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# Capital allocation and delegation of decision-making authority within firms<sup>☆</sup>

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## ABSTRACT

We use a unique data set that contains information on more than 1,000 Chief Executive Officers (CEOs) and Chief Financial Officers (CFOs) around the world to investigate the degree to which executives delegate financial decisions and the circumstances that drive variation in delegation. Delegation does not appear to be monolithic; instead, our results show that it varies across corporate policies and also varies with the personal characteristics of the CEO. We find that CEOs delegate financial decisions for which they need the most input, when they are overloaded, and when they are distracted by recent acquisitions. CEOs delegate less when they are knowledgeable (long-tenured or with a finance background). Capital is allocated based on “gut feel” and the personal reputation of the manager running a given division. Finally, corporate politics and corporate socialism affect capital allocation in European and Asian firms.

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## 1. Overview

An exciting new area of research looks inside the black box of the firm, to understand how corporate decisions are made and by whom. One branch of the organizational economics

literature focuses on the delegation of decision-making authority (see Section 2 for a review). A basic framework involves a principal (the Chief Executive Officer (CEO) in our analysis) who needs information or effort from an agent (upper level management in our analysis). In order to benefit

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from employees' information or proximity to certain activities, the CEO considers sharing control via delegating decision-making authority down the corporate ladder. The CEO could in principle gather the desired information but this self-gathering approach would become more costly to the CEO as the firm becomes very large or complex or as the CEO becomes overloaded (e.g., [Aghion and Tirole, 1997](#)). While the theoretical literature identifies many interesting trade-offs, the empirical evidence is scarce because [as noted by [Prendergast \(2002\)](#)] and others the econometrician can rarely observe the roles and responsibilities behind the corporate decision-making process, including how these vary across different decisions and settings.

We use a unique database of executive decision-making to study how CEOs and other high-level managers share the decision-making process related to five important corporate decisions: financing choices, returning capital to investors, mergers and acquisitions (M&A), corporate investment, and the allocation of capital across divisions. Our analysis relies on an anonymous survey-based sample of more than 1,000 CEOs and 500 CFOs who work in U.S.-based companies. In addition, we sample approximately 800 Asian and European executives. These business leaders provide information about their own backgrounds and training, demographic information about their firms, and the degree to which the five corporate finance policy decisions are delegated. In addition, we probe more deeply into decision rules associated with capital allocation.

Our data set has substantial variation across people, firms, divisions, industries, countries, and crucially, in the importance of informational inputs coming from different levels of the corporate hierarchy. This allows us to measure the degree of delegation in general, whether delegation varies across policies and settings, and to the extent that it varies, the factors that drive the variation. Our main findings can be grouped into the following themes.

First, we study whether delegation is company-wide; that is, invariant within the firm. We examine how the magnitude of delegation varies across the five key corporate policies, whether the sensitivity of delegation varies across policies and key drivers of those policies, and in particular, whether this variation is tied to the information requirements of the different policies. We also study interactions in delegation across policies.

We find evidence of the CEO's influence across all policies we study within a given firm. Even so, though it is often modeled as being company-wide, we also establish that delegation is *not* a monolithic decision across the entire firm but rather varies with the information characteristics of the policy. [Aghion and Tirole \(1997\)](#) and [Harris and Raviv \(2005\)](#) argue that CEOs likely possess the greatest informational advantage for M&A and we find that they are least likely to delegate M&A decision-making. In contrast to an external-facing policy like M&A, CEOs need the most internal informational input for investment decisions (capital allocation and corporate investment), policies that we find they delegate the most. The informational needs and delegation of capital structure and payout fall in between these extremes.

Not only does the magnitude of delegation vary across policies based on information needs, as just discussed, but

the sensitivity of the delegation decision to key drivers also varies with the informational needs of a given policy. For example, the marginal effect of CEO job tenure is greatest for M&A, and to a lesser extent for capital structure and payout. Thus, our evidence is consistent with an interpretation rooted in the informational needs of the policy.

We also examine whether CEO involvement in (and potential distraction by) one policy or aspect of the firm could capture the CEO's focus and lead to more delegation in other policies. We find some evidence of this. In particular, we find that in firms that have recently completed multiple mergers and acquisitions, the CEO is more likely to delegate the capital structure and capital allocation decisions to others. To our knowledge, we are the first to so closely tie delegation to CEO distraction or preoccupation with other recent events, as predicted by theory related to complexity. In addition, we discuss whether there may be offsetting influences on the desire to delegate versus centrally coordinate certain policies.

Second, our results reveal that decisions are made by people within firms, not just by firms as generic entities (though firms matter too, as discussed below). This is evident in that the degree of delegation varies with the personal characteristics and experiences of the CEO. In particular, we find that less delegation occurs when the CEO is particularly knowledgeable about a decision and when executive pay is primarily incentive-based. As an example of the former, a CEO delegates less as job tenure increases and when the CEO has a finance-focused background. We also find that the amount of capital allocated internally increases with the reputation and past success of divisional managers, more evidence that specific people matter (e.g., perhaps via their individual characteristics or work relationships with the CEO), not just the numbers and job descriptions.<sup>1</sup>

Third, in addition to the people involved, delegation is affected by company characteristics and circumstances. For example, we find that CEOs are more likely to delegate decision-making authority down through the corporate hierarchy when their firms are large or complex (multi-segment), which according to theory can cause CEO overload and increase the need to delegate ([Aghion and Tirole, 1997](#); [Harris and Raviv, 2005](#)).

Fourth, given the high degree of delegation in capital allocation noted above, and because allocating capital to divisions involves delegating both funds and decision-making authority, we explore this policy in more detail. We find that companies rely on several decision rules when allocating capital, including net present value (NPV) ranking, the timing of cash flows and financial constraints, as well as some rules tied closely to the people involved, such as the divisional manager's reputation and senior management's "gut feel." We also find some evidence of variation across countries in that corporate socialism (that is, even distribution of capital across divisions) and corporate politics are more important in Europe and in Asia than they are in the U.S.

<sup>1</sup> This result is consistent with the existence of relational contracts between the CEO and managers ([Gibbons and Henderson, 2012](#)).

Knowing how a decision is made within the corporate hierarchy is important, given recent evidence that executive-specific effects appear to influence some corporate policies.<sup>2</sup> One approach in this “executive effects” research examines corporate policies and infers from the error terms of policy regressions that individual managers appear to be associated with specific policies (such as a particular Chief Financial Officer (CFO) being associated with greater use of debt, or more payout). Rather than studying regression error terms, we take a different approach by directly asking the executives which policies they personally drive, and quantifying the dominance of a particular executive on a given policy. As [Alonso and Matouschek \(2007, p. 1070\)](#) put it, “an understanding of what determines the internal allocation of decision rights is ... a prerequisite for understanding, and potentially being able to predict, the decisions that firms make, such as how much to invest...”. In addition to directly providing a fresh micro understanding of how corporate investment and financial decisions are made and by whom, these micro patterns help to explain aggregate investment and financing patterns across the economy, given that aggregate patterns are the sum of micro-actions.

Our paper is part of a growing body of empirical research that studies how decisions are delegated within companies. Many of these studies examine delegation at the branch or plant level. [Colombo and Delmastro \(2004\)](#) survey 438 Italian metalworking firms and find that plant-level workforce and capital spending decisions are delegated more often in large firms and when tasks are urgent, and less in multi-plant companies (this last finding is opposite to ours). [Acemoglu, Aghion, Lelarge, Van Reenen, and Zilibotti \(2007\)](#) find that a company is more likely to design its units as profit centers (their definition of delegation) when it faces greater uncertainty in decision processes, which the authors argue occurs in firms close to the technology frontier or in industries with large variation in technological capabilities across firms. [McElheran \(2010\)](#), as discussed in more detail below, examines the delegation of new information technology decisions in U.S. manufacturing firms. [Bloom, Sadun, and Van Reenen \(2012\)](#) explore how corporate decentralization varies across countries with the degree of trust and rule of law and how this affects economic efficiency.

Our research builds upon and yet differs from these important papers. One contrast is that we examine delegation within the corporate executive suite (between the CEO and upper level management) for high-level policies, versus a primary focus in other papers on delegation between headquarters and divisions and policies that are for the most part realized at the divisional level. Another difference that we emphasize is the cross-sectional variation in the “information production processes” (the importance of input from underlings) across the policies we examine; this allows us to study how the magnitude and sensitivity of delegation varies by informational needs, which is a key element of the theory.

We also highlight that delegation is influenced by individual people with specific personal characteristics (job tenure, educational background, work experience, compensation mix, age), as well as by unique firm characteristics (expected growth, merger history, number of business segments, division, industry, country). Finally, we provide the first evidence on how several hard-to-measure characteristics (gut feel, managerial and divisional reputation, cash flow timing, and corporate politics) affect the delegation of investment dollars (capital allocation) within the firm.

It is worth noting that delegation leads to some loss of control by the CEO, which could reduce company-wide coordination of policies. This effect could in turn be offset by increased monitoring. The fact that we document signs of delegation suggests that the decisions we study could be relatively easy to monitor, so that the delegation effects stand out clearly in the data. Alternatively, it could just be that the information overload costs outweigh the loss of control/monitoring costs.

A survey approach well suits our study of high-level corporate policies; however, as with any empirical work, caution needs to be exercised in interpreting the results. Surveys may not measure actions but may instead capture beliefs. Some of the survey questions may be misunderstood or produce noisy empirical variables. It is possible that for some questions, executives might repeat back what they think researchers want to hear. In addition, one must interpret the survey evidence realizing that respondents do not necessarily have to understand the underlying reason they take certain actions to make appropriate decisions. One must also consider the extent to which the respondents represent the underlying population, an issue that we investigate below. Given that we conduct our survey at one point in time, it is not possible to make causal inference. We explore several of these survey-related issues in more detail in Appendix A. Even with these concerns, our contribution lies in providing new data and stylized facts that can be interpreted in the context of theoretical predictions about delegation. We hope that our new results about delegation of decision-making authority and allocation of investment dollars will help guide new theories of organizational structure and principal-agent dynamics.

We highlight one additional item. Our sample includes both public and private firms. Most research in economics focuses on public firms—largely because the data are readily available. Yet, 87% of firms in the U.S. with assets greater than \$10 million are private.<sup>3</sup> One might think that private firms are tightly controlled by the CEO and thus that delegation is not an important issue. Our sample allows us to establish the extent of delegation in private firms and the conditions that make delegation most likely.

The next section of the paper draws implications from the current theories of delegation as they relate to our experimental design. [Section 3](#) and Appendix A describe the survey instrument and delivery mechanism, explain the design of the questions and variables, and present summary statistics. [Section 4](#) analyzes who makes which decisions within the firm and under what conditions

<sup>2</sup> See, among others, [Bertrand and Schoar \(2003\)](#), [Malmendier and Tate \(2005, 2008\)](#), [Ben-David, Graham, and Harvey \(2013\)](#), [Bodnar, Giambona, Graham, and Harvey \(2014\)](#), [Frank and Goyal \(2007\)](#), [Chava and Purnanandam \(2010\)](#), and [Malmendier and Zheng \(2012\)](#).

<sup>3</sup> See <http://www.sppcapital.com/FAQS.1A-1.htm#FAQ12>.

decision-making authority is delegated to lower-level management. The evidence about the decision criteria that executives use when allocating capital across projects and divisions is presented in Section 5. Section 6 discusses caveats and shortcomings of our approach, in the context of thoughts about future research. Some concluding remarks are offered in the final section.

## 2. The theory of delegation

Our setting involves delegation from a CEO to managers, each of whom is likely have private information and personal objectives (e.g., as in Harris and Raviv, 2005).<sup>4</sup> The CEO trades off the benefits of engaging the managers and/or learning their private information versus the cost of doing so, such as giving up control to managers (who may like to build their own mini-empires) or having to monitor them closely. When gauging this trade-off, the CEO also considers her personal knowledge and experience relative to that of the employee versus the overload the CEO experiences from running a large, complex firm. Three key influences drive these trade-offs: CEO overload and the cost of information production (Aghion and Tirole, 1997), asymmetric information and uncertainty (Dessein, 2002; Harris and Raviv, 2005), and incentive conflicts. These influences are difficult to test with standard data sources. Below, we detail specific empirical implications related to these theories and briefly describe the variables that we use in our tests.

