for column/variable definitions and data sources. ***, **, or * denote

Table 9, Section C, Question 9

Headquarters and Investment Decisions

Survey responses

Panel A

	Section C, Question 9	Obs.	% Yes	% No
(9)	Does divisional management provide financial information such as cash flow forecasts or NPV calculations as part of their investment proposals?	109	98.2	1.8

Panel B

	% Yes	Size		Lines of business		Diversification		Capital constrained		Diversity in investment prospects		CAPEX / Assets		Debt ratio	
		small	large	few	many	related	unrelated	no	yes	no	yes	low	high	low	high
(9)	98.2	97.7	98.5	100.0	96.0	98.4	97.9	97.3	100.0	98.0	97.7	96.3	100.0	98.4	97.9

Panel B (continued)

	% Yes	Equity		Managerial ownership		Rating		Age		Tenure		Education	
		public	private	low	high	high	low	young	mature	short	long	MBA, Dr.	others
(9)	98.2	97.8	100.0	97.3	100.0	95.2	96.7	98.3	98.0	96.3	100.0	98.6	97.3

Ratings are based on a two-point (yes/no) scale.

Panel A reports summary statistics for the responses from all responding firms. We report the percentage of respondents that answer yes and no.

Panel B splits the sample by various characteristics and compares the proportion of respondents that answered yes across subsamples using chi-square tests (and for small expected frequencies Fisher's exact tests). See Table D for column/variable definitions and data sources. ***, **, or * denote statistical significance of differences in proportions across groups at the 1 %, 5 % and 10 % level, respectively.

Table 10, Section C, Question 10

Headquarters and Investment Decisions

Survey responses

Panel A

	Section C, Question 10	Obs.	Mean	% higher than actual outcomes	% lower than actual outcomes
(10)	On average, the forecasts provided in investment proposals are...	108	2.55	50.9	12.0

Panel B

	% higher than actual outcomes	Size		Lines of business		Diversification		Capital constrained		Diversity in investment prospects		CAPEX / Assets		Debt ratio	
		small	large	few	many	related	unrelated	no	yes	no	yes	low	high	low	high
(10)	50.9	59.1	45.3	55.9	44.9	50.0	52.2	48.6	55.9	54.9	42.9	58.5	43.6	56.7	43.8

Panel B (continued)

	% higher than actual outcomes	Equity		Managerial ownership		Rating		Age		Tenure		Education	
		public	private	low	high	high	low	young	mature	short	long	MBA, Dr.	others
(10)	50.9	52.2	44.4	51.4	50.0	52.4	48.3	48.3	54.0	60.4	41.8*	48.6	55.6

Ratings are based on a five-point Likert scale from 1 (substantially higher than actual outcomes) to 5 (substantially lower than actual outcomes).

Panel A reports summary statistics for the responses from all responding firms. We report the mean score, the percentage of respondents that find a business practice very (4) or highly important (5), and the percentage of respondents that find a business practice somewhat (2) or not important (1).

Panel B splits the sample by various characteristics and compares the proportion of respondents that answered 1 (substantially higher than actual outcomes) and 2 (higher than actual outcomes) across subsamples using chi-square tests (and for small expected frequencies Fisher's exact tests). See Table D for column/variable definitions and data sources. ***, **, or * denote statistical significance of differences in proportions across groups at the 1 %, 5 % and 10 % level, respectively.

Table 11, Section C, Question 11

Headquarters and Investment Decisions

Survey responses to the question: How important are the following business practices in your company to ensure that divisional managers provide truthful forecasts and do not overstate the attractiveness of investment projects? If you use these practices for other reasons an reporting, please check “Not Important”.

Panel A

	Section C, Question 11	Obs.	Mean	% very or highly important	% somewhat or not important	Statistical differences of proportions in rows
(1)	We link the performance-based pay of divisional managers to overall firm performance.	109	3.70	72.5	16.5	3-9
(2)	We require divisional managers to produce investment proposals with information that can be verified by headquarters.	109	3.83	68.8	7.3	3-9
(3)	We set the required hurdle rate for project approval in excess of the "true" cost of capital.	109	3.27	53.2	21.1	1-2, 5-9
(4)	We have institutionalized post-investment audits.	109	3.11	44.0	32.1	1-2, 6-9
(5)	We grant each division a minimum level of capital budget / investment.	109	2.72	33.0	45.9	1-3, 8-9
(6)	We put a relatively high weight on industry information that is gathered externally compared to internal information.	109	2.67	23.9	37.6	1-4, 9
(7)	We adopt criteria (e.g., payback rules) that discount distant long-horizon cash flows more heavily than does the NPV	109	2.51	22.0	45.0	1-4
(8)	The proportion of performance-based pay relative to base salary is high if a divisional manager claims better expected investment prospects.	109	2.33	17.4	53.2	1-5
(9)	We rotate divisional managers across divisions.	109	2.03	12.8	67.0	1-6

