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ABSTRACT

This paper conducts surveys that document CFO perspectives on corporate planning, corporate investment, capital structure, payout, and the goal of the firm. Current policy choices are compared to CFO survey data from two decades prior, which allows me to identify decision-making themes that are common across policies and through time. These common elements of real-world corporate finance indicate that companies make decisions based on internal forecasts that are miscalibrated and thought to be reliable only two years ahead; use decision rules that are conservative, sticky, simple, and that attempt to market time; and, emphasize corporate objectives that increasingly focus on stakeholders and revenues. These themes can guide and discipline academic models and tests, with the aim of better explaining outcomes. A model of satisficing decision-making aligns with many of these practice-of-finance characteristics: optimization is difficult in a complex fast-changing world, so managers use simple rules to make incremental improvements and they stick with rules that have worked well enough in the past. Non-behavioral models with costly biases can also account for some of the themes. Implications and avenues for future research are discussed

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In a traditional corporate finance framework, rational managers optimize to maximize shareholder value. A substantial body of research based on this framework assumes that managers form rational expectations, optimize corporate investment intertemporally, and invest in positive net present value projects, among other things. These principles, however, only partially align with real-world decision-making. Moreover, a gap between academic research and the practice of finance is reflected in the modest statistical fit of most corporate finance models and the even more modest ability to predict outcomes out of sample or provide quantitative guidance for specific companies.[1]

One can imagine several explanations of the research-practice gap: the academic (rational) paradigm may be largely correct but managers err by not listening to academics; academic assumptions and approaches may be reasonable but not sufficient to solve key puzzles; researchers may operate under the wrong set of assumptions about managerial preferences, objectives, and biases (and the structure of academic research may perpetuate these mistakes); the world may be too complicated for practitioners to optimize or implement academic approaches. Another consideration is that managers might act "as if" they follow theory (Friedman, 1953), even when the assumptions of theory are not realistic.[2]

To address these issues, it is important to understand in detail what companies do, both the outcomes firms produce and the underlying decision processes. In a corporate finance setting, we can directly gather this information from the expert practitioners who choose the actual outcomes. In this paper, I use CFO surveys to gather detailed information about the practice of finance, information that can be used to discipline and test academic models, with the goals of improving predictability and working towards closing the research-practice gap.

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[1] One example: In a capital structure context, Graham and Leary (2011) show that the standard explanatory variables explain about 10% of within-firm variation in leverage; and untabulated analysis for this paper shows explanatory power is worse out-of-sample.

[2] If the statistical fit between models and actual outcomes was good, the as-if argument might imply that the gulf between academia and the practice of finance is not as wide as it seems. However, the generally poor statistical fit and out-of-sample performance in explaining outcomes suggests that either key elements are missing in current models or that a lot happens in practice that is not predictable (high noise-to-signal ratio). See Section I for further discussion.

I explore these issues in two primary ways. The first is to comprehensively document key stylized facts of real-world corporate decision-making, with the goal of understanding how these elements affect corporate outcomes. Much academic research attempts to infer decision-making and optimization by studying archival data. In this paper, I instead directly ask CFO experts about real outcomes and the managerial motives that drive the outcomes, for topics including corporate investment,[3] capital structure, payout, and corporate expectations and planning. Some of this analysis is new to finance, such as studying the corporate planning process, even though planning is the foundation of many financial decisions and underlies the cash flow forecasts that are a staple of finance teaching and research. Other analysis updates and builds upon previous surveys of financial executives that coauthors and I conducted over the past 25 years (see Appendix 1 for a list of past surveys).[4] Comparing the new surveys to previous surveys allows me to determine what has (or has not) changed. I detect a fair amount of 'stickiness' in corporate decision-making, which implies that the distance between theory and practice has largely held steady over the past two decades. Comparing details of the practice of corporate finance to academic models can help clarify when models align with practice and when they do not, providing guidance to improve our ability to explain economic outcomes.[5]

Common Elements of the Practice of Corporate Finance

The goal of this paper is not just to describe the practice of corporate finance. The second key objective is to identify common themes that run through corporate decision-making, which I do by comparing decision-making across policies and through time. These themes identify a set of underlying principles that can be used to inform models and empirical analyses. In the rest of the introduction, I describe

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[3] For a theory vs. practice comparison of valuation techniques used by analysts, see Mukhlynina and Nyborg (2020).

[4] These past surveys, most of which were conducted with Cam Harvey, present early evidence of some of the phenomena documented in this paper, such as the use of simple decision rules.

[5] An old adage says to use the world as the textbook, not the textbook as the world. At a minimum, surveys allow professors to accurately describe to students what firms actually do, which is important if these students are to use the best of theory and practice to guide their future employers through the complex modern economy.

these unifying themes, mentioning policy-specific survey results only in the context of explaining these commonalities. The later sections of the paper describe in detail the policy-by-policy survey results.

One common element is that in many instances companies *focus on the near-term*. For instance, CFOs say that the information in their corporate plans is only reliable two years ahead and that the reliable horizon has gotten shorter. This makes planning difficult and affects other corporate decisions, such as encouraging a focus on shorter horizon investment projects.[6] Other evidence of a near-term focus includes extensive use of the payback method for capital budgeting; focus on current profits when changing investment plans; and benchmarking debt to current cash flows, rather than long-term value.

In a traditional corporate finance framework, managers form rational expectations, with their expectations calibrated to the distribution of future realizations. The second theme is that in reality, managerial forecasts produce an unusual number of positive and negative surprises (they are *miscalibrated* or overprecise; i.e., the second moment of the distribution is too tight).[7] For example, managers are miscalibrated if ex post 25% of their firms' realizations are below the 10th percentile of their forecasted distributions, or analogously above the 90th percentile; in this sense firms experience frequent downside and upside 'surprises'.[8] Evidence suggests that managerial job prospects and reputation are penalized proportionally more for downside misses than they are rewarded for upside success; therefore, in this paper I primarily focus on the effects of *downside surprises*.[9]

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[6] Companies do of course make long-term investments – but when they do, the decision is based on projections that have become increasingly less reliable as the horizon increases. This encourages shorter horizon investing. Future research should investigate whether this implies investing too little in addition to a shift in the horizon of investment.

[7] It is not surprising that managers are miscalibrated given that other research documents miscalibration in everyday people (Alpert and Raiffa, 1982) and experts (Soll and Klayman, 2004). Given my short time series, it is difficult to directly prove miscalibration in this paper (though the survey evidence is consistent with it). For additional evidence of managerial miscalibration, see Ben-David et al. (2013) and Boutros et al. (2021), both of which show that CFOs from the Duke CFO survey are miscalibrated and that miscalibration persists over time; see also Barrero (2022).

[8] The planning analysis below shows that in response to past forecast errors and economic shocks, managers appear to adjust the second and first moments of forecasts; however, Boutros et al. (2021) indicate that while second moment adjustments are 'in the right direction' they only partially attenuate miscalibration in future forecasts.

[9] As David Viniar, then-CFO of Goldman Sachs, noted in mid-August 2007, "The lesson you always learn is that your definition of extreme is not extreme enough." https://www.nytimes.com/2007/08/13/business/13cnd-goldman.html In terms of being penalized for downside outcomes, Jenter and Kanaan (2015) document that some CEOs are fired even for downside misses beyond their control, like industry or market shocks. Though I focus on downside surprises in this paper, future research should explore the

How would we expect corporate policies to be designed given that planning is only reliable a couple years out and firms don't anticipate tail risks well? Companies might adopt what appear to be *conservative* policies (the third theme), to provide slack when downside surprises occur.[10] Conservative policies are common. Capital budgeting policies are conservative in that companies set investment hurdle rates far above their cost of capital, leading them to choose projects that they ex ante believe have large net present value (NPV>>0). Therefore, when a negative surprise occurs, and ex post the company finds itself underperforming expectations, a previously selected project may still be positive NPV or close to it. This might be ideal if investment is irreversible (or perceived to be), transactions costs are high, or simply that firms prefer not to reverse affirmative decisions. In capital structure decisions, CFOs say that the primary corporate objective is to preserve financial flexibility (in part to avoid distress), which again is consistent with being prepared for downside surprises (Graham (2000) also provides evidence of conservative capital structure decisions).[11] In terms of payout, dividends are increased conservatively, allowing a firm to maintain its dividend even if future profits disappoint.[12] Thus, use of conservative decision rules is wide-spread, among other things offsetting near-focused and miscalibrated managerial expectations.

Fourth, companies are assumed to intertemporally balance marginal costs and benefits, implying changes in corporate decisions and possibly decision criteria as market conditions change. One might therefore expect the preferred corporate policies to change over the decades, given among other things the large changes in the structure of the U.S. economy: e.g., shift to a service-based economy, rapid growth in

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implications of not sufficiently anticipating upside outcomes. Gennaioli et al. (2016) and Barrero (2022) show that CFO forecasts appear to be unbiased, implying that upside surprises are also common.

[10] A working hypothesis is that executives (companies) are aware that they are miscalibrated, or at least are cognizant that they have been surprised by past downside outcomes and the associated penalties, and therefore to offset they design policies that build in slack. An important but unresolved question (that I discuss further below) is why executives don't instead fix the miscalibration. Maybe they can not fix it but still know they must prepare for it. This is somewhat like the sophisticated agents in the O'Donoghue and Rabin (1999) self-control model, who implement more-than-offsetting strategies in the near-term because they believe that they may behave suboptimally in the future. In this paper I consider miscalibration in the context of core financial policies; future research should investigate whether miscalibration and adaptions to it affect management practices more broadly, including corporate culture.

[11] Using the same survey data used in this paper, Barry et al. (2022) show that financial flexibility, workplace flexibility, and investment flexibility helped firms navigate the COVID crisis and affected plans for post-COVID operation.

[12] These last two findings confirm evidence in Graham and Harvey (2001), Brav et al. (2005), and archival research, thus providing evidence of inertia in corporate decision-making (which is the next theme).

intangible assets, increased customization of corporate focus, and historically low interest rates.[13] In reality, corporate decision-making exhibits substantial inertia (*sticky* policy rules and in some cases sticky outcomes), possibly because of frictions in coordination and communication in organizations, or rigidity of the budgeting process. For example, the factors that drive debt decisions in 2022 are ranked very similarly to their rank in 2001. Also, the popularity of companies using the CAPM to estimate the cost of capital has held steady over the past 20 years, despite many advances in asset pricing theory and evidence that the CAPM does not explain well the cross-section of returns. Moreover, investment hurdle rates are very sticky, with only minor changes over the past 35 years even as market interest rates fell substantially. In addition, CFOs indicate that target debt ratios do not change often. This broad-based inertia implies that even when decisions are made according to economic principles, the process is slow-moving, with possibly long lags before changes appear in the data. And when changes do occur, they may reflect a 'pent up' need to change. Note that policy stickiness might be connected to the previous theme: if managers choose conservative policies that build in slack, this may facilitate firms slowly adapting to changing conditions and thus maintaining prior policies.[14]

Fifth, managers are often assumed to use decision processes that account for multiple dimensions of complex circumstances. In reality, companies frequently use heuristics and *simple* decision rules (see also Graham and Harvey, 2001). For example, even after decades of business education highlighting the deficiencies of the payback rule, many (especially small) firms rely more heavily on payback than on NPV in capital allocation, possibly reflecting implementation challenges. Moreover, NPV often plays a support role in corporate investment choices.[15]

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[13] GE had the largest market value in 2000, followed by Exxon, Pfizer, Cisco, and Citigroup. In 2020, the largest six were Apple, Microsoft, Amazon, Google, Facebook and Tesla. Among the 20 largest market cap firms in 2000, only three (Walmart, Microsoft, and Johnson & Johnson) were also among the largest 20 in 2020.

[14] Despite substantial inertia, examples of changes that have occurred over the past two decades include increased emphasis on flexibility, a shift towards stakeholders, and a shorter-term planning focus (likely due to increased uncertainty).

[15] Formal textbook rules also at times take a back seat to informal or "strategic" considerations. NPV (or IRR) in many cases is used to justify a decision made by other means.

Sixth, corporate research often assumes that financial markets are (close to) informationally efficient; in which case there is little advantage to trying to time the market and market prices are a reliable guide for financial decisions. In reality, managers attempt to *time the market* when they issue debt and equity and when they repurchase shares, consistent with Graham and Harvey (2001) and archival findings (e.g., Baker and Wurgler, 2002; Shleifer and Vishny, 2003). These actions might imply that managers believe they have an informational advantage – or that managers believe markets are not fully efficient. I present survey data back to the 1990s that most managers feel that their firm's stock is *undervalued* most of the time, thus encouraging market timing behavior. While other explanations surely exist, left tail miscalibration can cause a manager to feel that the market undervalues the company's stock.

Finally, the surveys provide evidence about *the objects over which companies attempt to optimize*. Somewhat in contrast to the traditional objective of maximizing shareholder value, survey evidence suggests a recent shift towards a more balanced shareholder-stakeholder focus. As discussed below, this potentially has implications for discount rates and employee welfare. Corporate objectives appear to focus more on the valuation numerator (revenues or cash flows) than on the denominator (discount rates), a capital structure focus on Debt/EBITDA or credit ratings rather the classic debt/value or debt/assets,[16] and payout that competes with corporate investment (versus a classic objective of firms choosing investment projects first, then paying out excess profits to investors).

Implications and Roadmap

To sum up so far, evidence indicates that the decision-making that drives corporate outcomes is based on miscalibrated expectations, decision processes that are simple, sticky and conservative, and is conducted by managers who have rosy views of their firms' valuations. All of this occurs within a corporate forecasting and planning process whose reliable horizon is short. Models and empirical analyses should account for these pervasive elements of real-world corporate finance. Research based on rational

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[16] Given that cash flows are relatively volatile in some industries, a Debt/EBITDA focus may help explain why real-world debt targets are often loose and companies behave as if objective functions are flat (see Fig. 10 in Binsbergen et al., 2010).

frameworks with costly managerial biases can attempt to integrate the themes.[17] For example, Barrero (2022) incorporates two biases (miscalibration and extrapolation) in an otherwise traditional structural model that investigates hiring and valuation.

Alternatively, research based on non-traditional managerial beliefs and business practices, such as a satisficing framework (Simon, 1956a), can capture the themes of corporate finance as follows.[18] The world is very complex. Managers don't feel that they can reliably plan far into the future, nor do they have a good understanding of tail outcomes. Because managers can't optimize in a precise sense (except perhaps at great cost), they instead make satisficing choices. Perhaps the best firms can do is take steps in what they believe is the right direction (Kay and King, 2020), to achieve incremental improvement and keep alive future options. Conservative and simple rules (Gigerenzer, 1991) may work as well as any in directing next steps in this environment; and if a current decision rule works well enough, executives stick with it (because improvement is not possible or very costly). Importantly, not optimizing in a traditional economic sense is not necessarily evidence of a bias that leads to inferior performance; managerial choices may reflect learned adaptions that address real world circumstances. One could interpret many corporate actions and outcomes through this satisficing lens.

Various implications arise from the issues raised herein. First, the themes that pervade corporate finance suggest that assuming representative or homogeneous economic players masks important elements of reality: heterogeneous firms may respond differently to the same shock, and use different decision processes, due to their particular circumstances and historic paths. Second, the collection of themes suggests possible new dimensions to consider when evaluating academic models. For example, does a model built on one or two themes (e.g., miscalibration and desire for flexibility) produce the other themes (e.g., simple

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[17] Ben-David et al. (2013) show that managers' subjective distributions of corporate investment IRRs are miscalibrated and the authors link miscalibration to investment and capital structure policies. See also Graham, Harvey, and Puri (2013), Malmandier and Tate (2015), Gennaioli et al. (2016), Manski (2018), Shleifer (2019), Barrero (2022) and cites therein.

[18] Simon (1956b) argues that rational models can find optimal solutions for a simplified world or satisficing models of simple behavior can explore decisions in a more realistic world.

and sticky decision rules, and high hurdle rates)? These and other implications are explored more fully in Section VII. My hope is that theoretical and empirical research that takes seriously the unifying themes and real-world objectives of corporate finance will better predict and explain outcomes. In addition to in-sample fit, progress should be measured via improved out-of-sample performance; helpful quantitative guidance for specific firms would be a bonus.