Aghion and Tirole (1997) model the degree to which a boss retains formal authority but delegates real decision authority to an employee. The boss balances the cost of giving up control with the benefit of promoting initiative by the employee to act on his information. The authors argue that delegation of corporate decision-making authority increases when firm complexity is higher, causing the CEO to be overloaded (such as when she manages a large, multi-segment firm) because the boss has “too little time to acquire the relevant information on each activity” (p. 3). This leads to the first empirical implication that we examine: *delegation of corporate decision-making authority increases when the CEO is overloaded and as the firm becomes complex*. Our survey investigates who has the real authority to make a decision, the CEO or upper level managers. Though we cannot measure overload directly, it seems reasonable to posit that CEOs are more likely to be overloaded when their firms are complex (multi-divisional) or large (as measured by sales revenue). Delegation in general may also increase following mergers and acquisitions, which often increase the size and complexity of a firm, as well as the workload of upper management.

A second, related prediction also comes from Aghion and Tirole (1997), who argue that delegation is less likely when

the principal has a lower cost (than the agent) of becoming informed. Therefore, the theory predicts that a CEO will delegate less when she is very knowledgeable or well informed, or in relation to activities she has learned from personal experience. A similar prediction is made by Harris and Raviv (2005), who analyze a situation in which both the CEO and manager have private information. While the CEO would like to learn the employee's information via delegation, this must be traded off against potential agency costs related to the employee's personal preferences. Among other things, Harris and Raviv show that a CEO will delegate less when her private information is particularly important.

While we cannot measure knowledge or the relative cost of becoming informed directly, we can proxy for the CEO's knowledge and experience based on job tenure. Also, given that we empirically examine financial decisions, and Aghion and Tirole (1997) argue that delegation is less likely in activities related to expertise the principal has developed through experience, we also consider whether the CEO has previous work experience in finance or accounting. We measure business knowledge by whether the executive has an MBA degree. Note that the relative importance of CEO knowledge can differ across policies. In particular, among the policies we examine, employee input should matter more for capital allocation and investment because employees are very close to these decisions, and therefore, we predict that CEO knowledge will be less important for these decisions.

The cost of obtaining information can also affect the type of decision that is delegated, which again may differ by policy. In Harris and Raviv (2005), strategic decisions such as expanding into a new industry or product line are likely to be more closely related to the global perspective and information of the CEO (in contrast to the detailed, “plant level,” or “division level” information of lower-level employees). These authors hence predict less delegation in “decisions to acquire other firms relative to decisions to undertake internal investments” (p. 368). Assuming that CEOs have a lower cost (than do employees) of becoming informed about external projects, Aghion and Tirole (1997) similarly predict less delegation authority in external (versus internal) projects. In this case, the prediction relates to the type of project that might be delegated, rather than a characteristic of the CEO. Theory thus predicts<sup>5</sup> that *CEOs will delegate merger and acquisition decisions less often than other corporate decisions*. At the other end of the spectrum, we expect capital allocation and investment to be the most delegated policies because these are the policies for which the CEO's global perspective and information are relatively less valuable.

The predictions thus far relate to the informational needs of the CEO, given her own knowledge and experiences, in response to overload from running a complex firm, and in relation to the information production processes of various policies. To gather information from employees, the CEO will delegate thereby giving up control of the firm to

<sup>4</sup> See Gibbons (2010) for an overview of models in this class. See also Baker, Gibbons, and Murphy (1999), Mookherjee (2006), Alonso and Matouschek (2007), Rajan and Wulf (2006), Alonso, Dessein, and Matouschek (2008), and Rantakari (2008). Also, Freeland (1996) presents an interesting sociological account of M-Form (i.e., decentralization and the resulting separation of strategic and operational decision-making) organizational structure in General Motors in the early to mid-1900s.

<sup>5</sup> The first three predictions come from the workhorse models of Aghion and Tirole (1997) and Harris and Raviv (2005). It is worth emphasizing that our predictions are not definitive tests of these models but rather examine general implications of their theories.

some degree. A fourth prediction comes from Aghion and Tirole (1997) and Hart and Holmström (2010), who point out that when the CEO cares more about the outcome of a decision, less delegation will occur.<sup>6</sup> In our setting, when executive pay is heavily incentive-based, the CEO will care a great deal about the outcome of a decision. This would motivate the CEO to retain more decision-making control, and holding all else constant, lead to a *negative relation between delegation and the proportion of CEO pay that is incentive-based*. We test this prediction using compensation data for the survey respondents (e.g., the proportion of CEO pay that comes from variable compensation).<sup>7</sup>

Not only is the delegation of decision authority affected by information and agency issues, so is the delegation of capital to fund investment. Stein (2003, p. 145) argues that rationing funds based on managerial reputation is consistent with divisional managers having valuable information about investment prospects and headquarters allocating capital in an effort to elicit this private information. In Ozbas' (2005) model of internal capital allocation, divisional managers have unique expertise but they also have agency desires, so they are tempted to exaggerate project payoffs to increase their allocation of resources. If pay is proportional to a manager's perceived talent (i.e., reputation), then high reputation managers are more likely to reveal their private information so as not to disappoint ex post (which would reduce reputation). Therefore, both of these models make predictions similar to those discussed earlier, namely, that CEOs desire to learn managers' private information and they allocate capital internally to accomplish this end. What Stein (2003) and Ozbas (2005) add is an explicit link to reputation: *divisional managers are allocated more capital when their past success and reputation are greater*.<sup>8</sup> We test this prediction

<sup>6</sup> In Hart and Holmström (2010), the boss delegates formal authority over decision rights to managers and has incentive not to renege (which would aggrive the employees and lead them to exert less effort). In this setting, the boss effectively delegates fewer decisions when she cares a lot about the outcome and delegates more when the decisions matter more to lower employees.

<sup>7</sup> This prediction uses CEO variable compensation as a measure of how personally important a decision is for the CEO. Unfortunately, due to data limitations, we are not able to test a different agency-conflict-based prediction that is central to the theory: lower-level employees have agency desires to build their own mini-empires, which is a deterrent to delegation. Several papers study lower-level employee discretion in the context of incentive pay. Baiman, Larcker, and Rajan (1995) examine a binary delegation measure of business unit control of core functions among firms included in a compensation survey. Nagar (2002) studies the discretion of one hundred bank branch managers in choosing branch hours, hiring tellers, awarding promotions, and choosing which new investment products to sell. Aggarwal and Samwick (2003) examine how performance-pay sensitivity varies by Execucomp job title. Moers (2006) surveys 105 managers at six firms and links the contractibility (i.e., sensitivity, precision, and verifiability) of bonus plans to delegation of personnel, budgeting, and pricing decisions. Ortega (2009) studies individual interviews that are the basis of the European Working Conditions Surveys and links incentive pay to discretion in lower-level employee work methods and scheduling.

<sup>8</sup> Dessein (2007) studies when a CEO makes decisions as a dictator (i.e., with no delegation or sharing of decision authority). Dessein's model suggests that it is not worth incurring the cost of communicating with (in order to delegate to) divisional managers for low profit, low success projects. Assuming that past success is correlated with expectations

directly by asking CEOs whether capital allocation decisions are based on individual manager reputation; or similarly, based on past divisional success. Jennergren (1981) states that decentralization is often implemented via divisional capital allocation. Therefore, by studying whether internal capital allocation is tied to past success, we draw inference on whether delegation more broadly is tied to reputation and past success.

### 3. Data gathering, variable definitions, and summary statistics

#### 3.1. Survey mechanism

It is not possible to directly measure delegation of decisions using standard archival data sources, such as financial statement information. Instead, we measure both delegation and capital allocation using survey data. No other study attempts to quantitatively measure the delegation of decision-making authority for the set of five major corporate decisions that we study. We collect three primary types of information via the survey: how decision-making authority is shared within the firm, the criteria that executives use when allocating capital within their firms, and demographics about the executives and their firms.<sup>9</sup> Note that the survey is anonymous, so all demographic and firm-specific information is gathered via the survey. Below we define the key variables.

#### 3.2. Survey questions and variable definitions

##### 3.2.1. Delegation of decision-making authority questions

We ask CEOs and CFOs how much decision-making authority is delegated within their firms with respect to five policies: capital structure, payout, capital investment, allocating investment capital across divisions, and mergers and acquisitions. For each, we ask executives "Amongst the management team, who has the most input in the following policies?" For the CEO analysis, a response value of 1 indicates that the CEO makes the decision by herself, with no input from others. In other words, 1 indicates that the CEO does not share/delegate decision-making authority at all, and 7 indicates that the CEO assigns a given decision completely to others on the management team (i.e., complete delegation).

##### 3.2.2. Capital allocation questions

We ask executives about the decision criteria they use when deciding how to allocate dollars across divisions. We inquire how the following ten criteria or decision rules affect internal capital allocation. The left column shows

(footnote continued)

about future success, an extension would predict that delegation and capital allocation are higher when the divisional manager has developed a reputation for delivering on past projects (i.e., has a past record of success).

<sup>9</sup> The pdf version of the survey instrument can be found at <http://faculty.fuqua.duke.edu/~jgraham/CEOCFO.pdf>. Graham, Harvey, and Puri (2013) examine several questions from this questionnaire that are not studied in this paper.

the short-hand way we refer in the text to a given criterion. The right column lists the full survey choices available to executives as they answer the following question: Which of the following factors are important in your allocation of capital across divisions?

Balanced allocation	"Moving towards an even balance of capital allocation across divisions"
Manager reputation	"The reputation of the divisional manager in terms of delivering on previous projects"
Internal / external	"Whether the project requires external capital (versus funding with internal funds)"
Gut feel	"Senior management's 'gut feel'"
NPV rank	"NPV ranking of project"
Previous return	"Return on previous projects earned by the division proposing the project"
Manager confidence	"The confidence of the divisional manager in the project"
Cash flow timing	"Timing of projects' cash flows"
Corporate politics	"Corporate politics"
Market share	"Protecting market share"

The respondents rate each of these ten criteria on a scale of 1 to 5, with 1 meaning "not at all important" and 5 meaning "very important." In part of the analysis, we convert into binary form by assigning a given variable a value of 1 if the respondent answered 4 or 5, indicating that the response is important or very important.

### 3.2.3. Demographic and career-related variables

We gather information on the personal characteristics of the executives, their past careers/education, and firm demographics. Below we explain how we measure and interpret these variables. All of this information is self-reported by survey respondents. The survey is anonymous, so we cannot match the response data firm-by-firm to other data sources.

For executives, we know whether they are the CEO or CFO and in what country their firm is located. They also describe their primary area of work experience. We create a binary variable *Finance career* that indicates whether their career path has primarily been related to finance and accounting, which is potentially relevant because the corporate policies we examine are all financial policies. For example, we might expect that the CEO's informational advantage over subordinates (Harris and Raviv, 2005) increases, for the policies we consider, when the CEO has followed a finance career path. We inquire whether the executive has an MBA degree. An MBA may signify an extra degree of comfort with these policies, and therefore, an MBA might be less inclined to share decision authority. However, given the "teamwork" that many MBA programs emphasize, it is also possible that MBA training will lead to more sharing of decision authority by the CEO. We also gather information on the respondent's *Age*. Younger CEOs are potentially less

knowledgeable or differentially inclined to share decision-making with others in the firm.

The executives also tell us how long they have been in their current positions. *Tenure* is a dummy variable which equals 1 if the respondent's job tenure at her firm is greater than the median of all respondents (8 years). We postulate that knowledge increases with tenure, which the theories described in Section 2 imply should lead to less delegation; we expect this decreased delegation effect to be weaker for policies that require extensive lower-level employee input (like capital allocation and investment). Finally, we ask the executives what is "the approximate target percentage of your total compensation that is in the form of stocks, options, or bonus" (*Variable compensation*) because theory predicts that CEOs will delegate less when their pay is more incentive-based.