Panel B

	% very or highly important	Size		Lines of business		Diversification		Capital constrained		Diversity in investment prospects		CAPEX / Assets		Debt ratio	
		small	large	few	many	related	unrelated	no	yes	no	yes	low	high	low	high
(1)	72.5	70.5	73.8	78.0	66.0	69.4	76.6	73.3	70.6	80.4	60.5**	70.4	74.5	70.5	75.0
(2)	68.8	70.5	67.7	64.4	74.0	72.6	63.8	72.0	61.8	64.7	69.8	64.8	72.7	67.2	70.8
(3)	53.2	36.4	64.6***	49.2	58.0	56.5	48.9	61.3	35.3**	52.9	48.8	55.6	50.9	54.1	52.1
(4)	44.0	36.4	49.2	28.8	62.0***	41.9	46.8	48.0	35.3	49.0	30.2*	33.3	54.6**	41.0	47.9
(5)	33.0	25.0	38.5	35.6	30.0	37.1	27.7	38.7	20.6*	25.5	41.9*	33.3	32.7	36.1	29.2
(6)	23.9	25.0	23.1	20.3	28.0	25.8	21.3	25.3	20.6	19.6	27.9	31.5	16.4*	23.0	25.0
(7)	22.0	25.0	20.0	18.6	26.0	21.0	23.4	26.7	11.8*	31.4	14.0**	27.8	16.4	24.6	18.8
(8)	17.4	20.5	15.4	15.3	20.0	17.7	17.0	20.0	11.8	19.6	16.3	22.2	12.7	18.0	16.7
(9)	12.8	13.6	12.3	10.2	16.0	16.1	8.5	12.0	14.7	15.7	9.3	9.3	16.4	11.5	14.6

Panel B (continued)

	% very or highly important	Equity		Managerial ownership		Rating		Age		Tenure		Education	
		public	private	low	high	high	low	young	mature	short	long	MBA, Dr.	others
(1)	72.5	74.7	61.1	71.2	75.0	71.4	70.0	71.2	74.0	83.3	61.8**	72.2	73.0
(2)	68.8	69.2	66.7	64.4	77.8	71.4	50.0	67.8	70.0	77.8	60.0**	70.8	64.9
(3)	53.2	52.7	55.6	56.2	47.2	38.1	63.3*	52.5	54.0	51.9	54.5	55.6	48.6
(4)	44.0	44.0	44.4	47.9	36.1	52.4	43.3	42.4	46.0	46.3	41.8	45.8	40.5
(5)	33.0	31.9	38.9	32.9	33.3	38.1	30.0	37.3	28.0	37.0	29.1	29.2	40.5
(6)	23.9	25.3	16.7	19.2	33.3	23.8	20.0	20.3	28.0	22.2	25.5	29.2	13.5*
(7)	22.0	22.0	22.2	20.5	25.0	14.3	20.0	16.9	28.0	16.7	27.3	22.2	21.6
(8)	17.4	17.6	16.7	15.1	22.2	19.0	6.7	16.9	18.0	16.7	18.2	20.8	10.8
(9)	12.8	13.2	11.1	13.7	11.1	9.5	16.7	15.3	10.0	18.5	7.3*	12.5	13.5

Ratings are based on a five-point Likert scale from 1 (not important) to 5 (highly important).

Panel A reports summary statistics for the responses from all responding firms. We report the mean score, the percentage of respondents that find a business practice very (4) or highly important (5), and the percentage of respondents that find a business practice somewhat (2) or not important (1). The last column reports results from McNemar tests (for the analysis of multiple proportions drawn from a single sample) to examine whether ratings of each pair of sub-questions are statistically different. For instance, the rating in row 1 ("We link the performance-based pay of divisional managers to overall firm performance."; % very or highly important) is statistically different from the ratings in rows 3-9.