The implications of this paper extend beyond corporate finance. Companies are the genesis of much of the employment and investment in the economy, and an accumulation of firm-level effects defines the macro-economy. Companies also produce the assets and cash flows that underlie the securities on which asset pricing focuses.[19] There are also implications for policymakers: policy, laws and legal systems should be designed in recognition of the real-world practice of finance. As one example (elaborated below), the fact that companies base investment decisions on nearly static hurdle rates suggests that investment may be interest rate insensitive, which implies that interest rate focused monetary policy will struggle to spur corporate investment. In general, better understanding real-world corporate finance is central to understanding financial economics and the global economy.

The paper proceeds as follows. Section I describes the survey and data collection. Corporate investment including capital budgeting and cost of capital are explored in Section II. Planning and internal forecasts are investigated in Section III. Capital structure, target debt ratios, frictions that drive leverage decisions, and the importance of financial flexibility are investigated in Section IV. Payout policy, including the tension between payout and investment, is reviewed in Section V. Shareholder vs. stakeholder welfare is explored in Section VI. Sections II to VI contain in depth treatment of a given topic (emphasizing new information, while also presenting new analysis of known facts), to provide the reader with a full picture of

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[19] The evidence presented herein suggests that variation in discount rates is not a first-order driver of corporate investment. Interestingly, investor discount rates have traditionally been viewed as very important in asset pricing (Campbell and Shiller, 1988; Cochrane, 2008, 2011). Recently, Bordalo et al. (2020a) and De La O and Myers (2021), and Pettenuzzo et al. (2020) suggest a more prominent role for cash flows.

a particular topic. Section VII summarizes and discusses avenues for future research and Section VIII concludes. Appendices provide more detail on many of the topics.

I.   Data and Survey Methodology

Most empirical corporate finance research is based on archival data, which among other things can reflect governmental policy adjustments to economic events and corporate adaption to those policy adjustments, making it difficult to isolate ex ante corporate plans. Therefore, it is difficult for archival analysis to explore the reasonableness of underlying economic assumptions or to fully diagnose the performance of models. Surveys complement archival data, extending our knowledge of corporate behavior beyond what can be learned from archival analysis alone, by directly asking the expert practitioners who choose the outcomes about ex ante plans, policies, and underlying decision processes.

Figure 1: Demographics for Survey Companies

This figure displays demographic variables for firms in the 2022 CFO survey (combining the March 2019 and March 2020 waves of the survey). Appendix Figure A2.1 displays more detailed demographic breakdowns.
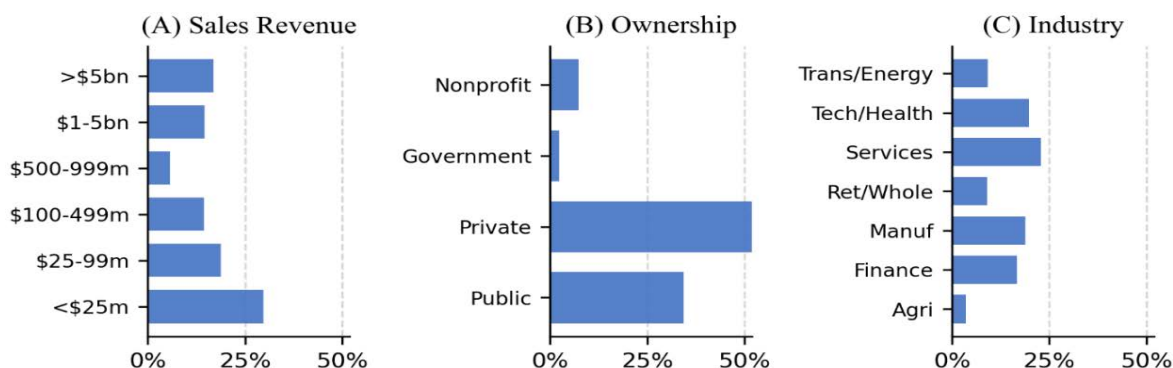
The main data source for this paper is a multi-part survey that occurred primarily in March 2019 and March 2020 (demographics presented in Figure 1; details on the content and timing of the surveys, and a discussion of the pros and cons of the survey methodology, are provided in Appendix 2.) I refer to these surveys jointly as reflecting the practice of finance in 2022. Though the surveys were conducted worldwide, in this paper I mostly focus on the U.S. data (which also include several dozen Canadian responses). At times, I rely on other data sources, including surveys conducted from 1996 to 2020 as part of Duke's Global

Business Outlook (cfosurvey.fuqua.duke.edu), as well as other research (e.g., Ben-David et al., 2013; Gennaioli et al., 2016; Barrero, 2022; Boutros et al., 2021), to highlight elements of corporate forecasts and corporate decision-making.

In addition to exploring traditional issues such as investment, financing and payout policies, the surveys investigate corporate expectations and planning. In March 2019 each firm provided internal forecasts and ex ante plans for a number of variables, including sales, capital spending and R&D, employment, borrowing interest rates, sources of external funds including debt, and payout. The CFOs provided base case, "upside" and "downside" forecasts for several variables, and best guess as well as 10th and 90th percentile revenue forecasts.[20] In March 2020, many of these same CFOs provided realizations for 2019, explained whether and why past forecasts were inaccurate, and whether/how 2019 forecast errors affected future corporate decisions. In March 2020, the CFOs also provided another set of forecasts (i.e., plans for 2020) for several key variables, again including the 10th and 90th percentiles for revenues. Among other things, this information allows me to observe how firms react to shocks to the planning process. I explore the effect of 2019 forecast error (and separately, effects of the 2020 COVID shock) on policy decisions and on first and second moment forecasts for 2020 (see Section III). Much of my data, however, were gathered before the COVID crisis, and therefore the crisis plays a minor role in my analysis except where explicitly noted.

Analyzing survey data is not without potential problems. Perhaps managers do not understand the questions as asked. Or, perhaps practitioners do not have to understand the reason they do what they do for economic models to be predictively successful (Friedman's 'as if' thesis, 1953). I argued in the introduction

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[20] Altig et al. (2021, based on several hundred monthly responses from financial executives) and Bloom et al. (2020, based on a Census question answered by managers at more than 30,000 plants) find that the 10th (90th) percentile forecast aligns with the "lowest" ("highest") forecast when respondents probability weight five possible future outcomes: lowest, low, middle, high, highest. That is, these respondents assign a 10% probability of the "lowest" and "highest" forecasts occurring. Bachmann et al. (2020) show that the span of "best possible" minus "worst possible" forecast is wider following large changes in past sales growth and large recent forecast error; in both cases, the span is wider following negative occurrences.

that the modest statistical fit and even more modest ability of models to predict out-of-sample corporate finance outcomes weakens the as-if argument. Moreover, to narrow the gap between the theory and practice of corporate finance, it is important to address both cause and effect, which the 'as if' perspective side-steps. Considering details about how experts make decisions might be helpful for several reasons. First, following Friedman, the themes and other results may provide for a wider range of assumptions within traditional models, some of which might lead to improved predictability. Second, for those who favor the subset of realistic assumptions, knowing which assumptions and processes influence managerial decisions has the potential to lead to a broader set of models. Third, if models incorporating enhanced assumptions still have weak explanatory power, then understanding real-world decision processes is an end itself, providing a lens through which to interpret economic data. Finally, the decision-making themes and stylized facts may be of independent research interest (e.g., exploring the underlying forces that lead to the common elements of the corporate decision process).

II.   Corporate Investment, Capital Budgeting, and the Cost of Capital

Most corporate investment research is based on outcomes as reflected in financial statement data. To potentially enhance our ability to explain outcomes, this section studies ex ante plans and *how* investment decisions are made. Commonalities across decision processes related to investment are emphasized (e.g., decision rules are generally simple and exhibit inertia and conservativism). Evidence is presented that shocks to demand and cash flows have first-order effects on investment but interest rates do not. Section II.A explores the capital budgeting decision rules companies use, many of which involve both discount rates and cash flow forecasts. Section II.B (II.C) studies discount rates (state variables that drive investment). Section III examines revenue and cash flow-related issues.

II.A Capital Budgeting Decision Rules

Standard finance logic says that, absent constraints and with perfect markets, companies should pursue NPV>0 projects (to increase firm value). In an unconstrained rational setting, standard textbook guidance

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is also to set the investment hurdle rate equal to the cost of capital, and pursue projects that are expected to

earn an internal rate of return that exceeds the hurdle rate. The surveys explore these and related issues.

Figure 2. Capital Budgeting Techniques

This figure displays CFO responses to the following question about the capital budgeting methods their companies use to make investment decisions: *How frequently does your firm use the following techniques when deciding which projects or acquisitions to pursue? {0 = Never, 1, 2, 3, 4 = Always}*. The percentage of firms that answer 3 or 4 are shown. The blue bars display results for the 2022 Duke CFO survey (March 2020 wave); the orange bars display results from Graham and Harvey (2001). Within each blue and orange bar, the solid portion displays responses for large firms (revenue above $1 billion), and the white, crosshatched portion displays responses for small firms (revenue below $1 billion). In 2022, for example, 77% of large firms (40% of small firms) say that they always or almost always use Net Present Value when choosing projects or making acquisitions.
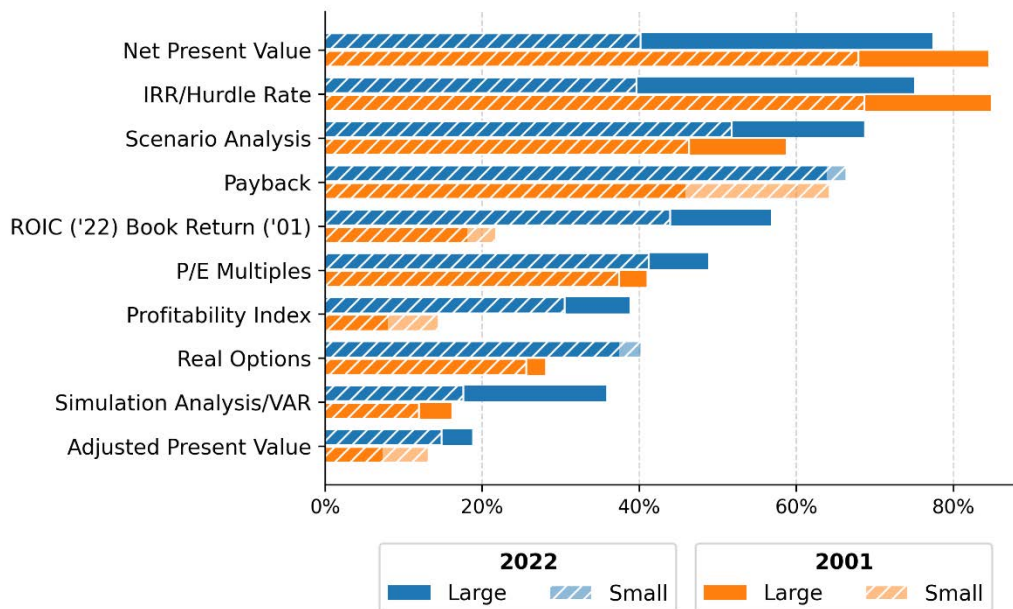
Figure 2 and Table I document that net present value (NPV) and internal rate of return (IRR) are the

most popular decision rules among large U.S. firms. In 2022, at least three-quarters of large firms say they

always or almost always use NPV and IRR in capital budgeting, somewhat fewer than 20 years earlier

(Graham and Harvey, 2001). Though not shown in the table, significantly more shareholder-focused firms[21]

and significantly fewer family firms rely on NPV, as do significantly more firms with CEOs whose pay is

tied to stock performance (above the median in performance pay). These findings are sensible given that

maximizing NPV is consistent with creating wealth for equityholders. In addition to NPV and IRR, many

firms rely on simple investment decision rules like payback and return on invested capital (ROIC), which

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[21] On a scale of 0 to 100, where 0 would mean a company should be run for the benefit of only shareholders (and 100 would mean only for the benefit of stakeholders other than shareholders), by shareholder-focused firms I mean companies that choose <=40 (see Figure 22).

as commonly applied do not directly account for risk or the time value of money. Among small firms (revenues < $1B), payback is far more prevalent than NPV or IRR, which written comments imply reflects constraints on funding, time, or financial sophistication.

Comparing preferred capital budgeting methods over the past two decades provides evidence of several of the unifying themes described in the introduction: stickiness in the rankings over time;[22] and the popularity of simple, short-horizon rules (like payback and ROIC). Open-ended survey responses in Appendix 3 provide details about why some firms rely on non-NPV decision rules rather than emphasize NPV as much as textbooks recommend: liquidity needs, a lack of sophistication, and a preference for simple decision-making. The appendix responses also note that NPV is often used to support decisions that are driven by strategic or qualitative objectives.[23] Future research should explore these issues. Do decision-makers shy away from relying on the detailed calculations of cash flows and discount rates, and if so why? Does business education sufficiently stress how to implement capital budgeting when facing heightened uncertainty, a short planning horizon, or binding constraints?[24] At the same time, usage of simulation and real options techniques has increased. Could these trends reflect the changing nature of firms and the characteristics of their cash flows?

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[22] Confirming that not much has changed is important. Empirical studies that use several decades or more of data often implicitly assume that the underlying processes explaining corporate behavior have not changed over these decades, to justify using one specification to study all of the data, even as the nature of assets and products produced by the companies have often changed substantially over the decades. My evidence is of course about stability of decision-processes, not necessarily stationarity of data distributions, though they could be related. Relatedly, though one should be cautious comparing very different samples, there is evidence of changes in the popularity of NPV in the decades preceding 2000. In a sample of about 100 very large firms, Gitman and Forrester (1977) find that in the mid-1970s only 10% (26%) of firms used NPV as their primary (secondary) decision rule, in comparison to IRR 54% (14%), accounting rate of return 25% (14%), and payback 9% (44%).

[23] Graham et al. (2015) show that 70% of US firms report that internal capital allocation is affected by the reputation of the manager requesting funding and nearly half indicate that managerial 'gut feel' affects investment decisions.

[24] Mukhlynina and Nyborg (2020) use surveys to document the valuation methodologies used by practitioners (professional analysts in their case). They find that 84% of professional analysts always or almost always use multiples valuation techniques, with DCF (i.e., NPV) being second most popular. Like what I find for CFOs, they find several simplifications implemented by analysts; for example, using the CAPM rather than a multi-factor model to estimate the cost of equity, and not properly accounting for tax benefits when calculating WACC. They argue that the gap between theory and practice in valuation is fairly wide and that work peers have a greater influence on the approach a given analyst uses to perform valuation than does financial education; they argue that financial education within the workplace might help close the theory vs. practice gap.

II.B Discount Rates and Hurdle Rates

The popularity of IRR indicates that many businesses compare expected investment returns to a hurdle rate. Survey analysis shows that these hurdle rates differ from standard cost of capital estimates. First, for two decades at least, hurdle rates on average have built in a 6% 'buffer' above the cost of capital (Figure 3; see also Jagannathan et al., 2016). A buffer is apparent in all industries (not shown) and types of firms (see Table II). The effective buffer may be even higher: A June 2017 Duke CFO survey shows that only 1-in-5 companies say they accept all projects whose expected return exceeds the stated hurdle rate. Some firms indicate that setting a high hurdle rate helps them focus on the "best" projects; however, standard textbook logic is that setting a hurdle rate higher than the cost of capital may cause firms to pass up value-creating projects.