We also collect information on company characteristics. We measure firm *Size* based on sales revenue and categorize firms as large if they have sales revenues exceeding \$1 billion. The executives also report the number of distinct operating segments in their firms (*Segments*) and whether their firms are public or private, which we categorize with a binary variable *Public*. We ask companies how many material mergers or acquisitions they participated in during the previous two years. We create two variables based on the responses. *Acquisitions* is a binary variable that indicates whether the company took part in any material mergers or acquisitions in the past two years, and *Multiple acquisitions* is a binary variable turned on when the firm participated in two or more.

We ask the CEOs and CFOs to tell us about their firms' growth in sales revenue. *Past growth* is a dummy that equals 1 if the respondent firm's average annual growth in sales revenue over the last three years is greater than the 75th percentile of all respondents (and equals 0 otherwise). *Expected growth* is a dummy that equals 1 if the respondent firm's projected average annual growth in sales revenue over the next three years is greater than the 75th percentile of all respondents (and equals 0 otherwise). We also create dummy variables that indicate when a firm operates in the technology (*Tech*) or *Manufacturing* industries. Finally, we ask companies to report their total debt to total assets ratio (*Debt ratio*).

### 3.3. Data and summary statistics

As detailed in Appendix A, in February 2006, we surveyed approximately 10,700 CEOs and obtained 1,180 U.S. responses (and more than one hundred from outside the U.S.). We also surveyed approximately 9,000 U.S. CFOs (and 10,000 European and Asian CFOs) and received 549 (664) responses. The CEO sample upon which most of our analysis is based has an 11% response rate, which is typical of recent survey response rates; the CFO 6% response rate is similar to the response on the quarterly CFO survey that relies on the same email lists.<sup>10</sup> In Appendix A, we

<sup>10</sup> Graham, Harvey, and Rajgopal (2005) obtain a response rate of 10%, Trahan and Gitman (1995) 12%, Graham and Harvey (2001) 9%, and Brav, Graham, Harvey, and Michaely (2005) 16%. In addition, Slemrod and Venkatesh (2002) survey tax preparers (12% response rate) and corporate

**Table 1**

Company and CEO characteristics.

This table reports summary statistics for survey responses from US CEOs. Firm sales (size) are determined based on a survey question categorizing firm sales into seven size groups. Category midpoints are used to create the firm size variable reported here with the largest firms represented as \$12.5B in the mean and median below. Category 1 includes firms with sales less than \$25M, category 2 between \$25M and \$99M, category 3 between \$100M and \$499M, category 4 between \$500M and \$999M, category 5 between \$1B and \$4.9B, category 6 between \$5B and \$9.9B, and category 7 greater than \$10B. Public is an indicator for publicly listed firms. Past growth reflects average annual percentage change in sales revenue over the last three years. Expected growth reflects projected annual sales revenue growth over the next three years. Number of operating segments refers to the number of distinct operating divisions in the firm. Number of acquisitions reflects the number of material acquisitions the firm has made over the past two years. Executive compensation variables are target percentages of total compensation. Variable compensation consists of stock, options, and bonuses. Finance career is an indicator for executives who, prior to their current job, had work experience focused in financial and/or accounting fields. Tenure is the number of years the executive has been in his/her current position. MBA indicates whether the CEO has a masters of business administration degree. The number of responses varies by variable because not every CEO provided information for every question.

	N	Mean	Std. dev.	Min	Med	Max
Public (%)	785	11.5%	N/A	N/A	N/A	N/A
Sales (size) revenue (\$M)	961	551.0	1,819.3	12.5	62.0	12,500.0
Number of operating segments	1,001	2.2	1.4	1.0	2.0	12.0
Past growth (%)	948	22.2%	45.4%	−30.0%	12.0%	500.0%
Expected growth (%)	952	18.6%	19.2%	−5.0%	12.0%	99.0%
Debt-to-assets ratio (%)	811	26.6%	25.2%	0.0%	20.0%	100.0%
Number of acquisitions	872	0.7	1.5	0.0	0.0	9.0
Variable compensation (% of total)	795	42.9%	26.4%	0.0%	40.0%	100.0%
Salary (% of total compensation)	795	57.1%	26.4%	0.0%	60.0%	100.0%
Finance career	986	16.0%	36.7%	0.0%	0.0%	100.0%
Age	992	54.1	9.4	25.0	54.0	89.0
Tenure	1,011	10.4	8.4	0.5	8.0	56.0
MBA (%)	916	34.9%	47.7%	0.0%	0.0%	100.0%

compare our sample to the Compustat database and find that our sample firms (both public and private) are roughly similar to the Compustat universe, with the primary exception being that our private firms are smaller than the firms in Compustat (which are almost all public firms). We find it reassuring that our firms are fairly similar to those in Compustat because much current corporate finance research is based on Compustat. [List (2006) argues that commonly used databases, like Compustat, provide a natural benchmark against which to compare survey results].

Table 1 contains self-reported summary information about the characteristics of sample firms. In our sample 88% of the firms are private, with mean sales revenue of \$551 million. While most research studies public firms, one advantage of our sample is that we learn a great deal about delegation and capital allocation in private firms. This is important because empirical analysis of private firms is scarce, even though 87% of U.S. firms with assets greater than \$10 million are private.

The median company in our sample has two operating segments and has experienced annual sales growth of 12% over the past three years, with similar expected future growth. The median debt-to-assets ratio is 20%. The mean (median) number of acquisitions over the past three years is 0.7 (0). Performance-sensitive compensation (stock, options,

and bonus) accounts for about 43% of the total target compensation of the average executive in our sample, while salary accounts for about 57%. More than one-third of CEOs have an MBA degree. They are predominantly male (92.3%, not shown in table). In terms of career path, 16% of the sample comes from a finance/accounting career background. The average chief executive is 54 years old and has been in his or her current job for 10.4 years.

Table 2 reports correlations between firm and executive characteristics for the U.S. CEOs and their companies. Larger firms compensate with proportionally more incentive pay and have CEOs with shorter job tenure. CEOs with MBAs are younger, tend to have a career path in finance or accounting, and tend to have shorter tenures. Even though these traits are correlated, the level of correlation should not pose any issues for our regression tests.

#### 4. Delegation of the corporate decision-making process

In this section we examine how decision authority is shared. We start in Section 4.1 by examining the degree to which various decisions are shared. This documents the magnitude of delegation overall and also variation in that magnitude across policies. In Section 4.2 we examine the sensitivity of delegation to company and employee characteristics and also how that sensitivity varies across policies.

##### 4.1. Which corporate policies do CEOs delegate?

To gauge how decision authority is shared, we inquire who on the management team has the most input with respect to the following policies: capital structure, payout, capital investment, allocating capital across divisions, and mergers and acquisitions. We first examine how often CEOs consider themselves to be the sole (or nearly the

(footnote continued)

taxpayers (9% response rate) about compliance costs. The referenced quarterly CFO survey can be found at <http://www.cfosurvey.org>. Note that the response rate for our paper is understated because some emails on the list are stale. For example, if we were to drop the email addresses for CFOs who had not responded to the quarterly survey for 12 or more consecutive quarters (and hence the email address is likely no longer valid), the response rate for our survey would triple to approximately 18%.

**Table 2**  
Correlations between explanatory variables.

This table reports the correlations between both firms and executive characteristics for the main sample of US CEOs. Variables are defined in Table 1. Significance at the 10% level is denoted by \*, at 5% by \*\*, and 1% by \*\*\*.

	Public	Firm size	# of operating segments	Past growth	Expected growth	Debt-to-asset ratio	# of acquisitions	Variable comp.	Salary	Finance career	Age	Tenure
Firm size	0.371**											
# of operating segments	0.076**	0.232***										
Past growth	-0.062***	-0.035	-0.030									
Expected growth	-0.052	-0.059*	-0.098***	0.481***								
Debt-to-asset ratio	0.014	0.030	0.027	-0.051	-0.044							
# of acquisitions	0.072	0.115***	0.153**	0.052	0.056	-0.023	0.067					
Variable comp.	-0.172***	0.174***	0.072***	0.021	0.096	-0.015	-0.067	-1.000***				
Salary	-0.172***	-0.174***	-0.072**	-0.021	-0.096***	0.014	-0.067	-1.000***				
Finance career	-0.012	0.043	-0.024	-0.051**	0.009	0.126***	-0.069	0.110*	-0.110***			
Age	0.015	-0.001	0.047	-0.177***	-0.305***	0.005	-0.036	-0.107***	0.107***	-0.062*		
Tenure	-0.156***	-0.095**	0.019	-0.113***	-0.174***	0.004	-0.028**	-0.054***	0.054	-0.057*	0.465***	
MBA	0.005	-0.009	-0.064*	0.065	0.087**	0.020	-0.034	0.025	-0.025	0.172***	-0.150***	-0.106***

sole) decision-maker (i.e., a response of 1 or 2 out of 7) for a given corporate policy, and we compare this information to the views reported by CFOs regarding their role in the decision process. We start by analyzing the responses of the roughly 950 CEOs and 525 CFOs who work at U.S.-based firms and who answered these questions. Note that the CEOs and CFOs are not necessarily from the same firms. Fig. 1 (Panel A) and Table 3 present the analysis. Fig. 1 (Panel B) compares the U.S. responses to those from Asia and Europe.

The evidence indicates that the degree of delegation is not uniform across the firm. CEOs tell us that they are most influential (i.e., most likely to make decisions without input from others) in merger and acquisition decisions (46.5% of U.S. CEOs assign a rank of 1 or 2 to their role, thereby claiming to make the M&A decision in relative isolation).<sup>11</sup> This dominant role of CEOs in acquisitions is consistent with Harris and Raviv (2005), who argue that the acquisition decision should not be delegated to lower-level managers (see Section 2). Similarly, Aghion and Tirole (1997) argue that projects with long-term and external effects (like mergers) are less likely to be delegated.<sup>12</sup> Because the CEOs and CFOs in our sample do not necessarily work at the same firms, to ensure that the differences between CEO and CFO responses are not driven by firm characteristics such as size, we match each CEO firm to a CFO firm based on whether the firm is public or private, and separately based on sales revenue matching. These untabulated results are similar to those just reported.