Panel B splits the sample by various characteristics and compares the proportion of respondents that answered 4 (very important) and 5 (highly important) across subsamples using chi-square tests (and for small expected frequencies Fisher's exact tests). See Table D for column/variable definitions and data sources. ***, **, or * denote statistical significance of differences in proportions across groups at the 1 %, 5 % and 10 % level, respectively.

Table 12, Section D

Headquarters and Allocation of Capital

Survey responses

Panel A

	Section D, Questions	Obs.	% Yes	% No
(1)	When capital markets are operating normally, is your company Capital constrained? In other words: Does your financing capacity limit your ability to pursue attractive investment projects.	115	30.4	69.6
(2)	Does your company's top management impose a limit on total investments of the firm by a predetermined, fixed budget?	115	55.7	44.3
(3)	Is the capital allocation to a division restricted by the division's own generated cash flow?	115	26.1	73.9

Panel B

	% Yes	Size		Lines of business		Diversification		Capital constrained		Diversity in investment prospects		CAPEX / Assets		Debt ratio	
		small	large	few	many	related	unrelated	no	yes	no	yes	low	high	low	high
(1)	30.4	47.9	17.9***	30.2	30.8	31.8	28.6	0.0	100.0	30.9	27.9	33.3	27.6	24.6	38.0
(2)	55.7	50.0	59.7	58.7	51.9	57.6	53.1	50.0	68.6*	56.4	51.2	50.9	60.3	49.2	64.0
(3)	26.1	25.0	26.9	19.0	34.6*	24.2	28.6	20.0	40.0**	20.0	34.9*	29.8	22.4*	24.6	28.0

Panel B (continued)

	% Yes	Equity		Managerial ownership		Rating		Age		Tenure		Education	
		public	private	low	high	high	low	young	mature	short	long	MBA, Dr.	others
(1)	30.4	28.4	40.0	25.6	40.5	31.8	22.6	30.2	30.8	29.3	31.6	29.9	31.6
(2)	55.7	57.9	45.0	50.0	67.6*	59.1	51.6	57.1	53.8	56.9	54.4	53.2	60.5
(3)	26.1	28.4	15.0	23.1	32.4	9.1	38.7**	30.2	21.2	24.1	28.1	27.3	23.7

Ratings are based on a twp-point (yes/no) scale.

Panel A reports summary statistics for the responses from all responding firms. We report the percentage of respondents that answer yes and no.

Panel B splits the sample by various characteristics and compares the proportion of respondents that answered yes across subsamples using chi-square tests (and for small expected frequencies Fisher's exact tests). See Table D for column/variable definitions and data sources. ***, **, or * denote statistical significance of differences in proportions across groups at the 1 %, 5 % and 10 % level, respectively.

Table 13, Section D, Question 5

Headquarters and Allocation of Capital

Survey responses to the question: How important are the following financial criteria for your capital allocation decision?

Panel A

	Section D, Question 5	Obs.	Mean	% very or highly important	% somewhat or not important	Statistical differences of proportions in rows
(1)	Internal rate of return (IRR)	115	3.84	70.4	11.3	5-6
(2)	Net present value (NPV)	115	3.82	69.6	14.8	5-6
(3)	Payback period	115	3.77	64.3	13.9	5-6
(4)	Sensitivity analysis	115	3.60	64.3	19.1	5-6
(5)	Hurdle rate	115	2.93	37.4	36.5	1-4, 6
(6)	Real-option valuation methods	115	1.77	6.1	77.4	1-5

Panel B

	% very or highly important	Size		Lines of business		Diversification		Capital constrained		Diversity in investment prospects		CAPEX / Assets		Debt ratio	
		small	large	few	many	related	unrelated	no	yes	no	yes	low	high	low	high
(1)	70.4	70.8	70.1	73.0	67.3	78.8	59.2**	71.3	68.6	72.7	67.4	63.2	77.6	69.2	72.0
(2)	69.6	60.4	76.1*	66.7	73.1	71.2	67.3	70.0	68.6	65.5	74.4	68.4	70.7	72.3	66.0
(3)	64.3	72.9	58.2	66.7	61.5	51.5	81.6***	65.0	62.9	65.5	67.4	66.7	62.1	67.7	60.0
(4)	64.3	54.2	71.6*	58.7	71.2	69.7	57.1	66.3	60.0	67.3	58.1	66.7	62.1	67.7	60.0
(5)	37.4	22.9	47.8***	30.2	46.2*	40.9	32.7	45.0	20.0**	36.4	37.2	38.6	36.2	38.5	36.0
(6)	6.1	4.2	7.5	4.8	7.7	6.1	6.1	6.2	5.7	9.1	2.3	3.5	8.6	6.2	6.0