Figure 3: **Hurdle Rates and the Cost of Capital**

This figure displays the time series of hurdle rates and the weighted average cost of capital (WACC), based on different surveys. Each blue square displays the average hurdle rate given by firms from that survey. Each orange diamond displays the average WACC given by firms from that survey. For example, the blue and orange points on the far right display the hurdle rate and WACC (15% and 9%, respectively) for firms from the 2022 survey (March 2019 wave). This figure expands on a figure in Sharpe and Suarez (2021); original data are from Summers (1986; Fortune 200 firms), Poterba and Summers (1995; Fortune 1000), Meier and Tarhan (2003; Northwestern University alumni who are CFOs) and various Duke CFO surveys from 2007 to 2019; interest rates are from FRED.
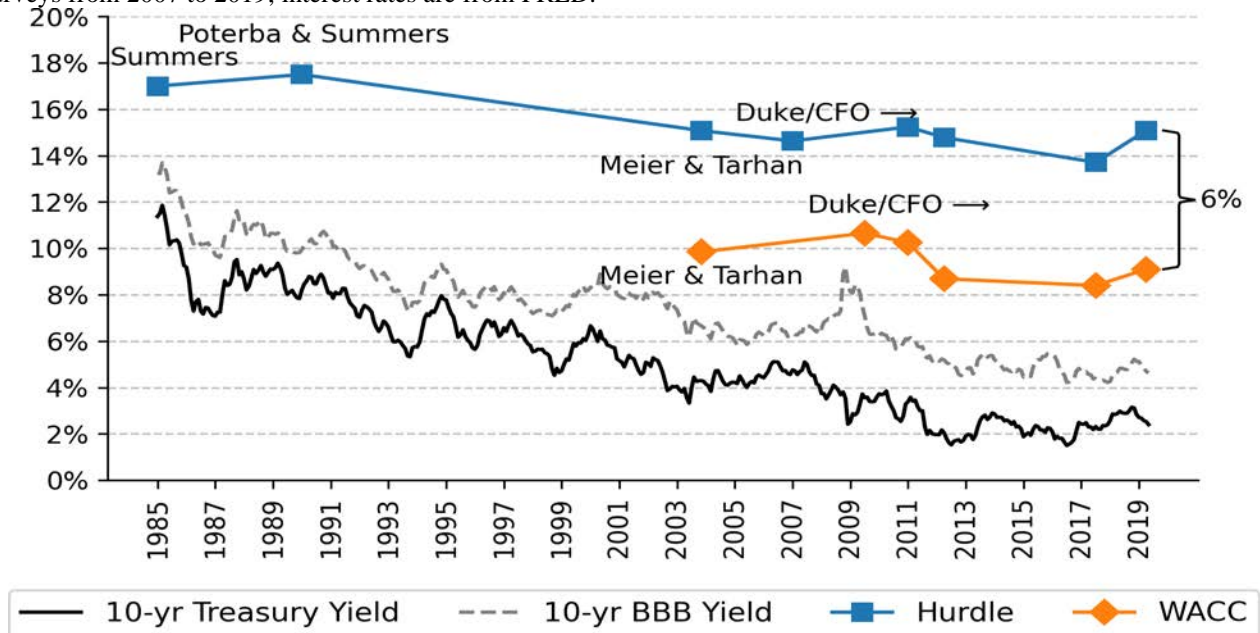
Adding a buffer is conservative in that it leads firms to choose projects that they believe to be NPV>>0. The conservatism inherent in a high hurdle rate may reflect a practical consideration if firms frequently underestimate the severity or likelihood of left-tail outcomes (miscalibration), combined perhaps with agency considerations to avoid negative surprises (see discussion in the introduction and Section III).[25] A high hurdle rate buffer is consistent with high perceived costs of reversing an investment decision: even if a project ex post underperforms to some degree, having used a buffer makes it less likely the project's performance will fall below the threshold that would involve changing from a yes to a no decision, which managers might prefer to avoid.[26] Alternatively, it may reflect that it is very hard to identify positive NPV projects or projects that pay back quickly.

Not only is there a buffer, the previous chart shows that hurdle rates are very sticky, having changed only about two or three percentage points over the last 35 years; this suggests that companies do not base hurdles tightly on a current, market-based cost of capital.[27] Over the past 35 years, market interest rates, a key component of cost of capital calculations, have fallen by about 1000 basis points. Hurdle rates might remain high in the face of falling interest rates if risk premia increased in an offsetting manner over the past

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[25] Decaire (2021) uses oil drilling data to argue that the hurdle buffer is tied to idiosyncratic risk.

[26] Duke CFO survey explanations for adding a hurdle rate buffer (above the cost of capital) include rationing due to financial constraint, operational constraints including on management time (see also Jagannathan et al., 2016), the desire to pursue the best available among all projects, accounting for a margin of error in analysis, addressing dimensions (e.g., risk) not fully captured in IRR calculations, and choosing projects with a shorter payback period. Though not expressed this way by CFOs, when a company says it does not pursue a project due to constraints (e.g., time or funding), this may indicate that if the project were in fact pursued anyway, it would be at higher cost and lower NPV than initially estimated. Finally, McDonald and Siegel (1986) and Ingersoll and Ross (1992) argue that if the option value of waiting to start a project is sufficiently large, this may justify not investing in the project today even if its current NPV is positive. McDonald (2000) shows that under certain assumptions, using a hurdle rate higher than the true discount rate aligns with 'waiting to invest' behavior that approximates optimal decision-making.

[27] See Sharpe and Suarez (2021) for analysis of the interest rate sensitivity of investment. Also, in Fig. 3, I performed unreported analysis to control for sample composition through time; this analysis reveals no statistical change in the hurdle rate from one survey to the next after propensity-score matching each sample to the 2022 survey sample. Relatedly, Appendix 4 presents evidence that approximately 60% of North American firms indicate that they changed their hurdle rate once or not at all in the past decade. CFO explanations for why hurdle rates are so steady include i) a belief that long-term investments should be picked by metrics that do not change much from year to year, ii) for some firms hurdle rate calculations are not the key metric by which investments are chosen, and iii) a desire not to make decisions rigidly based on precise numerical calculations (e.g., precise cost of capital calculations). One CFO told me that his firm kept its hurdle rate at 17% for decades; they finally reduced it in 2015 by four percentage points, reflecting a pent up need for change. In addition, many companies estimate WACC each year but do not simultaneously change the hurdle rate. One setting where firms do frequently change discount rates is M&A, where WACC plays a bigger role; possibly in part because this is what investment banks provide in their analyses.

35 years; however, that is not the prevailing view (Binsbergen, 2020). One executive told me that by remaining invariant the hurdle rate was 'sacred' in her company, providing a clear benchmark to facilitate decisions by mid-level employees (e.g., a coordinating device); this same executive said that changing the hurdle frequently would make it less sacred and could lead to less unified decision-making across the firm. Whatever the underlying cause, hurdle rates empirically reflect conservative, simple and sticky corporate decision-making and directly affect corporate investment outcomes.[28] Moreover, it is difficult for monetary policy (via reducing interest rates) to spur corporate investment because sticky hurdle rates make a reduced true cost of capital less relevant.

Among the minority of firms that changed their hurdle rates at least twice during the past decade, they changed it because of changes in borrowing costs, the risk premium, or cost/risk of equity (Figure 4).

Figure 4: **Reasons Companies Change Hurdle Rates**

This figure displays CFO responses to the following question about why their companies change their hurdle rates: *The last time you changed your hurdle rate, why did you change it?* Only firms that changed their hurdle rate at least two times in the past decade were asked this question. The bars display results for the 2022 Duke CFO survey (March 2019 wave). For example, 39% of firms changed their hurdle rates due to changes in borrowing costs.
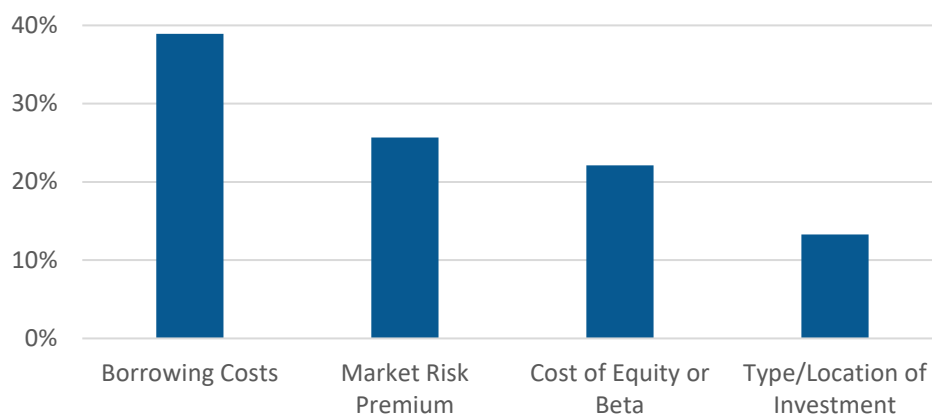
The Cost of Equity is an important component of the cost of capital and the standard calculation of discount rates. As in other policies, there is notable inertia in the ranking of methods to calculate the cost of equity: As in Graham and Harvey (2001), in 2022 firms commonly rely on the CAPM to estimate the cost of equity

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[28] Graham and Harvey (2001) document another simple capital budgeting practice: Using a single discount rate to value projects in a multi-divisional firm, rather than using an industry- or country-specific discount rate. Kruger, Landier, and Thesmar (2015) find empirical evidence that firms are more likely to do this when the degree to which this is a costly mistake is small. See also Stein (1996).

(Figure 5). Relative to the past, in 2022 large, public companies more often account for extra risk factors when estimating the cost of equity, though they most often use the 1-factor CAPM (Table III).[29] Widespread reliance on the CAPM, even in the face of evidence of the model's empirical shortcomings, suggests that firms rely on straightforward, simple and familiar techniques. The enduring popularity of the CAPM may also reflect teaching emphasis. Finally, small firms in 2022 often say that they use "a cost of equity estimate that we have not changed in many years," again indicative of inertia.

Figure 5. How Do Companies Estimate the Cost of Equity?

This figure displays CFO responses to the following question: *How do you determine your firm's cost of equity capital? {0 = Never, 1, 2, 3, 4 = Always}*. The percent who answered 3 or 4 are presented. CFOs are asked this question only if they first answered "Yes" to the question: *Does your firm estimate the cost of equity capital? {Yes, No}*. The blue bars display results for the 2022 Duke CFO survey (March 2020 wave); the orange bars display results from Graham and Harvey (2001). Within each blue and orange bar, the solid portion displays responses for large firms (revenue above $1 billion), and the white, crosshatched portion displays responses for small firms (revenue below $1 billion). In 2022, for example, 83% of large firms (29% of small firms) always or almost use the Capital Asset Pricing Model (CAPM) to estimate their firm's cost of equity capital.
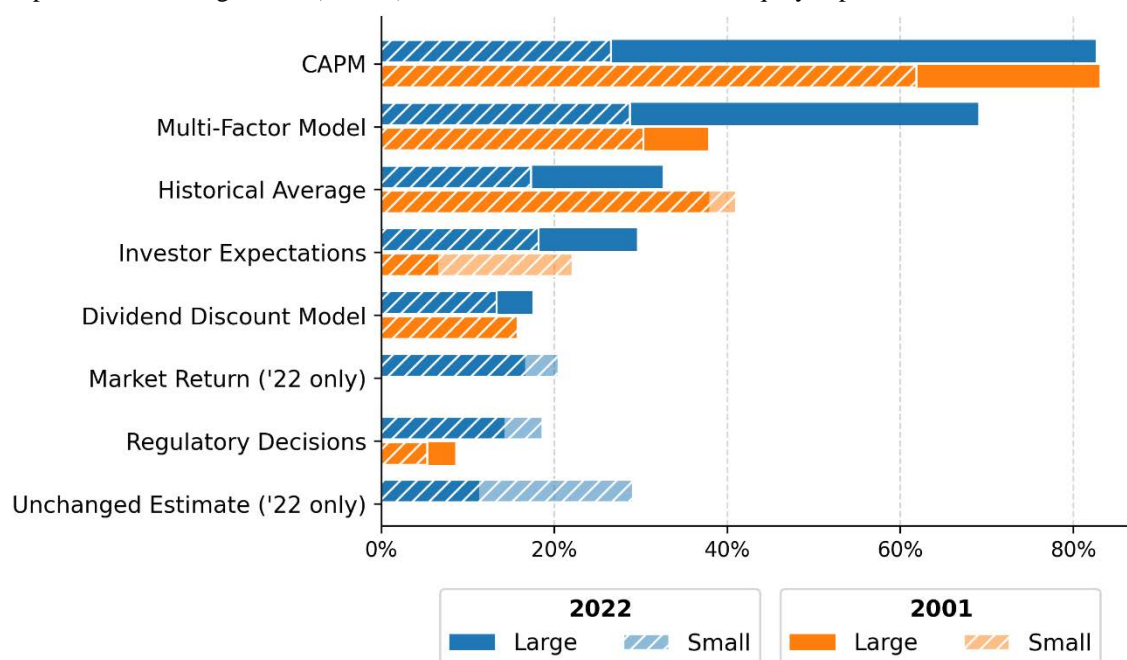
II.C Economic variables that explain changes in corporate investment

Section II so far emphasizes internal processes and calculations related to corporate investment. This section discusses economic forces that affect corporate investment, with the hope of informing academic modeling.

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[29] Graham and Harvey (2001) find that the extra risk factors firms explicitly incorporate into their discount rates are related to interest rates, inflation, and foreign exchange risk more so than classic asset pricing factors. Gormsen (2020) examines Duke CFO survey data on WACC and backs out cost of equity estimates; he estimates that the market beta, size, and book-to-market factors of Fama and French (1993) explain 37% (26%) of the cross-sectional variation in cost of capital (hurdle rate) estimates.

Figure 6. Reasons that Capital Spending Outcomes Differ from Forecasts

This figure displays CFO responses to the following question about why their firm's 2019 capital spending outcome differed from its 2019 forecast: *Why was your actual 2019 capital expenditures higher/lower than your 2019 forecasted capital expenditures?* The presented results are for firms that first chose "Capital Expenditures" (possibly along with another item) in response to the following question: *Considering the actuals vs. forecasts shown in the table above, for which items did the difference between actual and forecast have the biggest impact on your firm? (check up to two)* The blue (orange) bars display results for firms with 2019 actual capital spending greater than (less than) 2019 forecasted. For example, among firms for which realized 2019 capital expenditures were less than their 2019 forecast (orange bar), 50% of these firms say that "Current Profits" were a primary reason that they undershot capital spending.

Current Profits
Demand for our Product
Cash Holdings
Expected Future Profits
Economic Uncertainty
Access to Borrowing
International Trade/Tariffs
Political Uncertainty
Actions of Competitors
Planned Acquisition or Divestiture
Price/Availability of Capital
Borrowing Interest Rate
Domestic GDP Growth

■ Actual Below Forecast in 2019   ■ Actual Above Forecast in 2019

Many models link changes in outcomes to exogenous shocks that propagate though the economic system (Strebulaev and Whited, 2012). The survey asked CFOs which economic shocks are most important in terms of causing corporate investment in 2019 to deviate from plan (Figure 6). CFOs indicate that shocks to demand and profits are important investment drivers. Cash and current profits are particularly important for firms whose actual capital spending in 2019 fell short of plan (orange bars), suggesting that these firms may have faced financial constraints or a high cost of external funds, and is consistent with cash flow-sensitivity of investment. More broadly, the impact of current profits on investment spending is consistent with the near-term focus theme. Among firms that exceeded spending plans in 2019, some explanations point to events outside of the firm's control (e.g., demand), consistent with a difficulty in anticipating tail risks. The results also indicate that (in 2019, when interest rates were low) corporate investment was not interest-rate sensitive, consistent with the nearly static hurdle rate described above. Using various questions,

Duke surveys in 2004Q2, 2010Q4, 2012Q3, 2013Q3, and 2014Q1 also document a lack of interest rate sensitivity of investment. More on this below (see also Sharpe and Suarez, 2021).

As just discussed, Figure 6 presents evidence on shocks that cause firms to deviate from planned investment. A separate question asks which macroeconomic variables are ex ante expected to cause a firm to realize a good, bad, or middling scenario. For US firms, GDP growth and consumer spending are most important (see Figure A6.1). The key variables shown in these two charts may help inform future economic inquiry and structural models.

Investment and Capital Budgeting TAKEAWAYS:

- Capital budgeting and cost of equity decision rules are generally simple.
    - Decision rules of small firms appear to reflect constraints or liquidity concerns.
- Hurdle rates, capital budgeting methods, and cost of equity methods are sticky through time.
- Firms set Hurdle >> WACC, which is conservative in the sense of firms only investing in projects they expect to be NPV>>0, which may be by design to compensate for underestimating the likelihood or severity of possible downside outcomes.
- Corporate investment does not appear sensitive to interest rates (at the time and setting of the survey).
- Profit and demand shocks cause capital investment to deviate from plan.