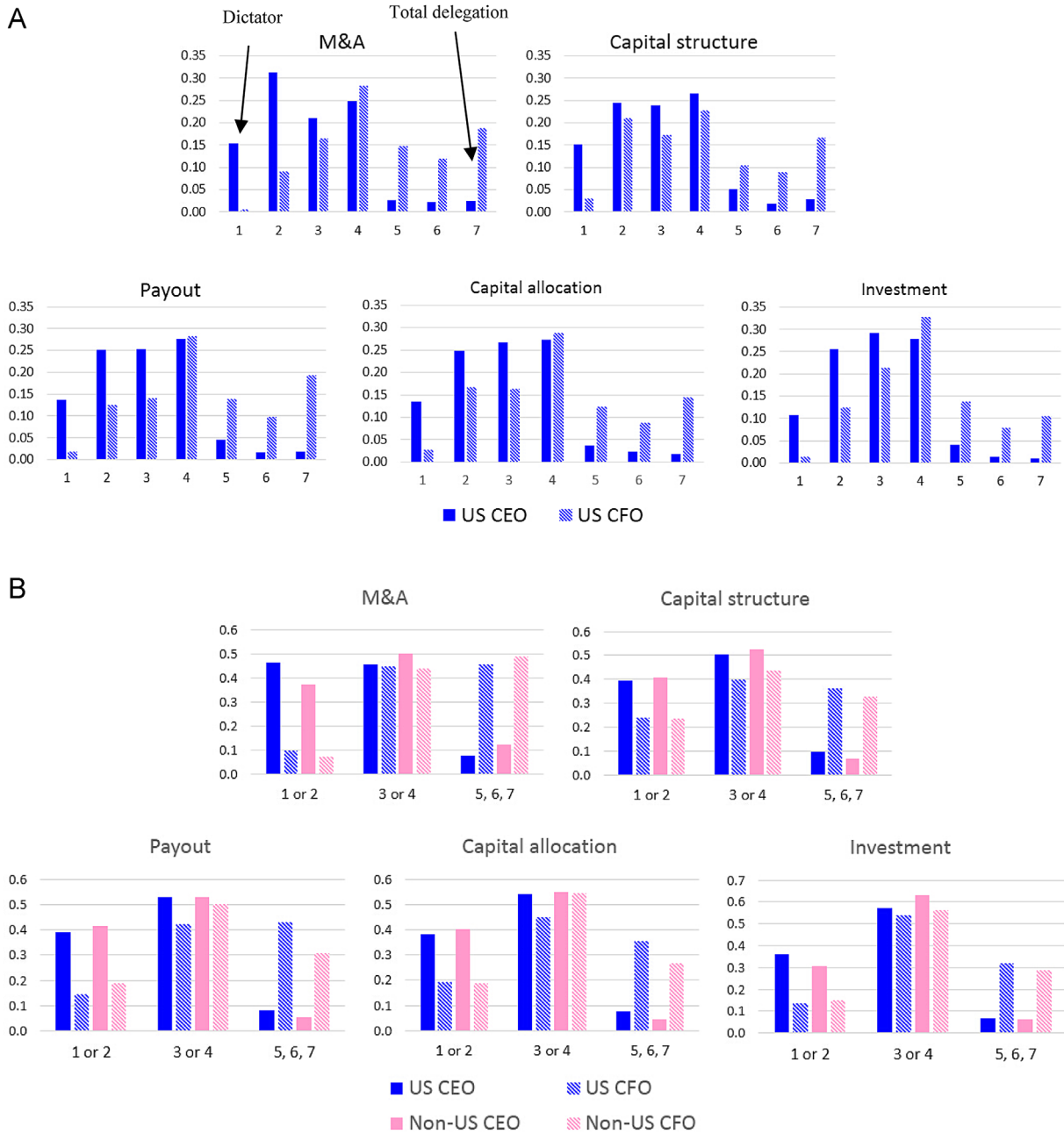
The relative patterns in Table 3 suggest two insights. First, while the M&A decision is kept particularly close by the vast majority of CEOs in our sample, there is an element of CEO dominance (lack of delegation) across all the policies. To gauge the degree to which delegation might be “company-wide,” we calculate correlations for delegation across policies (not tabulated). The correlation of the magnitude of delegation of the various policies is fairly high, suggesting some element of company/CEO-wide influence. The pairwise correlations range between 0.48 and 0.69. The 0.69 is between payout and capital structure, suggesting that these two policies in particular share a common degree of delegation.

Second, even though there is evidence of a company-wide element of delegation, the variation in the magnitude of delegation across policies is consistent with what theory would predict. If we group the policies by the amount of

<sup>11</sup> The 46.5% in Panel A of Table 3 is significantly larger than the 9.5% of U.S. CFOs that say they dominate M&A, with significance denoted by the \*\*\* next to the 9.5%.

<sup>12</sup> This result can also be interpreted within the theory of knowledge hierarchies (Garicano, 2000), where the top layer (CEOs) handles the most exceptional or difficult problems (and lower-level employees deal with more routine problems). Caliendo, Monte, and Rossi-Hansberg (2012) provide some empirical evidence consistent with the hierarchy theory. Studying French manufacturing firms from 2002 to 2007, among other things they find that wages decrease when firms expand by adding a new hierarchical layer of employees, while expansion without adding a new layer leads to higher wages. They attribute the reduced wages in the layer-increasing case to there being a larger discrepancy between knowledge at the top (CEOs) and bottom (assembly-line types of workers) caused by a reduction in knowledge at the lowest level.





**Fig. 1.** Delegation of corporate finance decisions. Panel A shows the degree to which US CEOs and CFOs describe their involvement in decisions about M&A, capital structure, payout policy, capital allocation and capital investment. A response of ‘1’ means that the respondent makes the decision solely by herself, while a response of ‘7’ means that the decision is delegated to others with no involvement by the respondent. The height of each bar denotes the proportion of CEOs or CFOs who entered that response. Panel B shows the degree to which US and Asian/European CEOs, as well as US and non-US CFOs describe their involvement in decisions about M&A, capital structure, payout policy, capital allocation, and capital investment. The height of each bar denotes the proportion of CEOs or CFOs who entered that response. (A) Delegation of decisions – US CEOs and CFOs. (B) Delegation of decisions – US and non-US executives.

informational input the CEO would need from inside the firm, the CEO would need the most input from capital allocation and investment, followed by capital structure and payout, and need the least input for M&A. The results in Panel C of Table 3 indicate that delegation occurs in this same order. In other words, the magnitude of delegation of a given policy is tied to

its information production process, as predicted by theory. Differences in means tests indicate that capital structure/payout decisions treated jointly are statistically different from capital allocation/investment considered jointly.

In terms of CFOs, they play a relatively large role in capital structure decisions (relative to CFO importance in

**Table 3**

Magnitude of CEO and CFO delegation of corporate policies.

This table describes who within a company makes corporate decisions and how much these decisions are delegated. Survey participants are asked to rank on a scale of 1 = high to 7 = low their involvement in five different financial decisions. Panel A reports the percentage of participants who answered “1” or “2” indicating that an executive dominates a given corporate decision with little if any help from others. In other words, there is no delegation of decision making authority. Panel B reports the percentage of participants who answered “6” or “7,” indicating that an executive has a minimal role in the given corporate decision. In other words, the decision is completely delegated to or made by others. The column labeled “Rank” presents the mean rank (of the values 0, 1, ..., 7) assigned by CEOs and CFOs for a given policy. In Panels A and B, significance between CEO and CFO responses at the 10% level is denoted by \*, 5% by \*\*, and 1% by \*\*\*. Panel C groups the data in Panel A by the information needs of a given policy, with CEOs needing the least informational input from lower-level employees in Group 1 (M&A). Significance (10% level) for a given group in Panel C is indicated by superscript numbers; for example, a “2,3” in the top row indicates that the Group 1 number is statistically different than the numbers for both Group 2 and Group 3. This analysis is based on responses from 950 US based CEOs and 525 US based CFOs.

<i>Panel A: Respondents who answered “1” or “2” (executive dominates decision)</i>					<i>Panel B: Respondents who answered “6” or “7” (little involvement by executive)</i>				
Corporate policies	US CEOs		US CFOs		Corporate policies	US CEOs		US CFOs	
	Rank	%	Rank	%		Rank	%	Rank	%
Mergers & acquisitions	2.9	46.5	4.6	9.5***	Mergers & acquisitions	2.9	4.7	4.6	30.9***
Capital structure	3.0	39.5	4.1	23.9***	Capital structure	3.0	4.7	4.1	25.6***
Payout	3.0	38.7	4.5	14.3***	Payout	3.0	3.6	4.5	29.3***
Capital allocation	3.0	38.1	4.2	19.2***	Capital allocation	3.0	4.2	4.2	23.2***
Investment	3.0	36.3	4.1	13.8***	Investment	3.0	2.5	4.1	18.4***

<i>Panel C: % of respondents who answered “1” or “2” as in Panel A, with policies grouped by information needs</i>		
Policy groups	US CEOs %	US CFOs %
M&A (Group 1)	46.5 <sup>2,3</sup>	9.5 <sup>2,3</sup>
Capital structure & payout (Group 2)	39.1 <sup>1,3</sup>	19.1 <sup>1,3</sup>
Capital allocation & investment (Group 3)	37.2 <sup>1,2</sup>	16.5 <sup>1,2</sup>

other decisions), where nearly one-in-four say they make the decision with little or no input from others. Though not shown in the table, the patterns of non-U.S. CFO delegation are similar to those shown for the U.S.

To summarize so far, we measure the magnitude of CEO decision-dominance for five high-level corporate policies and also study variation across the policies. CEOs are more likely to delegate the decisions for which they most need input from lower-level employees (capital allocation and investment). They are less likely to delegate the decisions for which they are thought to have the greatest informational advantage [M&A, as in [Aghion and Tirole \(1997\)](#) and [Harris and Raviv \(2005\)](#)]. In the next section, we explore the sensitivity of delegation to various firm and executive characteristics and also how this sensitivity varies by the information production process of a given policy.

#### 4.2. Under what circumstances are corporate decisions delegated by the CEO?

In this section, we investigate the factors and circumstances that affect the delegation of corporate decision-making authority by regressing our measure of delegation on various right-hand-side variables that capture CEO and firm characteristics. To test the theory detailed in [Section 2](#), we estimate a five equation ordered logit (one equation per decision) where the standard errors are clustered by CEO.

We begin by analyzing delegation as a general tendency that equally impacts all policies within a given

company by constraining the estimated coefficients for a given explanatory variable to be identical for all five policies ([Table 4](#)).<sup>13</sup> This analysis highlights the common factors that affect delegation in general. Later in [Table 5](#), we allow the estimated coefficients to vary across policies, which allows us to determine whether the sensitivity of delegation to the explanatory factors varies by the information production process of a given policy.

The dependent variable (degree of delegation) in the ordered logit is derived from integer values between 1 and 7 from the survey responses, with 7 indicating complete delegation. We divide the degree of delegation into three categories: 0 (if the respondent answered 1 or 2), 1 (if the respondent answered 3 or 4), and 2 (if the respondent answered 5, 6, or 7).<sup>14</sup> The results are presented in [Table 4](#).

Theory predicts that the delegation of decision-making authority increases when the CEO is overloaded because there are too many decisions to make, or because the cost of closely monitoring all the decisions would become too

<sup>13</sup> [Moers \(2006\)](#) argues that delegation seems to be linked across the five policies he examines (the development of new products, hiring and firing, selection of investments, budgeting, and pricing decisions), though he does not test this link statistically.

<sup>14</sup> Results are largely unchanged if we group the data differently, such as 1/2, 3/4/5, 6/7. Also, we recognize that multiple testing issues arise with regressions such as [Table 4](#). The coefficients that are significant at the 10% would be insignificant under multiple testing adjustments and most of our discussion is focused on coefficients that are more than 2.5 standard errors from zero (see [Harvey, Liu, and Zhu, 2014](#)).

**Table 4**

Delegation regressions constraining estimated coefficients to be equal across all five policies.

This table presents results from ordered logit regressions of US CEOs' delegation of decision authority on firm and executive characteristics. The specification includes a stacked system of five corporate policies, with dependent variables measuring degree of delegation in capital structure, M&A, payout, capital allocation, and capital investment decisions. In this table, the coefficient for any given variable is constrained to be equal across all five equations. Responses are on a scale of 1 to 7 with 1 = "I make the decision without the help from others" and 7 = "others make decision". For the dependent variable, this degree of delegation is split into 3 buckets: 0 (if the respondent answered 1 or 2), 1 (if the respondent answered 3 or 4), and 2 (if the respondent answered 5, 6, or 7). Variable compensation, Finance career, MBA and Public are as defined in Table 1. All other variables in this regression have been recoded as binary indicator variables. Segments take the value of 1 if the firm has more than two distinct operating units, while Size is 1 if the firm has annual sales revenue greater than \$1 billion. Tenure is 1 if time spent by the executive in current position is greater than the median of eight years. Expected growth is coded to 1 if reported projected annual sales revenue growth is in the upper 75th percentile of responses. Manufacturing and Tech are 1 if respondents' firms are in the manufacturing or technology (software/biotechnology) industries respectively. Old is 1 if the respondents' age is greater than the median US CEO's age (54 years), and Acquisitions is 1 if the firm has acquired at least 1 company in the last 2 years. Multiple acquisitions is 1 if the company has acquired 2 or more companies in the last two years. A positive coefficient indicates that delegation increases as the explanatory variable increases. A positive coefficient indicates that delegation increases as the explanatory variable increases. The economic significance columns show the percentage increase or decrease in the odds of being in a higher bucket as the explanatory variable increases. Standard errors are clustered by CEO. Significance at the 10% level is denoted by \*, 5% by \*\*, and 1% by \*\*\*. *T*-statistics are provided in parentheses.