Panel B (continued)

	% very or highly important	Equity		Managerial ownership		Rating		Age		Tenure		Education	
		public	private	low	high	high	low	young	mature	short	long	MBA, Dr.	others
(1)	70.4	68.4	80.0	71.8	67.6	63.6	67.7	74.6	65.4	74.1	66.7	71.4	68.4
(2)	69.6	70.5	65.0	73.1	62.2	68.2	67.7	73.0	65.4	79.3	59.6**	70.1	68.4
(3)	64.3	64.2	65.0	62.8	67.6	31.8	74.2***	69.8	57.7	65.5	63.2	62.3	68.4
(4)	64.3	65.3	60.0	65.4	66.2	72.7	61.3	61.9	67.3	74.1	54.4**	62.3	68.4
(5)	37.4	38.9	30.0	37.2	37.8	59.1	41.9	30.2*	46.2	31.0	43.9	39.0	34.2
(6)	6.1	6.3	5.0	7.7	2.7	9.1	9.7	4.8	7.7	5.2	7.0	5.2	7.9

Ratings are based on a five-point Likert scale from 1 (not important) to 5 (highly important).

Panel A reports summary statistics for the responses from all responding firms. We report the mean score, the percentage of respondents that find a budgeting method very (4) or highly important (5), and the percentage of respondents that find a budgeting method somewhat (2) or not important (1). The last column reports results from McNemar tests (for the analysis of multiple proportions drawn from a single sample) to examine whether ratings of each pair of sub-questions are statistically different. For instance, the rating in row 1 ("Internal rate of return (IRR)"; % very or highly important) is statistically different from the ratings in rows 5-6.

Panel B splits the sample by various characteristics and compares the proportion of respondents that answered 4 (very important) and 5 (highly important) across subsamples using chi-square tests (and for small expected frequencies Fisher's exact tests). See Table D for column/variable definitions and data sources. ***, **, or * denote statistical significance of differences in proportions across groups at the 1 %, 5 % and 10 % level, respectively.

Table 14, Section D, Question 6

Headquarters and Allocation of Capital

Survey responses to the question: How important are the following factors that go beyond pure financial criteria for your capital allocation decision?

Panel A

	Section D, Question 6	Obs.	Mean	% very or highly important	% somewhat or not important	Statistical differences of proportions in rows
(1)	Strategic information of top management	115	3.97	82.6	5.2	4-5
(2)	The assessment of divisional managers' abilities to deliver the expected results	115	3.97	79.1	5.2	4-5
(3)	Ability to execute projects (e.g., manpower, knowledge)	115	4.05	79.1	6.1	4-5
(4)	Current market trends	115	3.48	52.2	18.3	1-3
(5)	Previous industry experience or affiliation of decision-makers at headquarters	115	3.27	42.6	19.1	1-3

Panel B

	% very or highly important	Size		Lines of business		Diversification		Capital constrained		Diversity in investment prospects		CAPEX / Assets		Debt ratio	
		small	large	few	many	related	unrelated	no	yes	no	yes	low	high	low	high
(1)	82.6	75.0	88.1*	82.5	82.7	83.3	81.6	85.0	77.1	81.8	83.7	82.5	82.8	84.6	80.0
(2)	79.1	83.3	76.1	85.7	71.2*	72.7	87.8**	82.5	71.4	80.0	81.4	89.5	69.0***	80.0	78.0
(3)	79.1	83.3	76.1	79.4	78.8	80.3	77.6	83.7	68.6*	80.0	81.4	86.0	72.4*	81.5	76.0
(4)	52.2	47.9	55.2	54.0	50.0	60.6	40.8**	53.7	48.6	54.5	48.8	49.1	55.2	49.2	56.0
(5)	42.6	45.8	40.3	42.9	42.3	47.0	36.7	45.0	37.1	45.5	44.2	50.9	34.5*	44.6	40.0

Panel B (continued)

	% very or highly important	Equity		Managerial ownership		Rating		Age		Tenure		Education	
		public	private	low	high	high	low	young	mature	short	long	MBA, Dr.	others
(1)	82.6	83.2	80.0	84.6	78.4	86.4	87.1	79.4	86.5	84.5	80.7	81.8	84.2
(2)	79.1	80.0	75.0	78.2	81.1	54.5	90.3***	77.8	80.8	81.0	77.2	81.8	73.7
(3)	79.1	82.1	65.0*	76.9	83.8	77.3	83.9	76.2	82.7	77.6	80.7	81.8	73.7
(4)	52.2	54.7	40.0	52.6	51.4	45.5	48.4	58.7	44.2	53.4	50.9	57.1	42.1
(5)	42.6	43.2	40.0	41.0	45.9	36.4	45.2	42.9	42.3	48.3	36.8	42.9	42.1

Ratings are based on a five-point Likert scale from 1 (not important) to 5 (highly important).