III. Corporate Planning and Internal Forecasts

Given that hurdle rates don't change much through time, changes in cash flow forecasts are a more likely determinant of within-firm variation in investment.[30] And yet, research is sparse about the planning process that leads to cash flow forecasts, as well as how planning underlies and affects other policy decisions explored in this paper.[31] This section lays out basic facts of corporate planning, with the objective of better understanding the forecasts and processes that underlie policy decisions and outcomes. The section explores the short horizon of reliable planning forecasts, miscalibration, how firms dynamically change forecast and

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[30] Using data from the Duke CFO survey, Gennaioli, Ma, and Shleifer (2016) confirm that cash flow expectations are a significant predictor of both capital spending plans and realizations. Also, as reported in Section II, the importance of demand, profits, and overall economic activity imply that cash flows are important investment drivers.

[31] A growing literature explores expectations of managers (e.g., see Ben-David et al. (2013), Gennaioli et al. (2016), Barrero (2022), and Boutros et al. (2021)), investors (e.g., Greenwood and Shleifer (2014), Andonov and Rauh (2020), Giglio et al. (2021)) and macroeconomic outcomes (e.g., Malmendier and Nagel, 2015; Coibion and Gorodnichenko, 2012, 2015; Bordalo et al. (2020b)).

policy variables in reaction to forecast error and economic shocks, and the paramountcy of sales growth projections. Appendix 5 presents additional details.

Scenarios: CFOs indicate that on average their companies incorporate three scenarios in their planning. The scenarios generally apply to company-wide outcomes (though they occasionally apply to a particular division or project),[32] and most scenarios are of a downside/base case/upside nature. The base case reflects the "most likely" outcome (not necessarily the expected value) and is the basis of most key budgeting and cash flow forecasts. Most firms use downside scenarios to plan for contingencies (e.g., what and how much to cut if a bad outcome occurs), which is consistent with trying to avoid or manage the costs of distress[33] (see Table A6.I in Appendix 6) and implies that mistakes that lead to missing on the downside are costly. Upside scenarios often lay out stretch goals and are generally used to motivate employees. Downside and especially upside scenarios are often developed in less detail than the base case.[34]

Forecast horizon: Many companies develop a "5-year plan," with the first and possibly second years being the basis for spending budgets. Despite developing 5- or even 10-year plans, CFOs indicate that the horizon for reliable planning information is much shorter. A 2018Q3 Duke CFO survey finds that U.S. companies feel that only the first two years of their forecasts are reliable, versus about 3 years of reliability as of 2013 (Figure 7). Over this same 2013 to 2018 period, there was a coincident drop of about 1-2 years in the average life of investment projects. Thus, technologic and economic uncertainty reduced the horizon over which plan numbers are thought to be reliable, accompanied by a coincident reduction in the horizon of projects

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[32] Large firms are more likely than small firms to create scenarios for divisions, though the survey did not ask whether they aggregate these up to create the company-wide scenarios.

[33] Evidence is presented below that concerns about distress also are important in capital structure decisions.

[34] Base case scenarios are the most fully developed and are central to the business plan. Downside scenarios focus primarily how firms would react to negative outcomes, though they do not necessarily lead to fleshed out forecasts or pro forma financial statements. Upside scenarios are often akin to stretch targets for a few variables and often are not fully fleshed out. (Bolton and Faure-Grimaud, 2009, model action plans that are intentionally incomplete due to time-costs of deliberating.) A common perspective seems to be to expect the typical and prepare for the bad (though due to miscalibration tail outcomes may not be fully anticipated), with less formal attention paid to exploiting upside opportunities. One wonders if this approach prepares the typical firm to exploit upside opportunities. Under what conditions is this approach to planning optimal? What are the potential negative consequences of this arrangement?

being chosen. This form of 'short-termism' is driven by limited ability to forecast the future (versus the notion that bad governance or external pressures alone lead to short-termism; see also Graham, Harvey, Rajgopal (2005), Bebchuck et al. (2015) and Kaplan (2018)). This short horizon affects other corporate decisions. An interviewed CFO said a short reliable planning horizon leads to conservative decision-making because conservative decisions leave firms with more options and flexibility in the future (see also Barry et al., 2022). Near-focused decision rules like payback also align well with short horizon planning and projects.

Figure 7: Reliable Planning Horizon and Project Life

This figure displays information about the horizon over which CFOs believe that their corporate plans are reliable (Panel A) and the productive life of their investment projects (Panel B). Data are from the September 2018 Duke CFO Survey. In Panel A, the blue bars display how many years into the future firms in the 2018 survey could plan into the future; the orange bars display the recollection of CFOs about the reliable planning horizon as of five years earlier (i.e., in 2013). The bars in Panel B display the analogous averages for the length of the productive life of a project.

Panel A: Can reliably plan T years into future   **Panel B: Expected life of a new project**
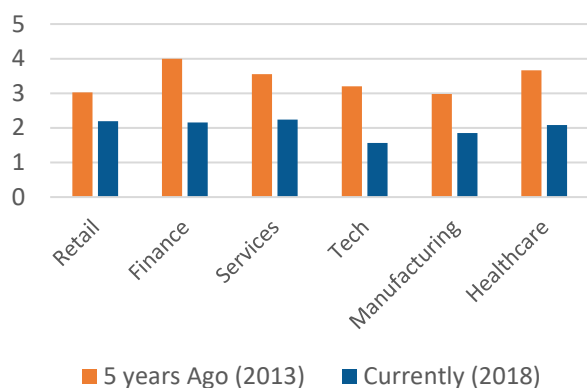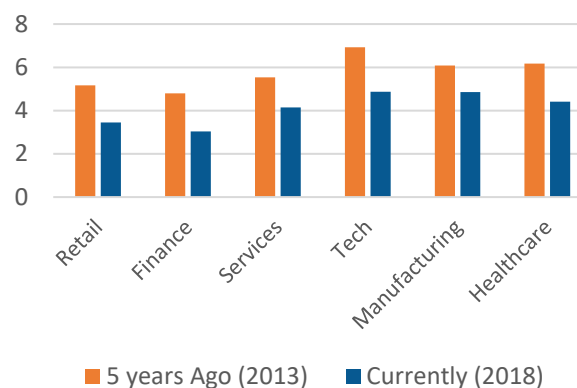
Revenue focus: The 2019 wave of the survey gathered forecasts for about one dozen variables, including sales, spending, and hiring (see Figure 8). The 2020 survey asked CFOs to report actual values for these same variables, allowing me to determine forecast errors (which are investigated below). The CFOs indicate that among variables that companies forecast, missing a revenue forecast is most consequential (Figure 8), suggesting an important top-down element in planning for both large and small firms.[35] Missing a profit

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[35] This raises several interesting possibilities: 1) that topline revenue growth is a primary objective of the firm and/or 2) that revenue acts as a summary statistic for important corporate outcomes. Interestingly, only about half of NYSE firms reported sales revenue prior to the Securities and Exchange Act of 1934 explicitly requiring that sales be reported (Binz and Graham, 2022), implying that 3) managers view sales forecasts as strategically important. Baumol (1959) explores maximizing revenues subject to a profit constraint.

margin target is the second most consequential forecasting error, especially for large firms. (See Appendix

Table A5.I for information about forecast accuracy for each forecasted variable.)

Figure 8. Which Internal Forecasts Have the Biggest Impact?

This figure displays CFO responses to the following question: *Considering the actuals vs. forecasts* [for 2019, as] *shown in the table above, for which items did the difference between actual and forecast have the biggest impact on your firm? (check up to two)* This question appeared on the 2022 Duke CFO Survey (2020 wave). The blue bars display responses for large firms (revenue above $1 billion), and the orange bars display responses for small firms (revenue below $1 billion). For example, 74% of large firms (85% of small firms) say that the difference between actual and forecasted revenue growth had among the biggest two impacts on their firms. The denominator for each variable is the number of firms for which the CFO provided data on both the actual and forecasted values of a given variable.
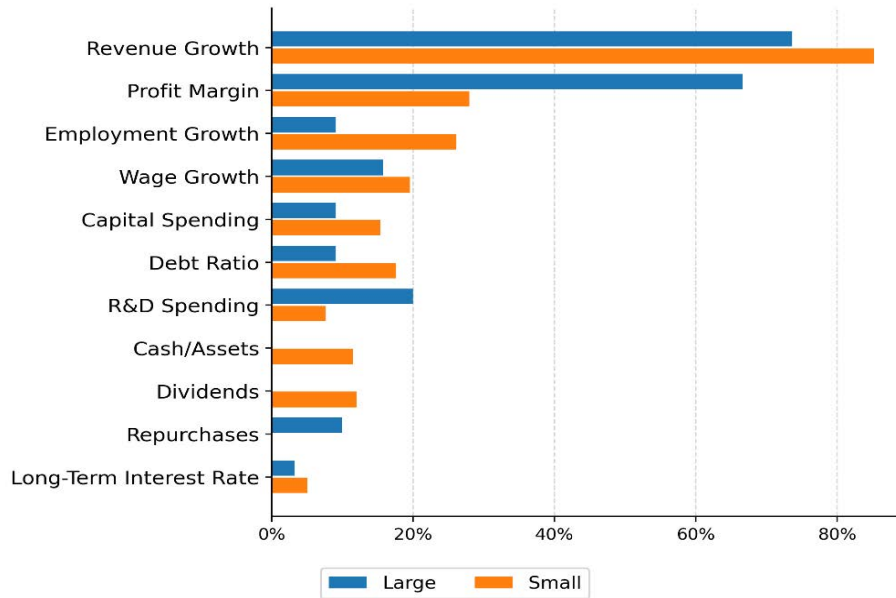
The survey collected (untabulated) evidence consistent with self-attribution bias in that executives are more likely to "blame the market" if revenues miss on the downside (relative to forecast) and take credit if they over-perform: When the realization exceeds the forecast, 64% attribute this revenue outperformance to actions or performance of the firm, and only about 36% attribute it to changing market conditions. When the realization falls short of the forecast, 62% blame the market and only 44% attribute to firm-specific actions or performance. Such behavior can lead forecasters to narrow distributions too much (widen too little) after past success (failure), leading to posterior distributions that are too narrow, and thus contributing to miscalibration.[36]

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[36] See Hertwig et al. (2004), Moore et al. (2015), Libby and Rennekamp (2011), and Gervais and Odean (2015) for related research. Added to miscalibration, Payzane and Woodford (2021) argue that individuals are "blind to outliers" (perceive tail

The rest of this section explores 1) whether planning forecasts are miscalibrated, underestimating the left tail in particular; and 2), how firms react dynamically to forecast error and economic shocks. For example, do companies update their forecasts to widen the distribution in the direction of a missed forecast and/or do they alter real policy choices? Recall that the goals of this section are to better understand internal forecasts and corporate planning in their own right, as well as to provide context to understand how planning might drive many corporate decisions.

Miscalibration: To determine whether a forecast is miscalibrated, one ideally would study a long time-series of forecast distributions and outcomes. For example, for a well-calibrated forecast, one would find that about half of ex post realizations fall within the ex ante interquartile range. Research indicates that executive forecasts are miscalibrated, meaning that forecast distributions are too narrow and underestimate the frequency of occurrences in the tails of the distribution. For example, Ben-David et al. (2013) and Boutros et al. (2021) study the Duke CFO survey sample and show that CFOs are miscalibrated in that only about 30% (rather than 80%) of ex post realizations of S&P500 forecasts fall within ex ante 10th to 90th percentiles; and Ben-David et al. show that managerial IRR forecasts tied to corporate investment are also miscalibrated. My respondents significantly overlap with the same pool of Duke CFO survey participants as in Ben-David et al. and Boutros et al.; and in fact, my CFOs are similarly miscalibrated in that only 26% of S&P500 stock return realizations fall within the ex ante 10th and 90th percentiles for my subsample of CFO's.

In the 2022 surveys, CFOs provided a forecast of the 10th and 90th percentiles and best guess forecasts of revenues for 2019 and 2020. While my sample is too short to robustly demonstrate miscalibration, as shown in Figure 9, the 2019 forecasts underestimate the lower and upper tails of own-firm revenue forecasts.[37] To provide context, at year-end 2018 economists in the Livingstone survey

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events as less extreme than they are) due to a neurobiological phenomenon that leads humans to allocate neuro resources to the most likely outcomes.

[37] Examining SBU survey data from 2014 to 2019, Barrero (2022) documents substantial miscalibration in sales forecasts and also that managerial forecasts over-extrapolate (good/bad past performance leads to forecasts of continued good/bad performance).

expected 2.4% (2.3%) annualized real GDP growth in the first (second) half of 2019. Actual real GDP growth for 2019 was 2.3%, indicating that 2019 turned out similar to expectations. Having said that, the Federal Reserve reduced interest rates in the second half of 2019 in response to perceived moderate economic weakening.

Figure 9. Revenue Calibration by Region

This figure explores the calibration of CFO revenue forecasts, comparing 2019 actuals to 2019 forecasts. Data are from both waves of the 2022 CFO Survey. The first wave (2019) asked CFOs for the 10th percentile, best guess, and 90th percentile revenue growth forecasts for the year 2019. The second wave (2020) then asked CFOs for their firm's 2019 revenue growth realizations. The blue bars display percentage of actual revenue falling below the 10th percentile of the forecasted value. The orange bars display percentage of actual revenue falling within the 10th and 90th percentiles of the forecast distribution. The gray bars display percentage of actual revenue falling above the 90th percentile forecasted value. For example, 28% of CFOs in the US say that 2019 actual revenues for their firms were below the 10th percentile of their 2019 forecasted revenue distribution.
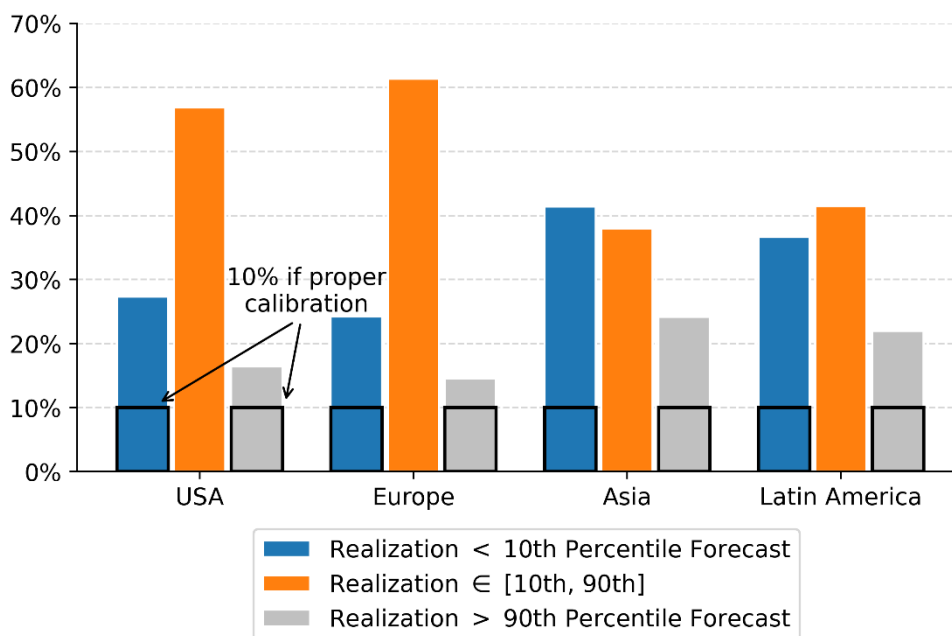
As previously discussed, one theme that cuts across my analysis is that many corporate policies appear to be conservative, which I argue may serve to offset the underestimation of the likelihood (and possibly the severity) of left tail outcomes.[38] Future research should investigate additional consequences of miscalibration. While being downside miscalibrated may have negative consequences should the downside

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[38] A managing director at an investment bank describes that when the price of oil was $100/barrel, the worst case scenario his energy client firms considered in their 5-year plans was $80/barrel (either because they did not think a lower price was reasonable or because they did not want to recognize a lower price in their plans). After weeks of haranguing, the banker was able to persuade the energy firms to consider a worst case of $70/barrel. Shortly thereafter, the price of oil fell well below $70 and remained there for many years.

occur, there may be career concerns for which ex ante underestimating the downside (and instead emphasizing the upside) may be beneficial for executives. For example, if a company presents forecasts with substantial downside to bankers or credit markets, and competitors do not, the firm may not obtain needed funding. Also, it may be difficult for managers who focus on the downside to climb the company ladder to the C-suite (e.g., Goel and Thakor, 2008), which would give managers incentive to project confidence (rather than emphasize downside possibilities).