	Predicted sign	(1)	Economic significance	(2)	Economic significance	(3)	Economic significance
Segments	+	0.397*** (3.89)	48.77%	0.443*** (3.93)	55.67%	0.455*** (3.66)	57.60%
Size	+	0.781*** (3.49)	118.40%	0.752*** (2.80)	112.20%	0.543* (1.75)	72.20%
Tenure	–	–0.405*** (–4.09)	–33.30%	–0.409*** (–3.55)	–33.59%	–0.416*** (–3.33)	–34.03%
Expected growth	–	–0.227* (–1.85)	–20.32%	–0.186 (–1.34)	–17.00%	–0.069 (–0.45)	–6.67%
Variable compensation	+ / –			–0.004 (–1.56)	–0.35%	–0.004* (–1.80)	–0.43%
Manufacturing	–			0.217 (1.60)	24.18%	0.097 (0.66)	10.20%
Tech	+			0.146 (0.81)	15.75%	0.063 (0.33)	6.46%
Finance career	–			–0.292* (–1.95)	–25.36%	–0.245 (–1.48)	–21.75%
Old	–			0.062 (0.55)	6.42%	0.109 (0.89)	11.51%
Acquisitions	+					–0.162 (–1.04)	–14.92%
Multiple acquisitions	+					0.303 (1.51)	35.33%
MBA	–					–0.279** (–2.21)	–24.33%
Public						0.323* (1.68)	38.08%
Observations		4613		3752		3185	
<i>p</i> -Value		< 0.01		< 0.01		< 0.01	
Chi-sq (df)		59.73 (4)		58.09 (9)		61.33 (13)	
Pseudo <i>R</i> <sup>2</sup>		2.1%		2.4%		2.9%	

costly. We measure the potential for overload based on firm size and the number of business segments (e.g., divisions) in the company. The positive coefficient in

Table 4 indicates that CEOs in firms with more business segments are significantly more likely to share/delegate decision authority with/to other executives and top-level

**Table 5**

CEO delegation of corporate policies, grouped by informational needs of CEO.

This table presents results from ordered logit regressions of US CEO's delegation of corporate policies. In this table, the policies are grouped as follows—Group 1: Merger and acquisition (CEO needs least input from workers, so should delegate less); Group 2: Capital structure and payout; Group 3: capital allocation and investment (CEO needs most worker input, so should delegate more). Variables are defined in Table 4. Policies are estimated in a block system of equations, which yields an  $R^2$  of 2.52%, and a log-likelihood of  $-4070.3$  in column (1), 2.97% and  $-3295.8$  in column (2), and 3.65% and  $-2791.9$  in column (3).

	Across groups, CEO's need for input from employees is ...														
	← smaller										larger →				
	Group 1 (Merger & acquisition)					Group 2 (Capital structure & payout)					Group 3 (Capital allocation & investment)				
	(1)	Econ. sig.	(2)	(3)	Econ. sig.	(1)	Econ. sig.	(2)	(3)	Econ. sig.	(1)	Econ. sig.	(2)	(3)	Econ. sig.
Segments	0.285** (2.03)	33.02%	0.263* (1.70)	0.369** (2.17)	44.63%	0.519*** (4.28)	67.99%	0.588*** (4.34)	0.623*** (4.02)	86.52%	0.327*** (2.75)	38.70%	0.356*** (2.68)	0.309** (2.15)	36.26%
Size	0.535*** (2.98)	70.71%	0.701*** (3.25)	0.512** (2.09)	66.89%	0.727*** (4.38)	107.0%	0.685*** (3.40)	0.508** (2.16)	66.23%	0.645*** (3.81)	90.52%	0.675*** (3.28)	0.607*** (2.60)	83.41%
Tenure	-0.595*** (-4.44)	-44.83%	-0.612*** (-3.90)	-0.585*** (-3.44)	-44.27%	-0.526*** (-4.55)	-40.91%	-0.557*** (-4.06)	-0.569*** (-3.72)	-43.38%	-0.222* (-1.95)	-19.88%	-0.191 (-1.40)	-0.204 (-1.40)	-18.48%
Expected growth	-0.487*** (-2.63)	-38.52%	-0.485** (-2.33)	-0.248 (-1.12)	-21.94%	-0.178 (-1.21)	-16.31%	-0.149 (-0.89)	-0.092 (-0.48)	-8.80%	-0.153 (-1.05)	-14.20%	-0.078 (-0.47)	0.049 (0.27)	5.05%
Variable compensation			-0.005 (-1.53)	-0.004 (-1.17)	-0.38%			-0.002 (-0.88)	-0.004 (-1.27)	-0.36%			-0.004* (-1.67)	-0.006** (-1.99)	-0.55%
Manufacturing			0.176 (0.90)	-0.006 (-0.03)	-0.62%			0.144 (0.82)	-0.037 (-0.19)	-3.63%			0.283* (1.71)	0.245 (1.40)	27.72%
Tech			-0.026 (-0.10)	-0.073 (-0.26)	-7.03%			0.025 (0.12)	-0.073 (-0.33)	-7.06%			0.368* (1.65)	0.289 (1.23)	33.51%
Finance career			-0.354* (-1.68)	-0.348 (-1.53)	-29.39%			-0.243 (-1.35)	-0.199 (-0.96)	-18.03%			-0.327* (-1.93)	-0.237 (-1.25)	-21.12%
Old			-0.102 (-0.63)	-0.087 (-0.50)	-8.38%			0.188 (1.36)	0.258* (1.69)	29.41%			-0.002 (-0.01)	0.040 (0.28)	4.12%
Acquisitions				-0.161 (-0.78)	-14.88%				-0.054 (-0.27)	-5.274%				-0.253 (-1.42)	-22.38%
Multiple acquisitions				-0.069 (-0.26)	-6.70%				0.121 (0.48)	12.83%				0.580** (2.46)	78.59%
MBA				-0.074 (-0.44)	-7.16%				-0.219 (-1.41)	-19.67%				-0.468*** (-3.20)	-37.37%
Public				0.458 (1.63)	58.13%				0.291 (1.24)	33.82%				0.209 (0.91)	23.20%
Observations	4613		3752	3185		4613		3752	3185		4613		3752	3185	
Coeffs sig. diff. from Group 1	-		-	-		***		***	**		***		***	**	
Coeffs sig. diff. from Group 2	***		***	**		-		-	-		***		***	**	
Coeffs sig. diff. from Group 3	***		***	**		***		***	**		-		-	-	

managers. The estimated ordered logit coefficient of 0.397 in column 1 indicates that as a firm changes from two or fewer segments to more than two segments, the odds of being in a higher delegation category increase by about half (48.8%), holding the other variables in the model constant. The results are more striking using firm size to measure overload, with the odds roughly doubling. These results are consistent with the hypothesis that decision authority is more likely to be shared or delegated as a company grows larger (as in [Chandler, 1962](#)) and more complex, and the CEO's workload in turn increases. These results are consistent with the [Aghion and Tirole \(1997\)](#) implication that overloaded CEOs delegate decisions down the corporate ladder.<sup>15</sup>

Theory predicts that delegation of decision-making authority *decreases* with the level or importance of the CEO's private knowledge. We use tenure as chief executive to measure CEO knowledge.<sup>16</sup> The negative estimated coefficient on tenure in the first column of [Table 4](#) is consistent with the prediction that as CEOs become more knowledgeable, they are less likely to share decisions with others.<sup>17</sup> The  $-0.405$  estimated coefficient implies that as a CEO's tenure grows longer (goes from short to long), the odds of being in a higher delegation bucket decrease by one-third, holding other variables constant.

The tenure result is interesting because an alternative hypothesis is that CEOs might delegate more as time passes and they become more comfortable with their employees, which would lead to a positive relation between tenure and delegation. We find the opposite. When we split the tenure variable into several separate dummy variables measuring length of time on the job, we again find that the tendency to delegate grows weaker as length of career grows longer (i.e., delegate less as tenure increases; not shown in table), consistent with tenure reflecting a knowledge-based incentive to delegate less.

The results in [Table 4](#) also indicate that having a finance or accounting career path (and presumably more related knowledge for financial decisions) leads to less delegation, as shown in column 2 in [Table 4](#). The result is less

significant ( $p$ -value of 0.14) in column 3.<sup>18</sup> The variable indicating whether the CEO has an MBA degree can also be interpreted as identifying chief executives who have private or valuable knowledge (if an MBA enables one to better process or interpret financial information). The MBA coefficient is significantly negative, indicating less delegation.<sup>19</sup> These results are consistent with the implication that as CEOs become more knowledgeable, they are less inclined to delegate decision authority.

We next examine whether the delegation of decision-making authority decreases with the degree to which the CEO is paid with incentive compensation. The idea is that as a decision becomes more important to CEOs, they are less likely to delegate. When considering company-wide delegation in [Table 4](#), we find that CEOs delegate less when they receive more variable compensation. While intriguing, this relation is economically small. One possible reason is that variable compensation of lower-level employees should have the opposite effect; that is, more variable compensation for the below-CEO employees should reduce employee agency costs by aligning their incentives with the CEO's, and thus lead to more delegation ([Aghion and Tirole, 1997](#); [Prendergast, 2002](#); [Van den Steen, 2010](#)).<sup>20</sup> Empirically, if the target proportion of chief executive variable pay (about which we have data) is positively correlated with a similar measure for lower-level employees (about which we do not have data), then there could be an offsetting increase in delegation. Thus, it is possible that the weak result related to CEO compensation is due to offsetting effects of compensation on the CEO and lower-level employees.<sup>21</sup>

Next, we examine whether delegation of decision-making authority varies with the growth opportunities of the firm. Theoretical implications from [Marino and Matsusaka \(2005\)](#) and [Taggart \(1987\)](#) predict that the head office is more likely to retain control (and delegate less) when a firm has growth options.<sup>22</sup> As our measure of growth opportunities, we use the self-declared expected growth of the firm (sales growth over the next three years). The estimated coefficient on the variable indicating expected growth has the expected negative sign (indicating less delegation); however, it is only significant in the column 1 specification that includes few control variables.

<sup>15</sup> [Li, Minnis, Nagar, and Rajan \(2009\)](#) find that CEOs of large firms talk less during earnings conference calls (their measure of increased delegation).

<sup>16</sup> In [Harris and Raviv's \(2005\)](#) model, both the CEO and manager have private information. While the CEO would like to learn the employee's information via delegation, this must be traded off against the agency costs related to the employee's personal preferences. Among other things, [Harris and Raviv](#) show that a CEO will delegate less when her private information is particularly important, which we measure in part based on job tenure. Given that we empirically examine financial decisions, and [Aghion and Tirole \(1997\)](#) argue that delegation is less likely in activities related to expertise the principal has developed through experience, we also consider whether the CEO has previous work experience in finance or accounting as a measure of knowledge.

<sup>17</sup> [Baiman, Larcker, and Rajan \(1995\)](#) measure CEO expertise as being high with respect to a business unit when the overall corporation's 2-digit SIC code is the same as that for a given business unit (and expertise is low when the unit has a different SIC code than the corporation). They find that business units are more likely to have control over core functions (that is, core functions are delegated to the units) when CEO expertise is low (that is, when the unit is in a different SIC code than the corporation).

<sup>18</sup> [Xuan \(2009\)](#) documents "reverse favoritism" in which new CEOs allocate relatively more capital to divisions other than the one(s) in which they previously worked.

<sup>19</sup> It is interesting to note that the negative estimated coefficient is counter to the idea that the "teamwork" training that MBAs receive in business school leads to more delegation or sharing of decision authority.

<sup>20</sup> See [Bernardo, Cai, and Luo \(2001\)](#) for a different angle on incentive compensation, namely, that managerial incentive compensation may increase when the manager oversees a high quality project (to mitigate the managerial incentive to overstate project quality), which is a different direction of causality than the incentive pay leading to a higher quality outcome.

<sup>21</sup> See footnote 7.