Panel A reports summary statistics for the responses from all responding firms. We report the mean score, the percentage of respondents that find a factor very (4) or highly important (5), and the percentage of respondents that find a factor somewhat (2) or not important (1). The last column reports results from McNemar tests (for the analysis of multiple proportions drawn from a single sample) to examine whether ratings of each pair of sub-questions are statistically different. For instance, the rating in row 1 ("Strategic information of top management"; % very or highly important) is statistically different from the ratings in rows 4-5.

Panel B splits the sample by various characteristics and compares the proportion of respondents that answered 4 (very important) and 5 (highly important) across subsamples using chi-square tests (and for small expected frequencies Fisher's exact tests). See Table D for column/variable definitions and data sources. ***, **, or * denote statistical significance of differences in proportions across groups at the 1 %, 5 % and 10 % level, respectively.

Table 15, Section D

Headquarters and Allocation of Capital

Survey responses

Panel A

	Section D, Questions	Obs.	Mean	% often or always	% some-times	% rarely	% never
(4)	Diversified firms may use the ability to move funds from divisions that are generating strong cash flow to divisions with less cash flow but strong investment opportunities. How frequently do you use this ability in order to achieve the highest capital productivity?	115	3.55	52.2	32.2	13.9	1.7
(7)	How frequently do you allocate financial resources more evenly across divisions than pure financial criteria (e.g., NPV) suggest?	115	2.37	12.2	34.8	29.6	23.5

Panel B

	% Sometimes to always	Size		Lines of business		Diversification		Capital constrained		Diversity in investment prospects		CAPEX / Assets		Debt ratio	
		small	large	few	many	related	unrelated	no	yes	no	yes	low	high	low	high
(4)	84.3	77.1	89.6*	82.5	86.5	81.8	87.8	81.3	91.4	87.3	81.4	80.7	87.9	86.2	82.0
(7)	47.0	47.9	46.3	44.4	50.0	45.5	49.0	47.5	45.7	50.9	41.9	42.1	51.7	40.0	56.0*

Panel B (continued)

	% Sometimes to always	Equity		Managerial ownership		Rating		Age		Tenure		Education		Winner-Picking	
		public	private	low	high	high	low	young	mature	short	long	MBA, Dr.	others	no	yes
(4)	84.3	81.1	100**	84.6	83.8	81.8	87.1	82.5	86.5	84.5	84.2	83.1	86.8	0.0	100***
(7)	47.0	44.2	60.0	47.4	45.9	54.5	51.6	47.6	46.2	48.3	45.6	46.8	47.4	22.2	51.5**

Ratings are based on a five-point Likert scale from 1 (never) to 5 (always).

Panel A reports summary statistics for the responses from all responding firms. We report the mean score, the percentage of respondents that engage in winner-picking (Section D, Q4) / corporate socialism (Section D, Q7) often (4) or always (5), sometimes (3), rarely (2), or never (1).

Panel B splits the sample by various characteristics and compares the proportion of respondents that answered 4 (often) and 5 (always) across subsamples using chi-square tests (and for small expected frequencies Fisher's exact tests). See Table D for column/variable definitions and data sources. ***, **, or * denote statistical significance of differences in proportions across groups at the 1 %, 5 % and 10 % level, respectively.

Table 16, Section D, Question 8

Headquarters and Allocation of Capital

Survey responses to the question: Please think about situations where you have decided to allocate capital more evenly than pure financial criteria suggested.
How important were the following factors for your allocation?

Panel A - answers filtered by "sometimes to always" checked in Section D, Question 7 (How frequently do you allocate financial resources more evenly across divisions than pure financial criteria (e.g., NPV) suggest?)