Dynamic reactions to economic shocks and missed forecasts. Given the importance of corporate planning in creating cash flow projections to aid many decisions, I explore how corporate forecasts change in reaction to changing economic circumstances. The rest of this section explores 1) whether, conditional on a missed 2019 forecast, companies change the first or second moments of their 2020 forecasts and real decisions in response; and 2) how corporate plans change in response to the enormous COVID-19 shock that occurred in March 2020. This analysis should be updated and expanded in future research.

As background, Boutros et al. (2021) use data from 2001 to 2017 to examine 10th and 90th percentiles and best guess forecasts of S&P500 returns from CFOs in Duke's survey (the same survey population as my sample, though not necessarily exactly the same respondents as in my analysis). They find that when a realization falls below (above) the 10th (90th) percentile of a CFO's ex ante forecast, in her next forecast the CFO reduces the lower (increases the upper) bound. In this sense, CFOs 'learn from their mistakes' and miscalibration is somewhat reduced; however, the learning is partial and improvement plateaus after a few quarters. Thus, forecasts are sticky in that they do not fully reflect all new information.

The surveys examined in this paper study corporate decisions and plans. The CFOs provide 10th and 90th percentile and best guess forecasts of 2019 revenues (blue arrows in Figure 10) and 2020 forecasts by the same firms (orange). For "accurate" 2019 forecasts (2019 realization falls within ex ante 10th and 90th percentiles), the width of the distribution shrinks in 2020. For "low miss" and "high miss" firms (2019 realization below 2019 forecasted 10th percentile, or above the 90th, respectively), the 2020 distribution

width remains relatively unchanged. Therefore, in a relative sense, distributions are wider for firms that miss a previous forecast. The best guess forecast falls more for firms that underperformed in 2019 (though the decrease is not statistically different than for the other two subgroups). Thus, for revenue forecasts within this sample period, the 2nd moment of forecast distributions reacts more to forecast error than does the 1st moment.

Figure 10. Impact of Past Forecast Errors on Future Forecasted Revenue Distributions

This figure displays the distributions of 2019 and 2020 forecasted revenue, conditional on the accuracy of the 2019 forecast as reflected on the x-axis. Data are from both waves of the 2022 CFO Survey. The first wave (conducted in March 2019) asked CFOs for revenue growth forecast distributions for 2019. The second wave (conducted in March 2020) then asked CFOs for the same information for their revenue growth forecast distributions for 2020, as well as 2019 realizations. To minimize possible effects of the COVID shock on 2020 numbers, only responses received before March 15, 2020 are included in this analysis. The blue bars display the 10th percentile (lower arrowhead), best guess (dot) and 90th percentile (upper arrowhead) averaged across firms for 2019 revenue growth forecasts. The orange bars display the same for 2020 revenue growth forecasts created in 2020. Starting from the far right, the x-axis divides firms into those whose realization was above the 90th percentile forecast in 2019, those whose realizations fell between the 10th and 90th percentiles, and those whose realization was below the 10th percentile forecast for 2019.
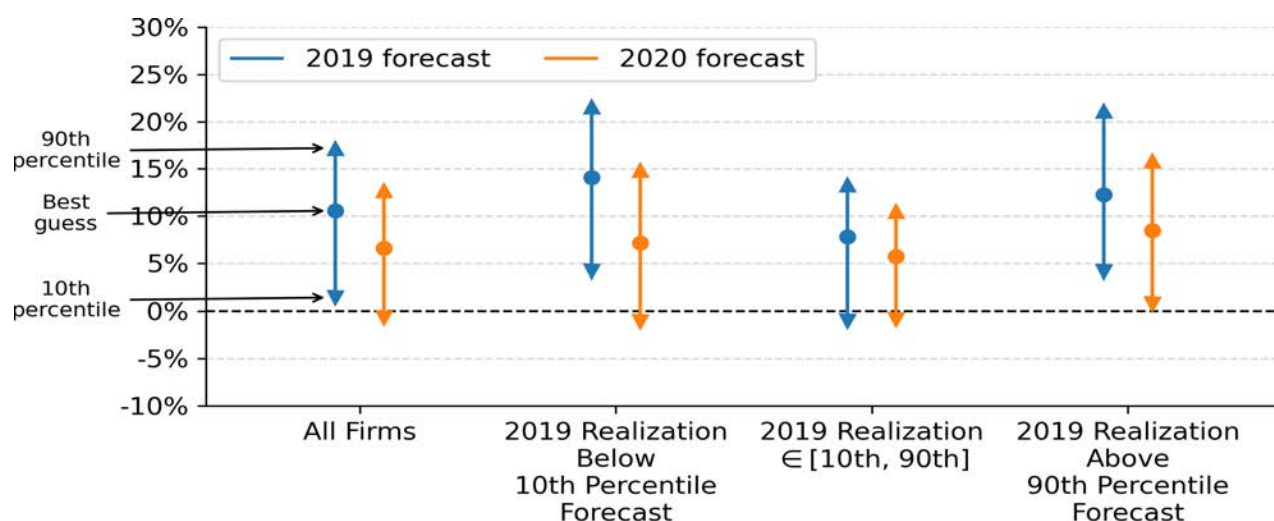
Figure 11 presents 2020 forecasts conditional on the negative shock of COVID-19. As shown in Barry et al. (2022), before mid-March 2020 most U.S. companies thought that any effects of COVID-19 on the U.S. economy would be minimal. Consistent with this perspective, the two lines in the middle of the chart indicate that, before March 15 most firms' views of their 2020 sales prospects were similar to their 2019 views, whether their assessment of their own-firm financial risk due to COVID was high (orange) or low (blue). In contrast, on March 15 and later, as it started to become clear that the U.S. might experience significantly negative COVID effects, the distribution of possible 2020 outcomes widened considerably for

both high- and low-risk firms. In particular, these firms (especially high-risk firms) started to consider much worse left tail possibilities than considered before March 15. Interestingly, the low-COVID-risk firms had similar pre- and post-March 15 best guess forecasts and on average increased their upside forecasts.

Figure 11. Impact of COVID-19 Shock on Forecasted 2020 Revenue Distributions

This figure displays the revenue distribution forecasts for 2020 among firms that report that they face different subjective levels of coronavirus-related financial risk, grouped by forecasts made before and after March 15, 2020. The blue and orange bars display revenue distributions for firms that say they face low and high coronavirus-related financial risk, respectively. The top arrowhead is the 90th percentile forecast and the bottom arrowhead is the 10th percentile; the dot is the average 'best guess' forecast. The lines on the far right represent firms that provided their forecasts on or after March 15, 2020 (which was an inflection point for US firms becoming aware of the severity of the COVID crisis). These data are from the 2020 wave of the survey project.
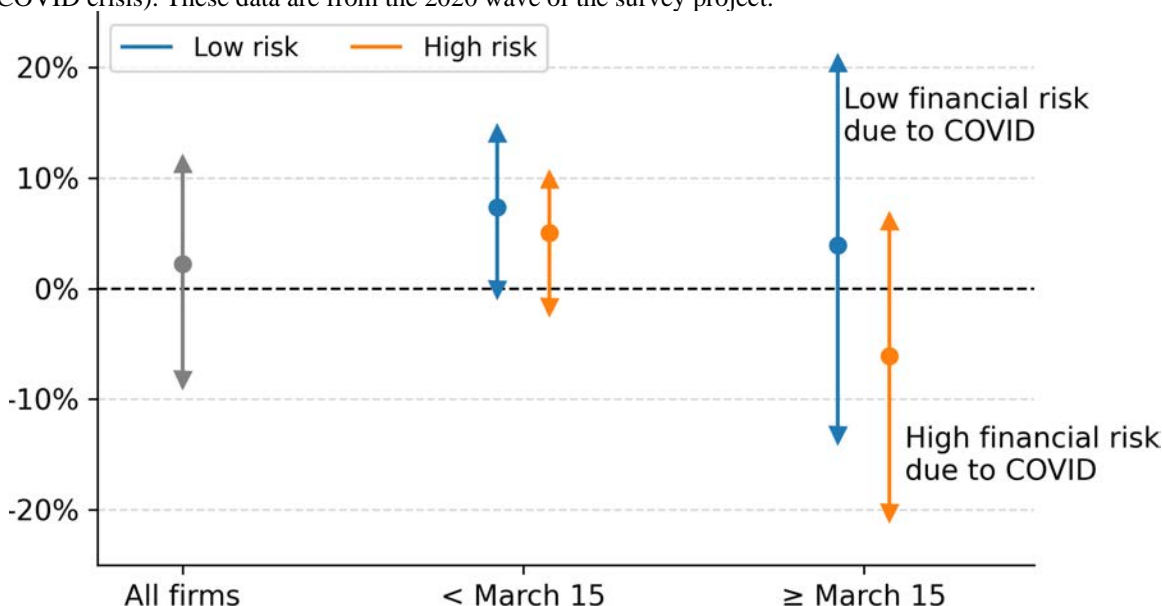
One implication from Figures 10 and 11 is that, relative to a benchmark, forecast errors and negative shocks affect the 2nd moment of ensuing forecasts. Such behavior should be captured in dynamic cash flow or corporate planning models. As discussed above, Boutros et al. (2021) show in their setting that second moment adjustments are in the right direction but relatively small.

Dynamic changes in spending, hiring, and revenues following missed forecasts. Figure 12 explores 2020 capital spending plans after a company misses its 2019 capital spending forecast (and likewise for revenue and employment). Note that the 2020 plans are for firms that responded before March 15, 2020 so as to avoid COVID effects on corporate planning. For capital spending, firms that underspent in 2019 (orange) have strong 2020 plans, as if they plan to make up the difference. The capital spending patterns are consistent with a form of inertia (multi-year objectives).

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Figure 12. Effect of 2019 Forecast Errors on Revenue, Spending, and Hiring Plans for 2020

This figure displays winsorized forecasts of growth in 2020 revenue, capital spending, and employment, conditional on the relation between realizations and forecasts for 2019. The four bars display (separately for each variable) the average forecasted 2020 growth for all firms (blue), firms with realized 2019 growth below the forecasted value for 2019 (orange), firms with realized 2019 growth equal to their forecasted value (gray) and firms with realized growth above the forecasted growth (yellow). The 2020 forecasts were made prior to March 15, 2020 to attenuate the effect of the COVID-19 shock on 2020 forecasts. The sample includes firms that appear in both waves (March 2019 and March 2020) of the 2022 CFO Survey.
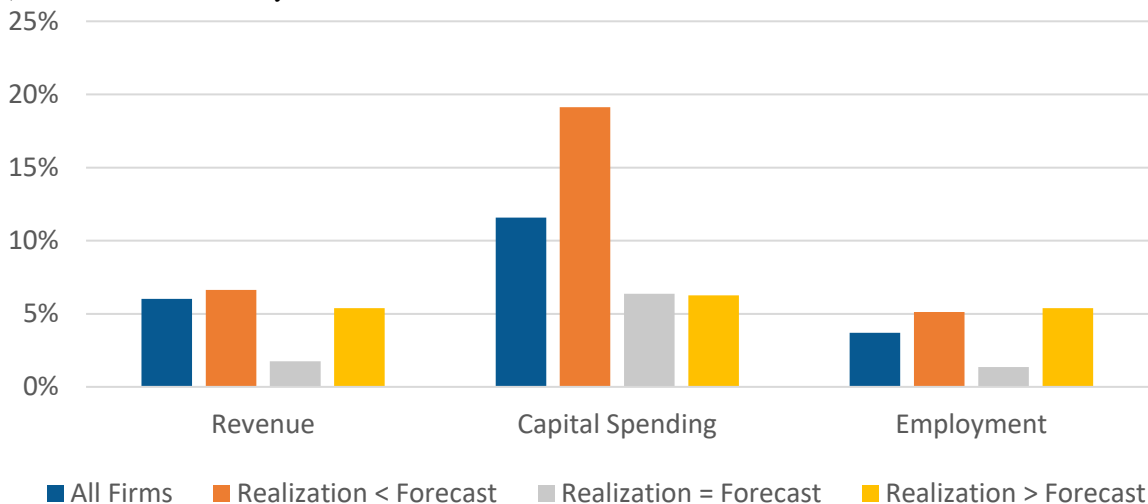
Planning and Internal Forecasting TAKEAWAYS

- Most companies scenario plan, primarily using downside/base case/upside company-wide scenarios.
    - Ex post, GDP growth and consumer spending are the macro forces that most determine whether a firm ends up in a downside, medium or upside outcome (see Appendix 6).
- Forecast distributions are typically too narrow and underestimate the tails of possible outcomes (more than 10% of realizations fall below (above) the forecasted 10th (90th) percentile of the ex ante distribution, indicating miscalibration). I argue that other corporate policies may be designed as conservative to offset downside miscalibration.
    - Executives often take credit for success and blame the market for failure. Such self-attribution may contribute to miscalibration.
- The revenue forecast is paramount (in that hitting/missing the revenue forecast is most important in terms of its consequences on the firm and its plans). Profit margins are second most important.
- An inaccurate forecast in one year leads to relatively wider 2nd moments for forecasts made the following year.
- The COVID shock led to wider forecast distributions in general. For high-COVID-risk firms, expected outcomes fell. For low-COVID-risk firms, upside possibilities increased.
- Capital spending behaves as if it follows a multi-year plan and in this sense exhibits inertia: companies plan to get back on track if the previous year went off-track.
- Creating and modifying plans takes time and resources, which may contribute to infrequent changes in (sticky) corporate policies.

IV. Capital Structure

The survey explores a number of capital structure issues: Do companies have leverage targets? If so, are targets strict or is there an acceptable range (and how large is that range)? How often do targets change? What factors determine the ideal amount of debt? What aspects of financial flexibility are important? Are various sources of external funding fungible once raised? As described below, the key findings reflect stickiness in decision processes, debt conservatism, flexible debt targeting, preserving financial flexibility to invest and to avoid distress, attempts to market time security issuance, and a pervasive view that equity is undervalued. I start with a very basic question: What measure do companies use when they evaluate their debt usage?

Figure 13. How Do Companies Measure Leverage?