<sup>22</sup> In [Marino and Matsusaka \(2005\)](#), the CEO delegates in situations that lead to pooling equilibria (in which a low quality employee can at low cost mimic a high quality worker). In separating equilibrium conditions, where low and high quality agents can be identified, headquarters will retain control in order to allocate resources according to perceived agent quality. Projects with high upside potential, such as growth projects, lead to such separating equilibria, and hence CEOs will delegate less when growth opportunities are high.

In untabulated analysis, we also include the lagged growth variable in the regression. One might conjecture that delegation would decrease based on past success, perhaps because CEOs attribute past successes to their own abilities. We do not find evidence consistent with this hypothesis, however, given the lagged growth variable is insignificant in this specification.

Finally, the public/private dummy variable is significant in Table 4, providing some evidence that public firms delegate more. This may occur because of the extra demands and regulatory requirements of public firm CEOs, or because public firms are more complex than private firms, or due to an informational advantage of private firm CEOs relative to public CEOs. Note that all the specifications in Table 4 control for size. As a result, the public-private difference is not simply due to private firms being on average smaller than public firms.

#### 4.2.1. Differences in delegation across policies

In the previous section we considered delegation as a company-wide phenomenon and detected evidence that delegation increases in CEO overload (as measured by firm size and complexity) and decreases with knowledge of the CEO and proportion of pay that is incentive-based, among other things. In Section 4.1 we learned that the *magnitude* of delegation varies across policies, with policies (like capital allocation and investment) that require more informational input from lower down the firm being delegated more often. In this section we explore whether the *sensitivity* of delegation to explanatory variables like complexity and knowledge also varies by policy.

For this analysis, we again group the policies into three categories, depending on the amount of input required from lower-level employees. M&A requires the least input from employees and is analyzed on its own.<sup>23</sup> We pair payout and capital structure together as two “high level” policies that do not require much specific input from lower-level managers. This pairing is bolstered by recalling the 0.69 correlation between the magnitudes of delegation for these two policies. We also pair capital allocation and investment together because they rely on extensive divisional or local informational inputs and implementation.

To explore these pairings of policies, in untabulated analysis we repeat the regression analysis in Table 4 but now the estimated coefficients are constrained to be equal for a given group of policies (that is, coefficients are constrained to be equal in a stacked payout/capital structure regression; and a separate set of coefficients is estimated for a stacked investment/capital allocation specification). We find that the estimated regression coefficients are statistically indistinguishable *within* each group (e.g., a constraint that restricts the coefficients to be equal between payout and capital structure is not binding; and likewise for capital allocation and investment). We also find that the estimated coefficients are statistically different *across* these groups. Hence, the effects of the explanatory variables on delegation

appear to be homogeneous within-group but differ across groups, leading to two implications: First, our grouping of policies based on information processes seems reasonable. Second, the sensitivity of delegation to the explanatory variables varies with the information process of the policies. From Section 4.1 we learned that (1) policies that require more input from employees are delegated more. In this section, we document that (2) the conditional effects on delegation of CEO and firm characteristics (e.g., firm complexity) vary across pairs of policies. We now explore (2) in more detail, to learn which estimated coefficients vary the most across policies.

Table 5 presents results for regressions that estimate separate coefficients for Group 1 (M&A), Group 2 (capital structure and payout), and Group 3 (capital allocation and investment). Several results emerge. First, the result that delegation increases in CEO overload (firm size and complexity) is pervasive and holds for all three categories of policies. We also note interactions between policies that are likely tied to overload. Firms that have recently completed multiple mergers and acquisitions have a tendency to delegate Group 3 decisions. This result is consistent with the executives of acquiring firms spending a disproportionate amount of their time integrating new business units into their firms. Therefore, it makes sense that these same executives are more likely to delegate other corporate decisions. It is also worth noting that CEOs are not inclined to share the merger and acquisition decision itself, even when their firm has recently made multiple acquisitions (the multiple acquisitions coefficient is insignificant for the M&A policy columns of the table). This is consistent with the unconditional evidence in Table 3 that CEOs say that they are the dominant merger and acquisition decision-makers.

Second, the effect of CEO knowledge varies in a way that is consistent with the information processes of the policies. As argued above, employee informational input and implementation are important in capital allocation and investment; hence, we expect that the effect of CEO knowledge will be smaller for these policies than for the others. That is exactly what we find. In Table 5, tenure is generally statistically insignificant for Group 3, indicating that CEO knowledge is less important. In contrast, tenure is significant in the capital structure/payout specification, and even more so for M&A, consistent with CEO knowledge having an important impact on the delegation decision. (Though not indicated in the table, the tenure coefficient for Group 3 is significantly smaller in magnitude than the coefficients for the other two groups.) Overall, this analysis indicates that the influence of factors on delegation is not uniform across the firm; rather, the sensitivity of delegation to CEO knowledge varies across policies, conditional on the information process and needs for a given policy. This introduces a new dimension into our understanding of the variation of delegation in various settings.

Third, we find that executive compensation only appears to impact capital allocation and investment. Thus, CEOs are least likely to delegate these policies when CEO pay is tied to these decisions, although the economic significance is small.

<sup>23</sup> Harris and Raviv (2005) and Aghion and Tirole (1997) consider M&A to be the policy for which the CEO has the greatest informational advantage (relative to lower-level employees).

There are important considerations that one should keep in mind when interpreting our results. First, our sample has a large concentration of private firms. This has the advantage of providing new information about an important part of the economy; however, it is not clear whether our results fully generalize to public firms. Second, we use a “low, medium, high” dependent variable. If we alternatively delete the middle, the results are similar.

Thus far, we provide evidence that individuals (CEOs) delegate less when they are knowledgeable and when the outcome matters more to them. Second, we find that delegation varies with the circumstances of the firm, increasing with firm size, complexity, and in public firms. Third, the degree of delegation, and the sensitivity of delegation choices, varies across policies conditional on the informational needs of the policies. In particular, CEOs delegate more, and CEO own-knowledge matters less, when they need more input from below. Fourth, we find some evidence of interactive effects across policies: Delegation of capital allocation and investment is greater in firms that have recently completed multiple acquisitions, likely because the executives are overloaded integrating previous transactions.

## 5. What decision rules are used to allocate capital across divisions?

Our analysis above documents that CEOs delegate the capital allocation decision. For this reason, and because capital allocation involves the delegation of dollars, in this section we analyze in detail the decision rules executives use to internally allocate capital to divisions. Among other things, the results below highlight the human element and informal nature of financial decision-making.

### 5.1. Capital allocation decision rules

NPV ranking is the most important factor that affects capital allocation across divisions within U.S. firms (see Fig. 2 and Table 6, Panel A).<sup>24</sup> For CEOs, the NPV criterion has a mean rating of 3.9 on a scale of 1 to 5 (with 5 indicating that the criterion is very important and 1 indicating not at all important). Nearly 79% of U.S. CEOs say that NPV rankings are important or very important (i.e., a rating of 4 or 5) when deciding how to allocate capital.<sup>25</sup> U.S. CFOs also list NPV as the most common

<sup>24</sup> Separately, we examine just the CEOs who answered 1, 2, or 3 on a scale of 1 to 7 regarding how much they dominate the capital allocation decision (where 1 indicates complete domination). The relative pattern of responses for the NPV rank rule, as well as the other important factors affecting capital allocation, is similar for this subgroup of executives that retains tight control of capital allocation decisions.

<sup>25</sup> Recall that 88% of our U.S. sample is composed of private firms and note that Graham and Harvey (2001) find that net present value is used to make capital budgeting decisions in nearly 80% of U.S. public firms. Combined with our U.S., European, and Asian results, the overall evidence implies that the NPV capital allocation criterion pervades corporate decision-making around the world.

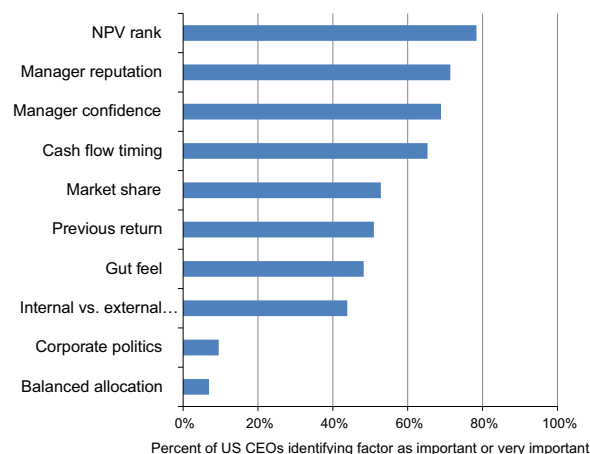


Fig. 2. Decision criteria for capital allocation – US CEOs.

Survey evidence on the factors that affect capital allocation decisions within a firm. The responses in this graph are for more than 1,000 US CEOs. Respondents ranked the importance of each factor on a scale of 1–5, with 1 being not important at all and 5 being very important. A factor is deemed to be “important” to a respondent if the ranking was a 4 or 5.

criterion affecting capital allocation, as do executives outside the U.S. (see Fig. 3).<sup>26</sup>

The second most important factor affecting capital allocation in the United States is the reputation of the divisional manager. We find this interesting because it connects to the human element of decision-making documented above. More than 71% of U.S. CEOs rely on divisional manager reputation (mean rating of 3.8 out of 5) when deciding which division to allocate capital to, and 66% of U.S. CFOs do so as well. This finding is consistent with implications from Dessein (2007), Stein (2003), and Ozbas (2005) that funds may be allocated to extract information from divisional employees. While this result is about the allocation of capital, given that decision rights often accompany increased funding (Jennergren, 1981), it can be extrapolated to imply that the delegation of decision authority increases with managerial reputation.<sup>27</sup>

<sup>26</sup> Due to the similarity of many results, we do not separately discuss the U.S. versus non-U.S. comparison again until the end of this section.

<sup>27</sup> These empirical results are consistent with Ross's (1986) analysis of 12 firms, which indicates that a divisional manager's investment projects are more often approved when she has historically delivered promised returns. Bower (1970) also cites field evidence that headquarters is more likely to accept the ideas proposed by managers who have developed a reputation for delivering in the past. If past success leads to more power for a divisional manager, our reputation result might be related to the finding in Glaser, Lopez-de-Silanes, and Sautner (2013) that powerful or connected managers receive a disproportionate share of cash windfalls in their detailed analysis of a single multinational conglomerate. A notable difference is that their finding is tied to cash windfalls while we detect a reputational effect in routine capital allocation. Our finding is also related to Cremers, Huang, and Sautner's (2011) result that among banks that are members of a group, the members with the most influence (ratio of voting rights to ownership rights) are allocated more capital from headquarters. Our result differs in that these authors interpret their result as being stronger as informational

**Table 6**

Capital allocation decision rules – US and non-US executives.

This table examines the rules that executives follow when allocating investment capital to divisions. An executive considers a rule to be important (“% imp”) in his/her allocation of capital across divisions if he/she answers 4 or 5 on a Scale of 5 with 1=“not at all important” and 5=“very important” on the following factors: NPV rank – “NPV ranking of project”, Manager reputation – “the reputation of the divisional manager in terms of delivering on previous projects”, Manager confidence – “the confidence of the divisional manager in the project”, Cash flow timing – “timing of projects’ cash flows”, Market share – “protecting market share”, Previous return – “return on previous projects earned by the division proposing the project”, “Gut feel” – senior management’s gut feel”, Internal/external – “whether the project requires external capital (versus funding with internal funds)”, Corporate politics – “corporate politics”, Balanced allocation – “moving towards an even balance of capital allocation across divisions”.

Panel A performs the analysis for all executives, while Panel B considers only executives who indicate that the Internal/External split is important (i.e., answered 4 or 5 for this factor). The following means are tested for statistical differences: US CFO versus US CEO, NON US CEO versus US CEO, and NON US CFO versus US CFO, with significance at the 10% level is denoted by \*, 5% by \*\*, and 1% by \*\*\*.