	Section D, Question 8	Obs.	Mean	% very or highly important	% somewhat or not important	Statistical differences of proportions in rows
(1)	Capital allocation conveys information about the (future) role of the division as part of the firm.	54	2.80	37.0	35.2	3-7
(2)	A more even capital allocation avoids opportunistic investment behavior within divisions.	54	2.50	20.4	51.9	-
(3)	A more even capital allocation frequently strengthens divisions in mature industries.	54	2.74	20.4	37.0	1
(4)	A more even capital allocation stimulates divisional managers' motivation to generate new investment ideas.	54	2.50	16.7	46.3	1
(6)	A more even capital allocation helps to retain divisional managers.	54	2.26	13.0	57.4	1
(5)	Too uneven capital allocation diminishes divisional managers' motivation.	54	2.15	13.0	59.3	1
(7)	A more even capital allocation strengthens our monetary performance incentive scheme.	54	2.20	9.3	59.3	1

Panel B

	% very or highly important	Size		Lines of business		Diversification		Capital constrained		Diversity in investment prospects		CAPEX / Assets		Debt ratio	
		small	large	few	many	related	unrelated	no	yes	no	yes	low	high	low	high
(1)	37.0	34.8	38.7	28.6	46.2	40.0	33.3	28.9	56.3*	39.3	22.2	33.3	40.0	42.3	32.1
(2)	20.4	13.0	25.8	10.7	30.8*	20.0	20.8	23.7	12.5	14.3	27.8	16.7	23.3	23.1	17.9
(3)	20.4	21.7	19.4	14.3	26.9	20.0	20.8	23.7	12.5	14.3	27.8	8.3	30.0**	23.1	17.9
(4)	16.7	13.0	19.4	17.9	15.4	10.0	25.0	15.8	18.8	14.3	22.2	12.5	20.0	15.4	17.9
(6)	13.0	13.0	12.9	10.7	15.4	16.7	8.3	7.9	25.0*	21.4	5.6	4.2	20.0*	11.5	14.3
(5)	13.0	13.0	12.9	10.7	15.4	13.3	12.5	10.5	18.8	17.9	5.6	8.3	16.7	7.7	17.9
(7)	9.3	13.0	6.5	7.1	11.5	3.3	16.67*	5.3	18.8	3.6	16.7	12.5	6.7	15.4	3.6**

Panel B (continued)

	% very or highly important	Equity		Managerial ownership		Rating		Age		Tenure		Education	
		public	private	low	high	high	low	young	mature	short	long	MBA, Dr.	others
(1)	37.0	35.7	41.7	35.1	41.2	50.0	25.0	30.0	45.8	35.7	38.5	41.7	27.8
(2)	20.4	19.0	25.0	21.6	17.6	16.7	25.0	20.0	20.8	21.4	19.2	25.0	11.1
(3)	20.4	16.7	33.3	18.9	23.5	8.3	25.0	20.0	20.8	17.9	23.1	16.7	27.8
(4)	16.7	14.3	25.0	13.5	23.5	16.7	25.0	20.0	12.5	25.0	7.7*	22.2	5.6
(6)	13.0	11.9	16.7	10.8	17.6	25.0	12.5	13.3	12.5	17.9	7.7	11.1	16.7
(5)	13.0	16.7	0.0	5.4	29.4**	16.7	18.8	16.7	8.3	7.1	19.2	5.6	27.8**
(7)	9.3	4.8	25.0**	5.4	17.6	8.3	18.8	6.7	12.5	3.6	15.4	8.3	11.1

Ratings are based on a five-point Likert scale from 1 (not important) to 5 (highly important).

Panel A reports summary statistics for the responses from the firms that indicate that they frequently engage in socialism (Section D, Q4; 3=sometimes, 4= rarely, 5=always) following the definition in Section 4.4. We report the mean score, the percentage of respondents that find a factor very (4) or highly important (5), and the percentage of respondents that find a factor somewhat (2) or not important (1). The last column reports results from McNemar tests (for the analysis of multiple proportions drawn from a single sample) to examine whether ratings of each pair of sub-questions are statistically different. For instance, the rating in row 1 ("Capital allocation conveys information about the (future) role of the division as part of the firm."; % very or highly important) is statistically different from the ratings in rows 3-7.

Panel B splits the sample by various characteristics and compares the proportion of respondents that answered 4 (very important) and 5 (highly important) across subsamples using chi-square tests (and for small expected frequencies Fisher's exact tests). See Table D for column/variable definitions and data sources. ***, **, or * denote statistical significance of differences in proportions across groups at the 1 %, 5 % and 10 % level, respectively.