This figure displays CFO responses to the following question: *When you consider the appropriate amount of debt for your firm (optimal capital structure), what are the primary metrics your company uses?(rank your top 3)* The blue bars display results for the primary choice. The orange (gray) bars display results for the secondary (tertiary) choice. The results are presented conditional on firm size. Large firms have annual revenue greater than $1 billion, and small firms have annual revenue less than $1 billion. For example, 49% of CFOs from large firms say that their top choice of capital structure measure is Debt/EBITDA (and 74% say it is one of their top three ways to measure debt).
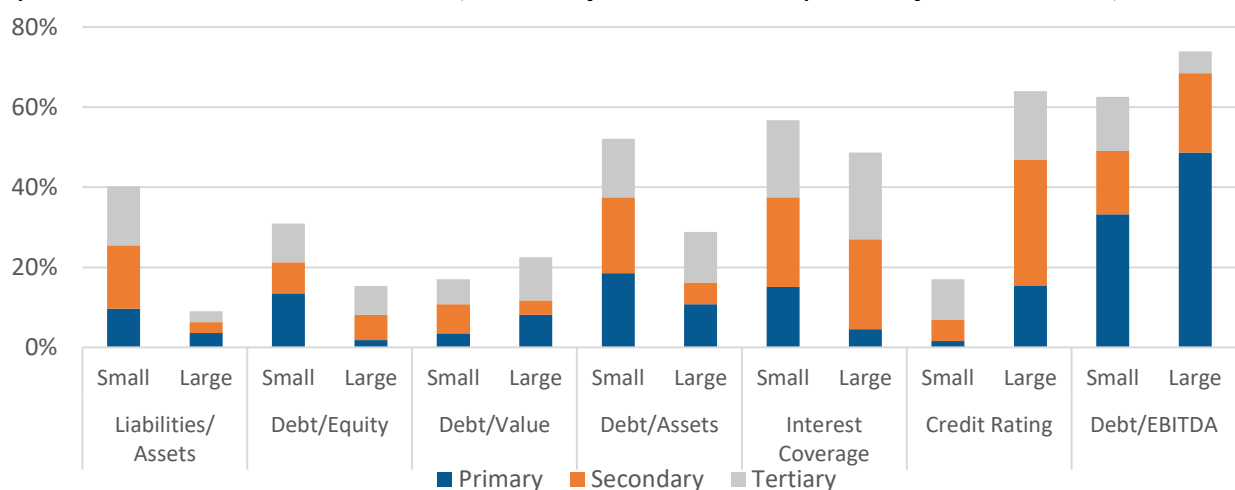
Debt/EBITDA is the most popular metric that firms use to quantify debt usage: more than 70% of large firms and about 60% of small firms rely on this measure as one of their three most frequently used debt ratios (Figure 13; Table IV).[39] Reliance on Debt/EBITDA may be the firm's internal preference or it

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[39] Debt/EBITDA has long been favored by investment bankers, which may promote its usage among CFOs. Debt/EBITDA is a rough measure of how many years of cash flow would be required to pay off outstanding debt or more broadly, as a measure of the ability to service debt.

may be imposed indirectly by lenders (via debt covenants[40]) or credit rating agencies (lease-adjusted Debt/EBITDA is a key input to credit ratings). The role of credit ratings and covenants are particularly relevant among firms that underestimate the left tail of possible outcomes.

After Debt/EBITDA, credit ratings (among large firms) and interest coverage (among small firms) are the next most popular debt measures. These results are surprising given that most academic studies measure leverage with debt/assets or debt/value, which the survey indicates are not as heavily relied upon (Table IV).[41] In *Journal of Finance* articles published since 2015 that mention leverage, 86% use debt-to-assets or net-debt-to-assets to measure indebtedness and none focus on Debt/EBITDA. It is worth investigating whether research implications change based on different debt measures (e.g., Liu and Shivdasani, 2019; Bolton, Wang, and Yang, 2021); for example, the fact that few companies target debt/value or debt/equity might help explain Welch's (2004) finding that firms do not counteract changes in these ratios that occur due to stock price changes. Note that Appendix Table A7.I shows reasonably high correlations among leverage ratios using annual data but less correlation when the variables are measured quarterly. Also note that two of the three most popular debt measures have flows in the denominator, indicating a near-term focus relative to an asset- or value-denominated variable. Moreover, flow variables behave differently than debt divided by assets or value; and they are likely more volatile (Appendix 7) and therefore might lead to flatter objective functions or conservative policies. Broadly, a change in interest rates might change debt targets differently for many of the debt variables. Finally, the top three measures in Table IV focus on debt service, which is consistent with a conservative theme in capital structure practice.

Traditional trade-off theories of capital structure (e.g., Myers and Robichek 1966; Scott, 1976) predict that firms have static optimal debt targets. Fischer et al. (1989) and others create dynamic models

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[40] Griffin, Nini, and Smith (2020) show that Debt/EBITDA is included in the most commonly used covenant packages and that in recent years an increasing use of cash-flow based covenants has improved the signal-to-noise ratio of covenant violations. See also Chava and Roberts (2008), Sufi (2009) and Lian and Ma (2020).
[41] Companies often use debt-to-value to determine WACC but when evaluating their debt usage, firms generally rely on different leverage measures (as shown in Figure 13).

that imply an optimal range for debt, wherein the company allows its debt ratio to vary until it reaches an upper or lower bound, at which time action is taken to push it back towards optimal. On the 2022 survey, 60% of large U.S. firms indicate that they have a tight or somewhat tight *target or range* for how much debt to use (Figure 14); very similar to responses in 2001. Two decades ago, small firms also targeted at about the same rate as large firms. In contrast, fewer than 40% of small firms target in 2022. Taken together, the evidence indicates inertia in the likelihood of targeting among large firms but small firms have moved towards more flexible capital structures. Also, highly levered firms are more likely to target debt usage (Table V).

Figure 14. Do Firms Have Target Debt Ratios?

This figure displays both 2001 and 2022 CFO responses to the following question: *Does your firm have a target for how much debt to use?* The results are presented conditional on firm size. Firms with annual revenue greater than $1 billion are defined as "large", and firms with annual revenue less than $1 billion are "small". The blue bars display results for no target/range. The orange bars display results for flexible target/range. The gray bars display results for somewhat tight target/range. The yellow bars display results for strict target/range. For example, in the 2022 survey, 60% of large firm CFOs say that they have a strict (yellow) or somewhat tight (gray) debt target/range.
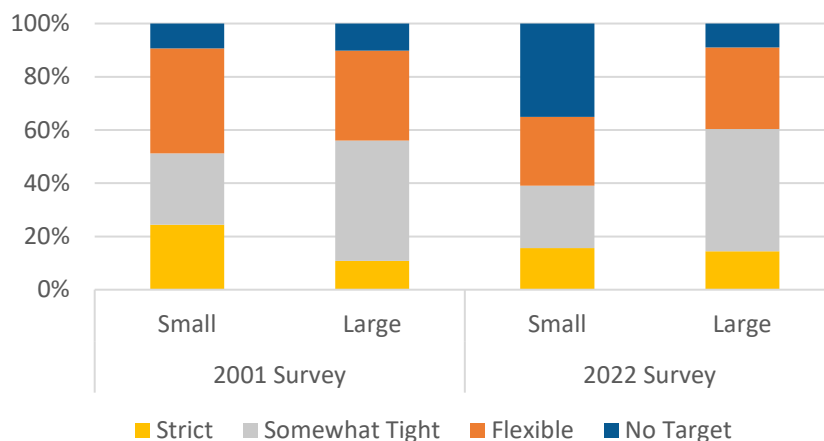
To investigate whether debt targets are narrowly focused or flexibly tied to ranges, two related questions were asked: How wide and symmetric is the band of acceptable debt ratios? How quickly do companies alter their debt to move back within the acceptable range? For the firms that target Debt/EBIDTA, Figure 15 reports that their debt ratio at the time of the survey averaged 3.3, and 78% of these firms indicate that they set an upper bound (which on average is 4.1) These companies indicate that it would take them on average 1.6 years to push their debt ratio back down

to an acceptable level. Such slow-moving debt policy changes are generally consistent with Korteweg et al. (2020), who argue that firms on average adjust capital structure greater than 5% of asset value only once every 2.5 years. Forty-six percent of Debt/EBITDA companies set a lower debt limit, and for these firms the lower limit averages about 1.9. Analogous results aggregated across all firms (not just firms that focus on Debt/EBITDA) are shown in Table VI, which highlights that large, public, dividend-paying, low cash firms say they are more likely to set leverage bounds.

Figure 15. Debt Ratio Ranges and Timetable to Return to Target

This figure displays 2022 CFO responses to questions about whether they set an upper or lower bound as part of an acceptable range for their target debt ratios. These responses are only displayed for firms that indicated they had a strict, somewhat tight or flexible debt range (in Figure 14), among firms that indicated Debt/EBITDA was their primary debt metric (Figure 13). Among these firms, the mean Debt/EBITDA was 3.3 at the time of the survey. 78% of these firms indicated that they set an upper limit debt ratio and the mean upper limit was 4.1. 59% of this 78% of firms set a timetable to reduce their debt ratio when it hit the upper limit, with a mean of 1.6 years. The lower limit information at the bottom is interpreted analogously.
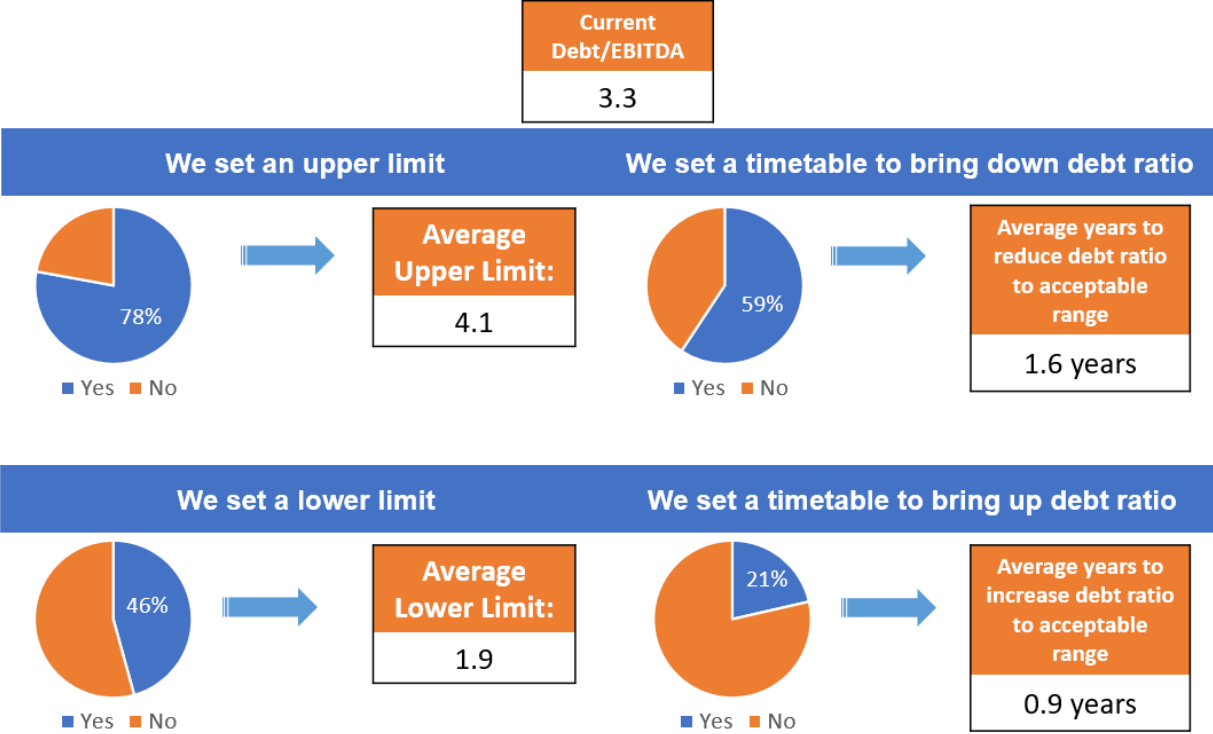
In March 2020, 10% (12%) of firms said that by year-end 2019 they had reached their ex ante upper (lower) limit debt ratio. Interestingly, only 16% of these firms[42] had taken action to alter their debt ratios

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[42] This subgroup consists of only 19 firms, so these findings should be interpreted cautiously.

back towards optimal, suggesting that the effective range of acceptable debt may be wider than shown in the previous chart. Common explanations for this lack of action are that firms thought their debt ratio would self-correct in the near-term and/or because they had changed the width of their acceptable range during 2019. This flexible rebalancing, as well as the general importance of financial flexibility as described below, aligns with research by Harry DeAngelo and others which argues that companies intentionally deviate from traditional debt targets by issuing transitory debt that allows them to achieve objectives such as funding investment. This literature would argue that the targeting behavior described above is secondary to the use of transitory debt to invest.[43]

Evidence in Appendix 7 shows that over the most recent decade, firms changed their target debt ratios infrequently: Roughly 60% of companies indicate that they changed their target debt ratio at most one time during the 2009-2018 decade. This stability is consistent with debt ratio persistence over such a horizon, as in Lemmon et al., 2008 (though DeAngelo and Roll (2015) provide evidence of increased debt ratio variation, and hence less stability, over longer horizons). While it is hard to know the appropriate amount of target variation, the stickiness over the last decade is notable given the changes in economic conditions and financial market conditions (deep recession, initially slow but eventually a strong recovery, significant changes in the tax code, very low interest rates, etc.). An open-ended question on the survey asked CFOs why they changed their target the most recent time they changed it (Appendix 7, Table A7.II). CFOs indicate that target debt ratios change for operational (e.g., investment, M&A) and liquidity reasons, more so than for restructuring designed primarily to re-optimize the debt ratio.

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[43] See DeAngelo and DeAngelo (2006), DeAngelo, DeAngelo and Whited (2011), DeAngelo, Gonclaves, and Stulz (2018), DeAngelo (2021) and cites therein.

Figure 16. Which Factors Drive Debt Decisions?

This figure displays CFO responses to the following question: *Which of the following factors affect how your firm chooses the appropriate amount of debt for your firm? {0 = Not Important, 1, 2 = Moderate Importance, 3, 4 = Very Important.* The percentage of firms that answer 3 or 4 are shown. The blue bars display results for the 2022 Duke CFO survey (March 2019 wave); the orange bars display results from Graham and Harvey (2001). Within each blue and orange bar, the solid portion displays responses for large firms (revenue above $1 billion), and the white, crosshatched portion displays responses for small firms (revenue below $1 billion). For example, 87% of large firms (78% of small firms) in 2022 regard maintaining financial flexibility as an important or very important factor affecting debt decisions. The 2022 credit rating number in the figure (i.e., 63.5% for large firms) is for firms that indicated they had a credit rating on the survey. For the firms that I can confirm have a Standard & Poor's credit rating, the percentage that listed credit rating as important or very important is 71.9% for the full sample.
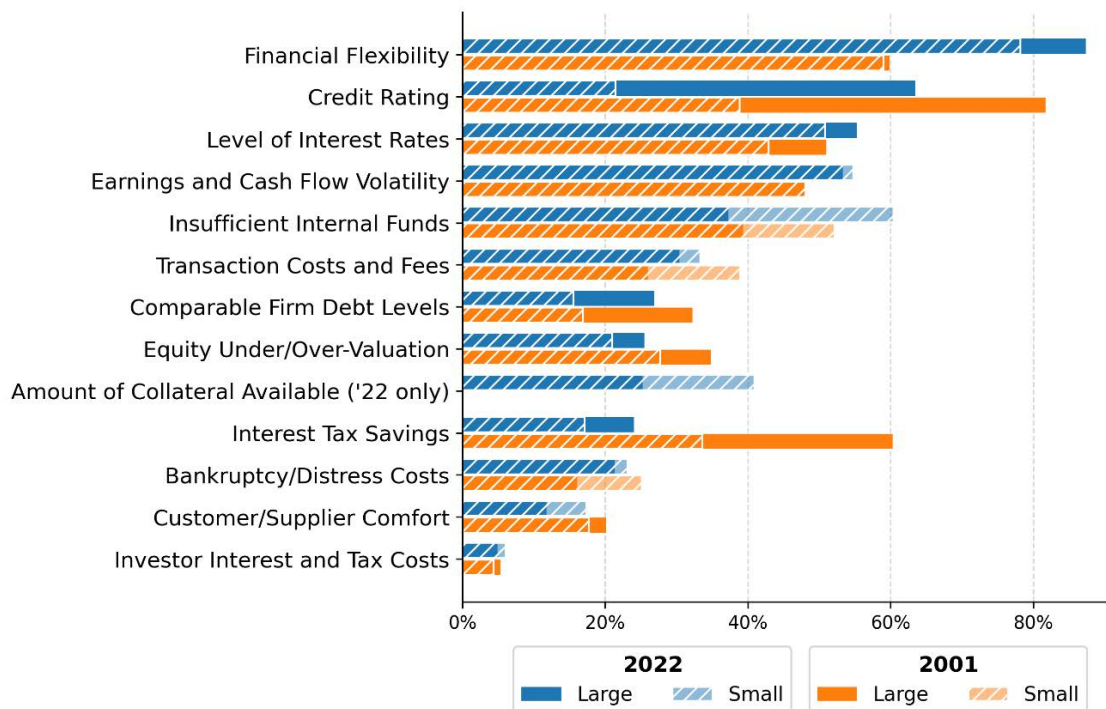
Following Graham and Harvey (2001), the survey asks CFOs about the determinants of their debt policy choices. Perhaps the most striking aspect of Figure 16 is the overall consistency (stickiness) of the importance of many factors in 2022 vs. their importance in 2001.[44] Most of the factors are of similar magnitude and relative rank in these two surveys separated by two decades, even with dramatic changes in the economy. One interesting exception is the importance of interest tax deductibility: 60% of large firms called interest deductibility an important or very important debt factor in 2001, compared to only 24% in the most recent survey. This reduction in importance is logical, given the reduction of U.S. federal corporate

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[44] Discussions with CFOs indicate that for a factor to be considered important requires both that the factor is part of the decision process the company uses and that the factor's effect is of sufficiently large magnitude. For example, the reduction in the importance of the interest tax savings factor likely reflects a reduction in the magnitude of the statutory tax rate, rather than a change in the importance of taxes generally. For variables that received relatively similar rankings, the combination of magnitude and importance in the decision process can be interpreted as relatively similar today versus 20 years ago.

income tax rates (from a top rate of 35% in 2001 to 21% in 2018), very low interest rates and hence low interest deductions, and new restrictions on interest deductibility. This is consistent with stability of the decision process combined with a change in the magnitude of the tax factor. Given that the importance of tax deductions changed as expected, this highlights the stability of the other factors: The similar ranking of nontax factors therefore appears to reflect substantial inertia in managerial decision processes (though one can't say whether these decision processes reflect precise optimization or learned adaptions).