Panel A								
Capital allocation (all respondents)								
	US CEO		US CFO		NON US CEO		NON US CFO	
	Mean	% imp	Mean	% imp	Mean	% imp	Mean	% imp
NPV rank	3.9	78.6%	3.7	70.1%***	3.8	75.6%	3.8	70.4%
Manager reputation	3.8	71.3%	3.6	66.0%*	3.6	61.3%**	3.6	64.0%
Manager confidence	3.8	68.8%	3.6	62.2%***	3.8	62.6%	3.7	63.4%
Cash flow timing	3.7	65.3%	3.7	64.9%	4.0	73.4%	3.9	74.7%***
Market share	3.4	52.9%	3.4	56.0%	3.5	55.7%	3.6	60.0%
Previous return	3.5	51.2%	3.7	63.5%***	3.9	66.9%***	4.0	75.9%***
Gut feel	3.3	48.2%	3.1	37.1%***	3.2	38.2%*	3.0	35.9%
Internal/external	3.2	43.9%	3.0	40.4%	3.4	50.0%	3.2	41.3%
Corporate politics	1.9	9.5%	2.7	23.3%***	2.5	17.7%***	3.1	35.8%***
Balanced allocation	1.7	6.9%	1.8	5.8%	2.2	13.6%**	2.4	17.9%***

Panel B								
Capital allocation (respondents who expressed that the need for external funds is an important decision criterion)								
	US CEO		US CFO		NON US CEO		NON US CFO	
	Mean	% imp	Mean	% imp	Mean	% imp	Mean	% imp
NPV rank	4.1	83.2%	3.9	74.6%**	4.2	93.5%*	3.9	74.9%
Manager reputation	3.9	76.1%	3.9	76.2%	3.9	75.8%	3.7	70.4%
Manager confidence	3.9	69.9%	3.7	65.0%	3.9	64.5%	3.8	68.1%
Cash flow timing	4.0	79.5%	4.0	77.3%	4.2	88.7%	4.1	84.5%*
Market share	3.4	55.0%	3.4	58.0%	3.7	62.9%	3.7	63.8%
Previous return	3.5	48.8%	3.7	63.9%***	4.0	71.0%***	4.1	78.8%***
Gut feel	3.5	54.3%	3.2	40.9%***	3.3	45.2%	3.2	38.7%
Internal/external	2.0	9.9%	2.8	23.2%***	2.4	21.0%***	3.1	39.2%***
Corporate politics	1.9	10.7%	1.9	7.7%	2.4	19.4%**	2.6	24.5%***



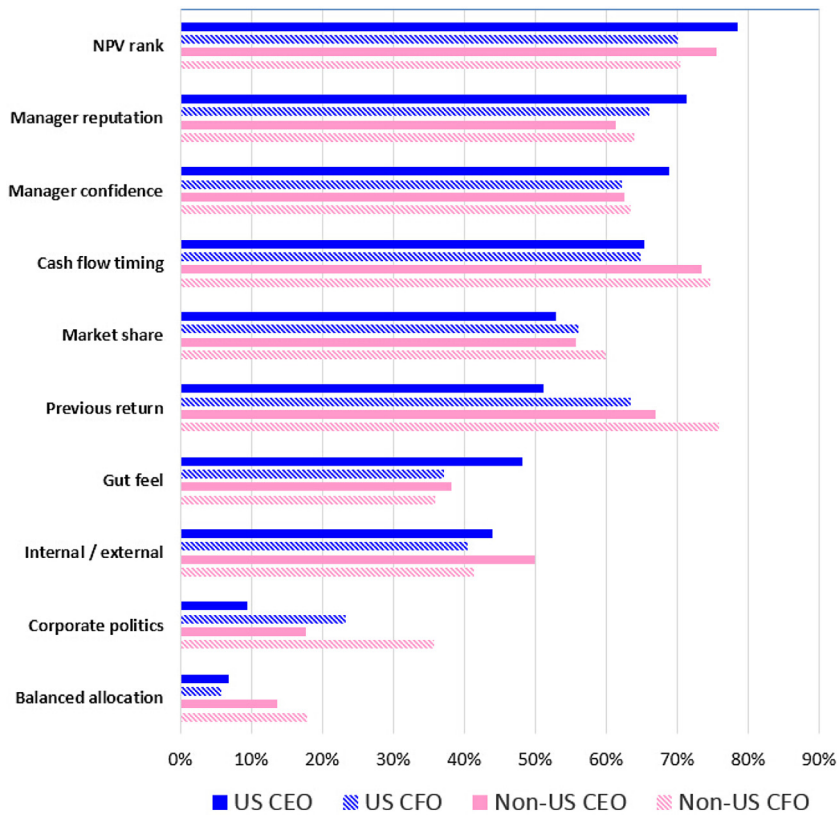


Fig. 3. Decision criteria for capital allocation – US and non-US executives.

Percent of respondents identifying a factor as important or very important in making capital allocation decisions. Respondents ranked the importance of each factor on a scale of 1–5, with 1 being not important at all and 5 being very important. A factor is deemed to be “important” to a respondent if the ranking was a 4 or 5.

When we ask about whether the past return on investment in a given division (instead of its manager’s reputation) affects its future capital allocation, we find somewhat weaker evidence among U.S. CEOs (51% list past divisional return as an important criterion in allocating capital) than among U.S. CFOs (about 64%). Relatively speaking then, CEOs focus more on the person (i.e., the manager’s reputation), rather than on the division the manager represents, while CFOs focus evenly on the individual and the division. Interestingly, CEOs with a finance background appear to take a “numbers” approach by rating past divisional return equal in importance to the particular manager’s reputation (not in table). In contrast, CEOs with a non-finance background follow the “softer” approach of rating a manager’s reputation (3.8) as significantly more important than past divisional returns (3.5; not in table).

When presenting their capital allocation requests to headquarters, divisional managers convey their degree of confidence about whether a project will succeed. We interpret “confidence” to indicate the certainty (or lack

thereof) in cash flow forecasts for a given project. Divisional manager confidence has great influence on corporate capital allocation decisions: 69% of CEOs say it is important in capital allocation within U.S. firms. This result is interesting because it indicates that the second moment of information affects capital allocation decisions. Significantly fewer CFOs than CEOs list divisional manager confidence as being important.

We investigate whether executives consider the timing of cash flows as they allocate capital within their companies. The usual assumption in academic research is that managers choose positive NPV projects for investment—the timing of the cash flows is of second-order importance. However, nearly two-thirds of U.S. CEOs cite cash flow timing as an important capital allocation factor, as do a similar percentage of CFOs. We note that cash flow timing can rationally play a role if a firm is financially constrained, to the extent that it would be beneficial to accelerate cash flow receipt in negative states of the world.

We investigate whether financial constraints might be related to the importance of cash flow timing. Initially, we find modest supporting evidence when we explicitly ask whether the need for external funding affects the allocation of capital to divisional projects. This might be relevant if the firm is financially constrained. About 44% of the executives list the need for external funds as an important

(footnote continued)  
 asymmetry rises, while our result is unconditional relative to information asymmetry.

factor affecting capital allocation. The analysis is more intriguing when we interact the “internal/external financing” factor with the “cash flow timing” factor. We accomplish this by subsetting the sample and studying only the firms that rate external financing concerns as 4 or 5 (i.e., firms that might be financially constrained). For this subsample, we find that 79.5% of these firms rate cash flow timing as being important (see Panel B of Table 6). This 79.5% is statistically larger than the 56% of unconstrained firms that rate cash flow timing as important (the 56% is not shown in the table). Therefore, this evidence is consistent with the importance of cash flow timing being explained at least in part by the degree of financial constraint a firm faces.

Approximately half of CEOs list their “gut feel” as an important factor affecting how to allocate capital across divisions. This highlights the subjective nature of corporate investment and emphasizes that executives rely on their personal judgment when making decisions. Huang (2013) argues that the propensity to make gut feel decisions increases when the business environment is more uncertain or ambiguous. While gut feel clearly matters in capital allocation, we note that it ranks lower than formal decision rules such as NPV in our analysis.<sup>28</sup>

We also find that gut feel decision-making is more prevalent among small firms (49% of small firm CEOs rely on gut feel, significantly greater than the 38% of large firms; not shown in table) and private firms. These patterns are consistent with small, private firms having fewer highly visible peers to which to compare themselves, and hence small firm CEOs relying more on personal judgment (Gigerenzer, 2007). Finally, we find that gut feel is more popular among CEOs for whom another informal rule (the reputation of the divisional manager) is also popular. Overall, the popularity of “gut feel” emphasizes that decisions are made by people, not by corporate entities.

We also inquire whether corporate politics affect capital allocation. Only one-in-ten U.S. CEOs indicates that politics matter (see Table 6).<sup>29</sup> Given that the top decision-maker might be the last person to admit that politics affect corporate decisions, this would suggest that CEO responses to this question represent a lower bound. Consistent with this conjecture, CFOs are significantly more likely than CEOs to indicate that politics affect corporate decision-making: nearly one-in-four CFOs say that corporate politics affect capital allocation decisions.

Finally, among U.S. CEOs and CFOs, only 6% to 7% say that their company attempts to balance capital allocation evenly across divisions (which could be thought of as “corporate socialism”). Though the level is low, untabulated analysis indicates that socialism is relatively more common when incentive compensation is not that

important, which is consistent with Ozbas and Scharfstein's (2010) and Palia's (1999) findings that socialism decreases with equity stakes and performance pay. Scharfstein and Stein's (2000) agency model can explain these findings if CEO incentive compensation counteracts the CEO impulse to allocate capital to managers of weak divisions in order to retain them. Ozbas and Selvili (2006) argue that rigid capital allocation (one possible manifestation of socialism) is more likely to occur when information asymmetry between the CEO and managers is high and as firms become more complex. Untabulated analysis does not support these latter implications (that socialism increases with firm complexity or information asymmetry). We do however find that growing firms are more likely to balance capital across divisions.

For the most part, the responses from Asian and European executives are similar to those for U.S. firms. We highlight two differences. First, relative to U.S. business leaders, a significantly higher proportion of non-U.S. executives acknowledge that corporate politics affect capital allocation in their firms. In Table 6, 18% of European and Asian CEOs say that internal politics affect the distribution of funds across divisions, and 36% of non-U.S. CFOs say the same. Second, Asian and European companies are also more likely to strive to balance capital allocation across divisions. Nearly one-in-seven (five) non-U.S. CEOs (CFOs) say that balanced allocation is important.<sup>30</sup> Given that European and Asian executives receive less incentive pay than do U.S. executives, the increased socialism in their firms is consistent with the Ozbas and Scharfstein (2010), Palia (1999), and Scharfstein and Stein (2000) implications mentioned above.

## 6. Caveats and suggestions for future research

A novel aspect of our paper is that we ask top executives about multiple high-level corporate policies that vary in terms of the amount of lower-level informational input needed. Given that our study is done at one point in time, we neither observe outcomes nor are we able to make any statements about causality. There are several ways that future research can build and improve upon our work.

*Bottom-up:* Our study focuses on top-down decision-making (by CEOs and CFOs). It would be interesting for future research to ask lower-level employees how much their supervisors delegate to them. Ideally, pairs of survey respondents would work at the same firm, to allow downward and upward comparisons. It would

<sup>28</sup> This complements a result in Huang (2013), who finds gut feel to be quite important in angel investor decisions about entrepreneurial start-ups, an environment that is likely more uncertain and ambiguous than ours.

<sup>29</sup> One form of corporate politics is evident in Duchin and Sosyura (2012), who find that managers with stronger social ties to the CEO make larger capital expenditures.

<sup>30</sup> One possible explanation for the higher acknowledgment of corporate socialism in Europe, relative to the U.S., could be that European countries are generally more socialistic, and hence their executives could be more likely to answer survey questions accordingly, even if perhaps their firms are not actually more socialistic in practice. To investigate this possibility, we examine the propensity to acknowledge corporate socialism on the survey separately for each European country in our sample. We do not find evidence consistent with this hypothesis, given that CEOs of companies headquartered in more socialistic European countries are no more likely to respond that their firms participate in corporate socialism in capital allocation.

also be interesting to understand the role of the board of directors and hired advisors in the spectrum of delegated versus centralized decision-making.

*Single policy:* While we cover five policies, another approach would study a single policy in much more detail to provide a more nuanced understanding. Consider a division's budget. It would be beneficial to understand how much delegation is involved in deciding the size of a division's budget, and whether there is tiered delegation (e.g., is the amount of the budget decided at headquarters but the decision on how to spend the budget delegated to divisions?).

*Intentions and outcomes:* Our survey captures the opinions and perceptions of executives. It would be helpful for future research to connect to the corresponding actions that ensue. This requires a different type of survey, i.e., non-anonymous. While there are drawbacks to the lack of anonymity, delegation research would likely benefit from the link to outcomes.

*Delegation versus coordination:* We establish that the degree of delegation varies across policies within the same firm. It would be interesting for future research to more explicitly contrast delegation with opposing forces to centralize or coordinate policies across the firm. While delegation helps to relieve costs such as those related to CEO overload, it leads to loss of control by the CEO and could also increase operational costs in some cases. For example, consider the information technology (IT) function within a typical firm. McElheran (2010) finds that delegation *decreases* with firm size when it comes to IT decisions, reflecting the value of coordinating IT company-wide as size increases. In contrast, for the high-level decisions that we examine (that likely require less company-wide coordination than IT), sharing of decision authority *increases* in firm size. Thus, beyond just size considerations, it would be helpful for future research to explicitly consider the opposing forces that might lead to delegation or coordination dominating in various settings.

*Interactive effects:* We find that capital allocation and corporate investment are delegated more when a firm has recently completed several acquisitions. More could be done to study interactions across policies. For example, one might think that repeating a task multiple times will lead to expertise and less delegation; however, spending so much time on a given task might also increase overload and lead to more delegation. In untabulated analysis, we attempt to tease out these specific effects by including a new variable that is the product of our measure of knowledge (tenure) and our measures of overload (size; number of business segments) but do not find significance. Future research specifically designed to separately measure such opposing forces may prove fruitful.

*Culture:* We briefly examine non-U.S. companies. In our view, future research designed to capture explicit

differences across countries and culture might be fruitful.

## 7. Conclusions

We provide new evidence about how capital is allocated within firms and under what circumstances decision-making authority is delegated by CEOs and CFOs in the United States, Europe, and Asia. Our results can be grouped into four themes.

First, *the degree of delegation is not monolithic for a given firm*. Delegation varies across corporate policies and in particular, it varies by the informational requirements needed to make a given policy decision. For example, CEOs delegate more when they need more input from their direct reports (such as for capital allocation and investment) and less when the CEO's informational advantage is at its greatest (M&A). We also document interactive effects across policies: Delegation of capital allocation and investment is greater in firms that have recently completed multiple acquisitions, likely because the executives are overloaded by the integration phase of previous transactions.

Second, *decisions are made by individuals, not simply by corporate entities*. We find evidence that CEOs are less likely to delegate decisions when they are knowledgeable about a policy (as measured by CEO tenure as well as work experience and educational background), and when the outcome matters more to them (as measured by incentive compensation). Also, the sensitivity of delegation to person-specific characteristics varies with the informational requirements of a given policy are greater. For example, CEO knowledge matters less for highly delegated policies.

Third, *delegation decisions are also affected by the characteristics of the firm*. Delegation increases with the number of business segments and firm size, evidence that CEO workload may be high, and in public firms.

Finally, *there is a strong "human element" to the delegation of investment funds (capital allocation)*. In addition to net present value, CEOs rely heavily on informal allocation rules, many of which reveal a human element, such as the divisional manager's reputation, the timing of when cash flows are produced by a project, and senior management's "gut feel." We also find that, relative to U.S. firms, in Asian and European companies capital is more likely to be evenly distributed across divisions, and corporate politics are more likely to play an important role.

## Appendix A. Survey design and delivery

We created an initial survey instrument based on existing theoretical and empirical research. We then solicited feedback from a number of academics, practitioners, and CEOs. Based on this feedback, we modified, shortened, and focused. We also sought and incorporated the advice of marketing research experts on the survey's design and execution. Finally, we conducted beta tests with two CEOs and incorporated their input.

Among other things, these CEOs expressed their common-sense understanding that delegation involves the boss giving up or sharing some of the decision process with others in the firm, allowing those others to play an active role in making the decision.

A PDF of the faxed English language version of the final survey instrument can be found at <http://faculty.fuqua.duke.edu/~jgraham/CEOCFO.pdf>. For most of the participants, rather than a fax, the version of the survey they were administered consisted of a series of linked HTML pages.

We surveyed both CEOs and CFOs. We contacted three groups of CEOs. The largest group was approximately 10,000 executives who subscribe to *Chief Executive* magazine. *Chief Executive* has more than 70,000 subscribers, and we emailed an invitation to participate in the survey to the CEO subscribers who work at the largest 10,000 companies (among their 70,000 subscribers). There was a bounceback rate of about 2.3% on the emails, meaning that as many as 9,770 companies could have received the invitation (though email filters or other barriers likely reduced the number of executives who actually saw the survey). We also reached out to readers of *Chief Executive* with an advertisement in the magazine that invited them to go to a web link to participate in the experiment. This printed advertisement attracted fewer than two dozen participants, and if we were to delete these CEOs from the sample, our results do not change. Due to their small number, we do not separate out these CEOs in the analysis but instead merge them in with the other *Chief Executive* respondents.

The second group of CEOs we contacted are 800 (net of bounced emails) chief executive readers of *CFO* magazine. We emailed the same survey invitation to these executives. The third group of CEOs attended the World Economic Summit in Davos during January 2006. We faxed surveys to 142 Davos' executives and received seven responses. If we were to delete these responses, it would not alter our results. Due to their small number, we do not separate out these CEOs in the analysis.

In total, we surveyed approximately 10,700 CEOs, once improper email addresses are eliminated. All of these invitations were issued on approximately February 1, 2006. We sent a reminder to all those emailed on February 14. Across all these groups, 1,180 CEOs responded, for a response rate of approximately 11%. In the analysis, we focus primarily on the 1,017 CEOs who work for firms headquartered in the United States. Regression analysis is sometimes based on fewer observations.

During the first two weeks of February 2006, we also invited four groups of U.S. CFOs to participate.<sup>31</sup> The largest group of surveyed CFOs consists of subscribers to *CFO* magazine. On our behalf, the magazine emailed 6,800 invitations (net of bounced emails) to subscribers of the U.S. version of its primary publication, *CFO* magazine. Separately, Duke University emailed 2,000

(net of bounced emails) CFOs who had participated in previous quarterly CFO Global Business Outlook surveys conducted by researchers at Duke and *CFO* (see <http://www.cfosurvey.org>). The response rate for the quarterly survey is typically 5% to 6%. The third group was 253 CFOs who participate in the Forum on Corporate Finance. Finally, 107 financial officers who are alumni of Duke University were faxed a survey instrument (the results do not change if the faxed responses are ignored). All total, approximately 9,000 U.S.-based CFOs were surveyed. We received 549 responses, for a response rate of approximately 6%.

We also surveyed Asian and European chief financial officers. In particular, we invited subscribers to *CFO* Europe and *CFO* Asia magazines to participate. In the demographic questions, we verify that these respondents in fact work in firms that are headquartered in these geographic regions. *CFO* Europe sent approximately 5,600 email invitations and *CFO* Asia 4,500, both figures net of emails that bounced. Nearly 400 European CFOs responded, as did 264 Asian CFOs, yielding response rates of approximately 7% and 6%, respectively. The Asian group was not sent an email reminder because the reminder date fell near the Chinese New Year. The European response rate may be a little higher because we gave the executives the opportunity to take the survey in any of four languages: English, French, German, or Dutch. The Asian survey was only available in English. In the analysis, the non-US executives and CFOs are primarily included as a comparison group to the US analysis.

It is important to understand the population that our surveyed firms represent. We do not know the demographic information of the universe of surveyed firms. Therefore, in addition to describing the companies in our sample (as in Tables 1 and 2), we follow the recommendation by List (2006) who says that it is important to benchmark the sample under study to well-known samples of firms. In our case, we benchmark to the frequently examined Compustat database. We examine sales, debt-to-assets, and other variables as shown in Table A1. Briefly, the sales comparison indicates that our sample firms are smaller than the typical Compustat firm, with two-fifths of our sample falling in the smallest Compustat quintile. This is not surprising given that 88% of our firms are private, and almost all firms on Compustat have publicly traded equity. The survey response sample is, however, fairly representative of the Compustat universe in terms of debt/assets and historical growth (except that we have very few firms from the lowest growth quintile). We repeat this analysis in Panel B, examining only the 90 public firms in our sample that are managed by U.S. CEOs. The distribution of sales revenue for our public firms is roughly centered on the distribution of Compustat firms, with 58.2% of our sample falling in Compustat quintiles 3 and 4. Though not shown in the table, we separately compare our private firms to the private firms in the CapitalIQ database and find that they are similar to each other in many dimensions, though our sample private firms are somewhat larger.

<sup>31</sup> Most of those surveyed have the job title CFO. Some have the title of Treasurer, Assistant Treasurer, VP Finance, Comptroller, or a similar title. We refer to this group collectively as CFOs.

**Table A1**

Comparing the survey sample to Compustat.

This table compares the survey sample of the firms under the management of US CEOs to the Compustat universe using survey variable definitions. The survey data are matched against the 2005 annual Compustat data because our survey was conducted in early 2006, which should reflect 2005 financials. Sales are represented by seven size categories. Category 1 includes firms with sales less than \$25M, category 2 between \$25M and \$99M, category 3 between \$100M and \$499M, category 4 between \$500M and \$999M, category 5 between \$1B and \$4.9B, category 6 between \$5B and \$9.9B, and category 7 includes firms with \$10B or above in sales. Debt-to-assets ratio, payout ratio (dividends as a fraction of earnings), and historical growth (average annual percentage change in sales revenue over the last three years) are reported by the US CEO survey respondent. Sample % shows the percentage of survey firms falling in a given Compustat quintile. Due to the frequency of similar responses to payout ratio, breaking the survey sample and Compustat sample into five quintiles was not possible. From our sample, responses for payout ratio corresponded to only two Compustat buckets.

Variable		Sample average	Sample median	Compustat breakpoint quintiles				
				1	2	3	4	5
Sales	Universe avg.	2.2	2.0	1.0	1.7	2.8	3.9	5.7
	Sample avg.			1.0	2.0	3.0	4.5	6.6
	Sample %			40.6	26.8	20.4	9.3	2.9
Debt/Assets	Universe avg.	0.3	0.2	0.0	0.0	0.2	0.3	1.0
	Sample avg.			0.0	0.1	0.2	0.3	0.7
	Sample %			19.8	17.2	16.3	22.7	24.1
Payout ratio	Universe avg. (%)	21.3	0.0			0.0		55.6
	Sample avg. (%)					0.0		41.7
	Sample %					50.2		49.8
Historical growth	Universe avg.	0.3	0.1	−0.2	0.0	0.1	0.2	1.7
	Sample avg.			−0.2	0.0	0.1	0.2	1.0
	Sample %			1.0	26.6	33.3	25.2	13.9

Variable		Sample average	Sample median	Compustat breakpoint quintiles				
				1	2	3	4	5
Sales	Universe avg.	3.5	3.0	1.0	1.7	2.8	3.9	5.7
	Sample avg.			1.0	2.0	3.0	4.7	6.6
	Sample %			11.4	17.7	27.8	30.4	12.7
Debt/Assets	Universe avg.	0.3	0.3	0.0	0.0	0.2	0.3	1.0
	Sample avg.			0.0	0.1	0.2	0.3	0.7
	Sample %			18.8	18.8	11.6	30.4	20.3
Payout ratio	Universe avg. (%)	19.1	5.0			0.0		46.2
	Sample avg. (%)					0.0		36.7
	Sample %					53.2		46.8
Historical growth	Universe avg.	0.2	0.1	−0.2	0.0	0.1	0.2	1.7
	Sample avg.			−0.1	0.0	0.1	0.2	0.7
	Sample %			3.0	36.7	24.1	26.6	10.1

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