The desire to preserve financial flexibility is the most popular factor affecting capital structure decisions, notably more so in 2022 than two decades prior.[45] The importance of flexibility makes sense in the context of short planning horizons and internal forecasts with miscalibrated left tails. Future research should consider what drives the (increasing) importance of flexibility. The move towards a service and tech economy? The increase in customized, heterogeneous firms and products? The growing importance of intangible assets / asset specificity and the reduction in redeployability?

Many debt factors seem consistent with a trade-off theory (earnings volatility, transaction costs, collateral, tax savings), and other factors align with a pecking-order (flexibility in general; undervaluation (insufficient internal funds) for public (private) companies, as shown in Table VII). Moreover, given that managers list avoiding potential costs of distress as a primary benefit of preserving financial flexibility (Figure 17), and also list earnings volatility as a primary debt factor (Figure 16), companies appear to view financial distress as an important deterrent to debt usage, in contrast to some views in the academic literature.[46] Among other explanations, this could indicate conservatism driven by managerial self-interest

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[45] Using Compustat data, DeAngelo, Goncalves, and Stulz (2018) show that after hitting a peak debt ratio, the median firm reduces its debt ratio to a near-zero trough in fewer than seven years, consistent with these firms working to increase financial flexibility. See also Bolton, Wang, and Yang (2021), who model the importance of financial flexibility.

[46] Miller (1977) famously used the phrase "horse and rabbit stew" (to describe the apparently large 'horse' tax benefits of debt associated with the 48% corporate income tax rate in the mid-70s, to in his view the apparently small 'rabbit' expected costs of financial distress). As Miller (1991) puts it, "neither empirical research nor simple common sense could convincingly sustain these presumed costs of bankruptcy as a sufficient, or even as a major reason for the failure of so many large, well-managed US corporations to pick up what seemed to be billions upon billions of dollars of potential tax subsidies." This thinking of course abstracts away from indirect costs of debt, such as the benefit of preserving debt capacity for future opportunities. Interestingly, in the current survey distress costs appear to be more important than tax factors, thus we may have rabbit and horse stew in the

(e.g., risk averse managers choosing conservative corporate actions). Many businesses seem to act as if they face an objective function that has a flat region near optimality and for which the penalty for being too aggressive is much worse than the penalty for being too conservative.[47] Such an objective function may reflect downside miscalibration in corporate forecasts and/or job security concerns of managers.

Section II suggests that corporate investment is not interest rate sensitive. It is therefore notable that interest rates are an important debt determinant (Fig. 16). This result suggests that CFOs try to time the market, which is difficult to reconcile with standard theory. Appendix Table A7.IV summarizes explanations of what CFOs mean when they say they issue debt when interest rates are low (e.g., cost of debt is 'cheap'; ability to service debt improves). Also, Graham and Harvey (2001) find evidence of attempts to market time debt maturity and foreign debt issuance. Future research should investigate the contrast of CFOs saying that debt issuance is interest rate sensitive at the same time that investment hurdle rates are not, given the common view that investment and capital structure are closely related.

Twenty-five percent of large firms say that having collateral to secure debt is an important debt factor (Table VII). The overall moderate importance of collateral is consistent with the downward trend in secured debt usage in Benmelech et al. (2021). These authors argue that firms more likely to face distress or financial constraint are more likely to secure debt (see also Rampini and Viswanathan, 2010; and Ma, Tong, and Wang, 2021). Consistent with this, I find evidence that small firms and firms lacking financial flexibility are significantly more likely to say collateral is an important factor in debt policy (Panel B).

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current (low tax) environment. Recent research focusing on distress costs includes Berk et al. (2010) and Almeida and Philippon (2008), who argue that the cost of distress may be higher than estimated in previous academic studies (the latter paper focuses on measurement, the former on viewing labor cost as a missing and hard-to-measure component of distress costs). See also Elkamhi, Ericsson, and Parsons (2012), Graham, Kim, Li, and Qui (2021), and Ivanov, Petit, and Whited (2021).

[47] Binsbergen et al. (2010) derive such an objective function (see their Figure 10; see also Korteweg, 2010).

Figure 17. Why is Maintaining Financial Flexibility Important?

This figure displays the 2022 CFO responses to the following question: *Why is it important for your firm to maintain financial flexibility? (choose up to three)* This question was only asked of firms that indicated that financial flexibility was at least moderately important (answered 2, 3, or 4 on a scale of 0 to 4) in Figure 16). Large (small) firms are those with sales revenue greater than (less than) $1 billion. For example, two-thirds of small firms indicate that maintaining financial flexibility is important to help avoid financial distress.
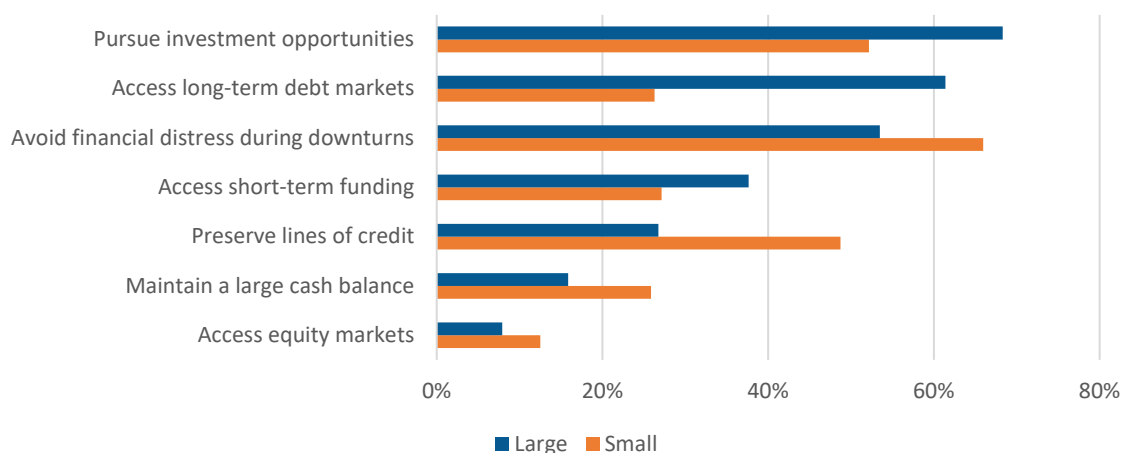
As discussed above, approximately 80% of companies list preserving financial flexibility as a primary determinant of corporate debt policy. In response to a separate question, large firms say that preserving the ability to pursue investment opportunities is the most important aspect of flexibility (Figure 17), suggesting that the benefit of being able to invest outweighs many traditional costs and benefits of debt. Table VIII shows that small, private firms list avoiding distress as the most important objective of financial flexibility, underscoring an important role of debt conservatism. See Appendix 7 for evidence of self-attribution bias when firms evaluate the relative contribution of the market vs. own-firm actions in determining their degree of financial flexibility.

Equity issuance and valuation: The survey also investigates equity issuance decisions. The 2022 findings (not in a table) are similar to those in Graham and Harvey (2001), again consistent with sticky decision processes. Important factors in both 2022 and 2001 include that issuance decisions are affected by perceived own-firm equity valuation (which suggests an element of market timing), concern about EPS dilution, and facilitating employee compensation. One factor more important today than it was 20 years ago is balancing capital structure via equity issuance.

Given the importance of equity valuation to equity issuance decisions (and repurchase decisions, see Section V), it is notable that in a typical quarter, 50% to 80% of public company CFOs think their stock is undervalued (Figure 18). This was true in the late 1990s during the Internet Bubble, before and after the 2001 recession, and it was true in 2020 just before and during the COVID-19 crisis. This strong, pervasive view suggests actual or believed information asymmetry between managers and investors and is consistent with firms attempting to time the market. Unreported analysis indicates that the excessively positive perspective of CFOs is about their own firms, not about the market at large: CFOs rate their ability as investors to 'time the overall market' as average but rate their ability to choose own-firm value-creating investment projects as much better than that for their industry peer CFOs.

Figure 18. Is Your Stock Correctly Valued? (1990s, 2000, 2002, 2011, 2020)

This figure displays CFO responses to the following question: *Is your stock correctly valued?* The blue bars display results for CFOs who believe that their firm's common stock is undervalued. The orange (gray) bars display results for those who believe their stock is correctly valued (overvalued). The historic data are from the Duke Global Business Outlook survey. 20q1 data are from the March 2020 wave of the 2022 survey project. For example, among CFOs who responded after March 15, 2020, 83% think their stocks are undervalued.
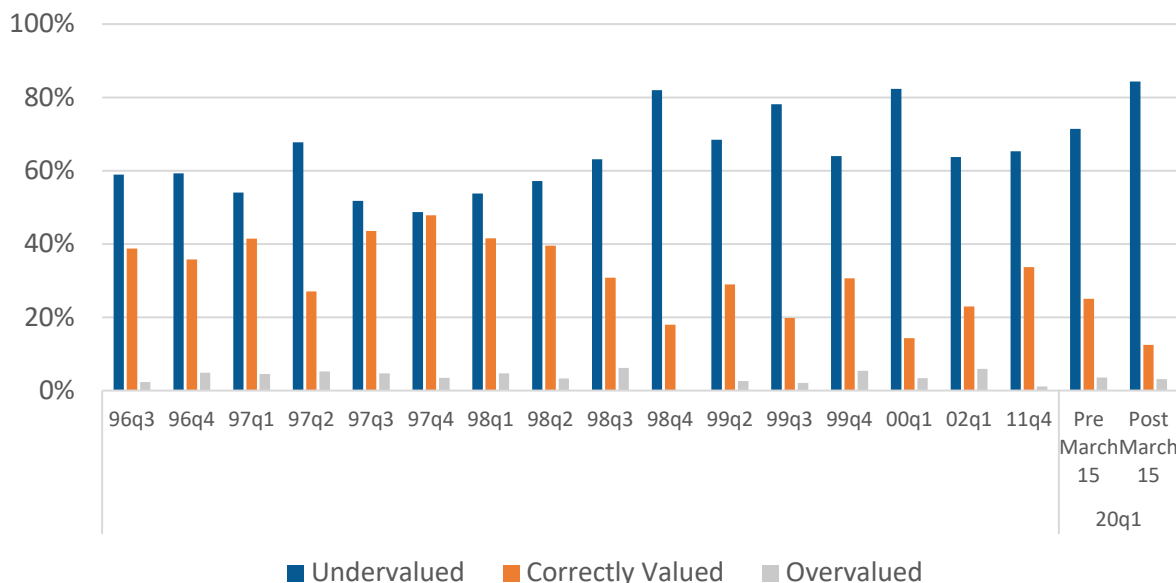
To judge their own firm's valuation, a majority of firms rely on a simple approach comparing current price to recent highs and lows (Figure 19); many firms also rely on advisors or internal models based on discounting their own cash flows or looking at comparable firms.

Figure 19. What Methods Do Companies Use to Value Their Own Stocks?

This figure displays the 2022 CFO responses to the following question: *What approach does your company use to conclude that your stock is undervalued/overvalued or that your stock price is low/high?* For example, 52% of the CFOs value their stocks according to the current stock price relative to its historic highs and lows.

Capital Structure TAKEAWAYS:

- Most companies quantify debt using ratings or flow measures, in particular Debt/EBITDA.
- Firms say that they target debt but flexibly.
    - There is stickiness in the degree to which targeting behavior is pursued.
    - For firms that target, over moderate time horizons they rarely change the target itself and if they find themselves off target, they move slowly back towards the target.
- The factors that drive debt decisions are sticky (i.e., similar rankings in 2001 and 2022).
- Financial flexibility is very important, in order to invest and to avoid distress (consistent with not fully anticipating left tail outcomes and/or large direct and indirect costs of distress).
    - When flexibility changes, executives self-attribute: take credit for improvements, blame markets for deterioration (see Appendix 7).
- There is evidence of market timing (issue debt when interest rates low; issue equity when valuation is perceived to be high).
- Companies pervasively think their stock is undervalued, even during market booms.
- Simple rules like recent highs are used to determine own-firm common stock valuation.[48]
- Appendix 7 shows that funding sources are not viewed as interchangeable in terms of planned use of funds; that is, different sources of funds are associated with different real outcomes.
- Appendix 7 also shows that debt overhang leads to agency costs such as passing up NPV>0 projects and cutting corners, as well as information on debt maturity and fixed versus floating.

V.   Payout

This section highlights three aspects of corporate payout policy that align with the common themes of corporate finance. The survey also investigates in detail the relation between payout and investment.

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[48] Equity issuance research could explore several questions: Why do firms act as if equity is more costly than debt on a risk-adjusted basis? (Is it tied to adverse selection?) Why do firms view equity issuance as dilutive if the funds are used to create value? Why do firms appear to care more about existing/continuing equityholders than, for example, equityholders that sell into a repurchase program?

The first common theme apparent in payout decisions is the substantial stickiness in payout decision processes and the stickiness in dividend outcomes. The results in Figures 20 and 21, Table IX and Appendix 8 indicate that the reasoning and beliefs behind corporate payout decisions are largely consistent with key findings in Brav et al. (2005) and Lintner (1958). The consistency across decades of the factors that drive payout decisions indicates substantial inertia in the way companies think about dividends and repurchases.[49] This is notable given the dramatic change in type of firm (e.g., manufacturing vs. service), extent of multinational focus, etc. of the dominant firms. Amidst this economic change, mature firms with stable profits regularly pay out a substantial portion of profits to shareholders (Figure 20).

Figure 20. Important Objectives Driving Payout Decisions

This figure displays the importance of various factors that drive payout decisions. Data are from the 2022 survey (March 2020 wave), which asked CFOs: *How important are the following factors to your company's dividend/repurchases decisions? {0 = Not important at all, 1 = Somewhat Unimportant, 2, 3 = Important, 4 = Very Important}* The graph displays the percentage of CFOs that answered 3 or 4, and the sample is conditional on the firm paying dividends (top, blue) or repurchasing shares (bottom, orange); a firm can be included as both a dividend payer and a repurchase. For example, 48% of dividend payers state that the stability of future earnings is important to dividend decisions and 29% state that it is very important (thus, approximately 78% of dividend payers consider future earnings stability to be important or very important).

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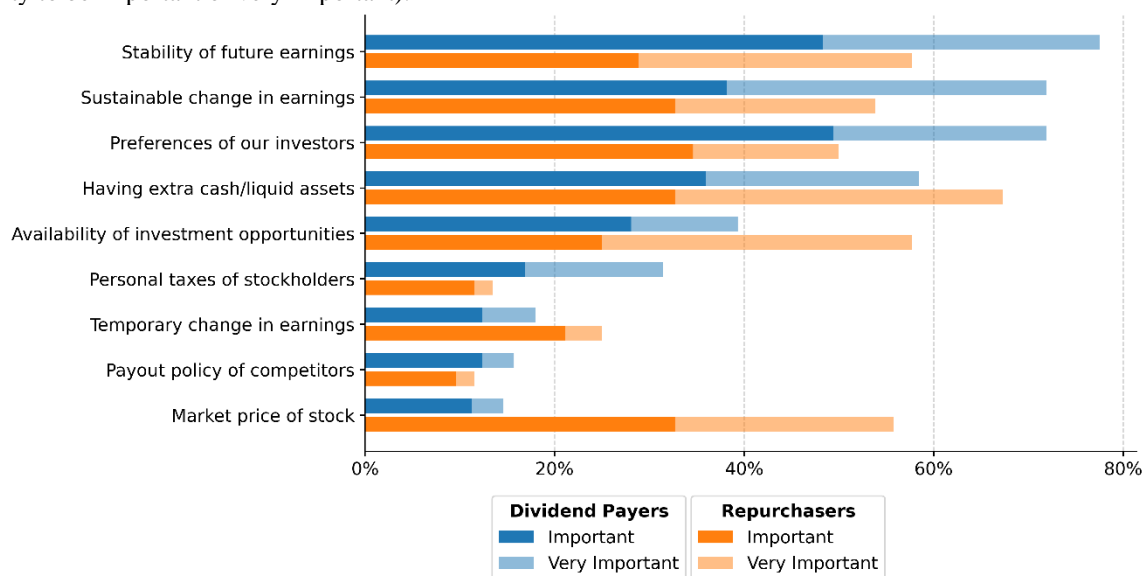
[49] As additional evidence of payout process stability, Appendix 8 shows that the simple Lintner model of increasing payout at a smooth rate towards a target payout ratio still works well in explaining dividends. The stability in what drives payout is also evident in Kahle and Stulz's (2021) finding that models estimated on firm characteristics using pre-2000 data explain much of the change in payout post-2000.

There is evidence of conservatism in payout decisions, one of the themes of corporate finance. One fact known since Lintner is that U.S. companies are very reluctant to reduce dividends due to the associated negative market reaction (Figure A8.1 in Appendix 8); hence firms are conservative and they smooth dividend increases. This conservative approach to increasing dividends is logical when reliable planning horizons are short and firms underestimate the left tail of their earnings distributions. Left tail surprises also provide incentive for firms to shift payout towards repurchases, given the perceived lack of market penalty for repurchase reductions from one year to the next.

The third theme relates to attempting to time the market: Companies say they repurchase when buybacks are a good investment (Figure A8.2). This undervaluation logic is notable, given that about two-thirds of companies believe their shares are undervalued at any point in time (Figure 18). Firms also say that they repurchase with the objective of increasing earnings per share, a view also common among bankers and the popular press, though academics note that this action may not increase firm value due to the increased equity risk (and cost of equity) associated with levering up via repurchases (Oded and Michel, 2008). CFOs also cite repurchases as a tool to offset stock compensation.

The survey dedicates several questions to exploring the tension between returning funds to shareholders via payout versus using the funds to invest. The survey explores whether the commitment to maintain historic dividends (or to repurchase shares) crowds out corporate investment.[50] Brav et al. (2005) provide survey evidence that maintaining the existing level of dividend payments may be as important as funding corporate investment. The current survey uses a 3-prong approach to study how firms balance investment vs. payout. One, in response to a direct survey question, 45% (58%) of firms indicate that they choose investment policy *before* choosing dividend (repurchase) policy (Figure A8.1). Two, the survey asks CFOs whether they would reduce payout in order to use the funds to instead invest in an attractive

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[50] Miller and Rock (1985) and Bhattacharya (1979) argue that high quality firms can use payout and the associated forgoing of investment to signal their type. With the caveat that signaling is a very difficult issue to explore using surveys, Brav et al. (2005) find little support among practitioners for the signaling hypothesis. Ham et al. (2020) find evidence of signaling over short horizons.

investment; and if so, what after-tax ROIC the new investment project would have to earn to justify such a trade-off: 61% (23%) of companies indicate that they would not reduce their dividend payment (repurchases) to invest, regardless of the return on the alternative project. Among the 39% (77%) who would consider cutting dividends (reducing repurchases) to fund investment in a new project, the required after-tax ROIC on the investment would need to be at least 19% (18%).

Figure 21. How Do Companies Prioritize Capital Allocation of Funds?

This figure displays the 2022 CFO (March 2020 wave) responses to the following question: *Please indicate the priority of the following items as your firm allocates capital. {not important; like to do but only moderately important; important, do if possible; top priority; not applicable}.* The percentage of firms that answer "Important, do if possible" or "Top priority" are shown. The results are divided into two non-mutually exclusive groups (i.e., a firm can be in both groups): firms that pay dividends ("Dividend Payers") and those that repurchase shares ("Repurchasers"). For example, 77% of dividend-paying firms say that maintaining historic levels of dividends is important or very important.
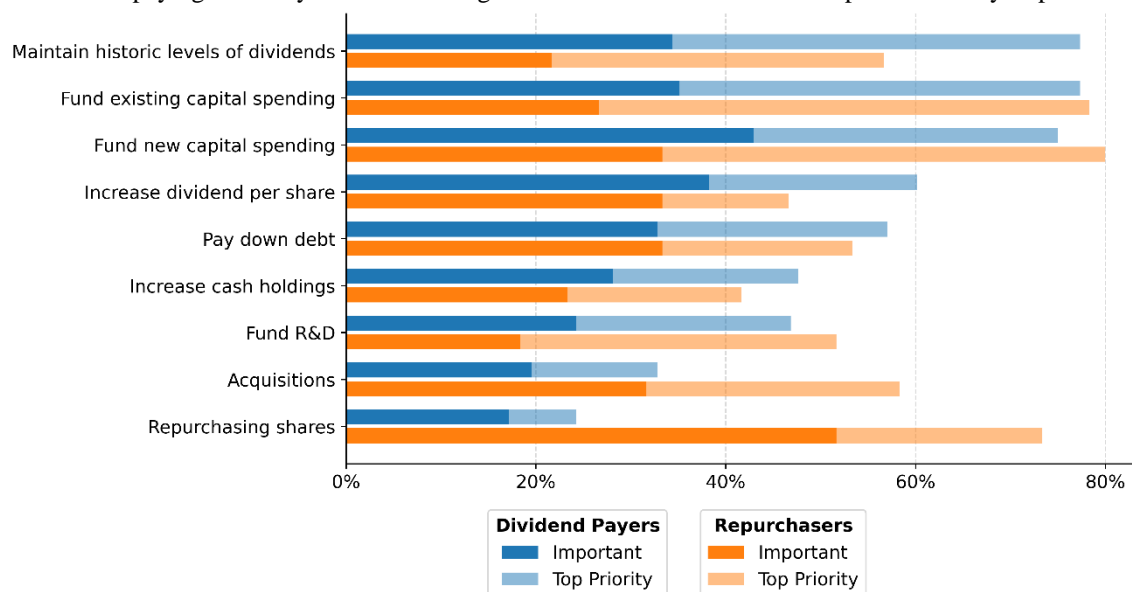
Three, the survey asked CFOs how they prioritize the allocation of capital within their firms, whether it be to invest, pay dividends, pay down debt, etc. Among dividend-paying firms (blue bars in Figure 21), maintaining the historic level of dividends is on par with funding existing or new capital investment, and more important than paying down debt or funding R&D.[51] Among firms that repurchase

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[51] For firms that neither repurchase nor pay dividends (not shown in Figure 21), their ranking of capital allocation priorities is very similar to that shown for dividend payers. The differences are that the maintaining and increasing dividends are not ranked by non-payout firms, and non-payout firms rank "increase cash holdings" third in their capital allocation ranking.

shares, buybacks are an important use of capital (bottom row of Figure 21), though not quite as important as funding investment.

Across these three prongs of inquiry, CFOs view maintaining dividend payments as being in the same equivalence class as investing in profitable investment projects. According to CFOs, repurchases are somewhat less likely to crowd out investment than are dividends. These relative priorities should be considered in corporate finance research and policy (e.g., the efficacy of a recent Biden Administration proposal to tax repurchases to discourage share buybacks and encourage corporate investment).

Payout TAKEAWAYS:

- There is substantial inertia (stickiness) in payout decision processes and in the important payout drivers over at least two decades. That is, the factors and decision rules that drive payout policy are similar to those Brav et al. (2005) and earlier.
- Not only is the decision process sticky, dividend payments are very sticky.
- There is evidence of payout conservatism and attempts to time the market.
- Dividend stickiness affects corporate investment: CFOs say that maintaining the existing dividend is as important as corporate investment, with increasing dividends not far behind.
- According to CFOs, repurchases also compete with investment but less so. Most CFOs say that they would reduce repurchases in order to fund an attractive investment project.

VI.   The Goal of the Firm

Earlier sections note that corporate objectives prioritize revenue growth, historic payout, and Debt/EBITDA. This section explores the important corporate objective of maximizing shareholder value, the traditional goal of the firm. In a 2010 survey, conducted just after the Great Recession when capitalism was taking a beating in the press, CFOs indicated that their companies were run primarily for the benefit of shareholders. In 2010, the "stakeholder index" was 31 (a ranking of 100 would mean the entire focus of the firm should be on stakeholders other than shareholders; see Figure 22). A decade later, CFO views have

shifted towards a more balanced stakeholder/shareholder perspective, with a stakeholder index of 41. This

reduced focus on shareholder-value maximization holds across industries and around the world.[52]

Figure 22. On Whose Behalf Should a Company Be Run?

This figure displays CFO responses to the following question: *In whose interests do you think a company should be run? {0 = Shareholders Only, 100 = Other Stakeholders Only}*. The orange bars display results from a Spring 2010 Duke CFO survey. The blue bars display results for the 2022 survey (March 2020 wave). Within the middle bars, the crosshatched portion displays results for scores greater than or equal to 50.
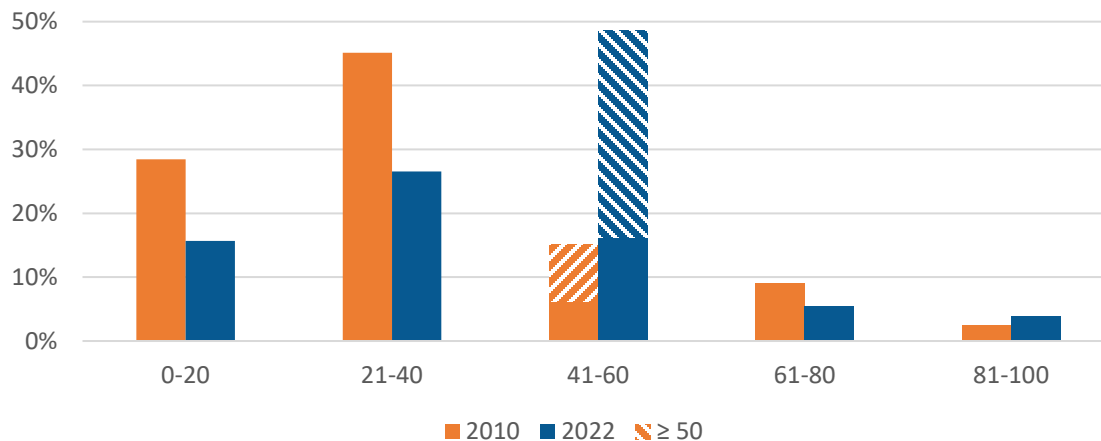
Among CFOs that rate the stakeholder weight at least 40, the 2022 survey asks which particular

stakeholders are most important. Most firms list employees and customers as their key stakeholders (Figure

23). About one-in-five also list the environment and the local community.

More research is needed into this shift towards more shareholder-stakeholder balance. Consistent

with the shift in survey data, with great fanfare in August 2019, the 1,000 member Conference Board

announced that shareholders were only one among a half-dozen stakeholder groups on behalf of whom their

firms optimize. Similar announcements were made by Blackrock and participants of the World Economic

Forum, among others. Do these announcements coincide with genuine changes in the focus of public

companies, or are they window dressing? Is focusing on stakeholders just a natural component of

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[52] About 6% of respondents are excluded from Figure 22 because they chose exactly a 50/50 stakeholder/shareholder focus and answered a follow-on question in a manner that seemed inconsistent; implications do not change if these observations are included. Also, the survey responses are at least partially corroborated: Among public survey respondents, there is 33% correlation between the CFO-declared importance of stakeholders on the survey and the number of times 'stakeholder' is mentioned in DEF14A letters to shareholders. See Adams et al. (2011), Hart and Zingales (2017), Fama and French (2020), Bebchuk and Tallarita (2020), and Raghunandan and Rajgopal (2021) and citations therein for more research in this area.

shareholder wealth maximization? Does stakeholder focus increase value and hence also benefit shareholders (Edmans, 2020)? Have the two paradigms grown more incentive compatible?

Figure 23. Which Stakeholders Matter? (Other Than Common Stockholders)

This figure displays the 2022 CFO (March 2020 wave) responses to the following question: *Which (if any) constituents or stakeholders do you think should be ranked above shareholders?* The results are conditional on answering a score greater than or equal to 40 to the question in Figure 22: *In whose interests do you think a company should be run? {0 = Shareholders Only, 100 = Other Stakeholders Only}.*
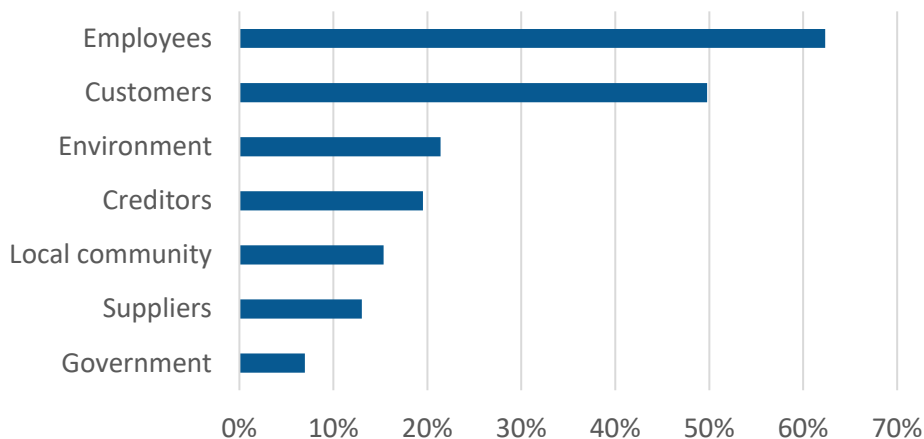
If there has been a true shift toward stakeholder interests, what are the implications? One implication could be that relative to shareholder-focused firms, stakeholder-focused firms may optimize from a less diversified agent's perspective. Do stakeholder firms favor labor (e.g., fewer layoffs during the 2020 recession)? Do they have higher discount rates or cost of capital, and does their capital allocation differ? Does stakeholder focus lead to a more stable company over time (less churn of employees and customers) and help offset uncertainty and downside risk? How should executive compensation be tied to stakeholder focus? Will enhanced technology and big data allow companies to write contracts or lead to disclosure more aligned with stakeholders? Another important unanswered question is just how much shareholder value stakeholder-focused firms are willing to sacrifice in order to achieve stakeholder objectives.

Goal of Firm TAKEAWAYS:

- Over the last decade, there has been a shift towards stakeholder focus, though on average maximizing shareholder value is still the primary CFO focus. Future research should explore whether there is corroborating evidence of a recent shift towards stakeholder interests; and if so, how this shift has affected corporate decision-making.
- Employees and customers are the stakeholders that receive the most focus, followed by the environment and the local community. Does such focus enhance or work against shareholder value?

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VII. Summary and Implications for Future Research

This section summarizes the findings of the paper and explores avenues for future research. The summary presents key findings within the following broad trichotomization of corporate decision-making: 1) internal expectations and scenario planning, 2) the objects that firms optimize, and 3) the unifying themes of the corporate decision-making process.

In terms of 1), in the creation of budgets, internal cash flow forecasts and scenarios, CFOs indicate that information in internal plans has about a 2-year reliable horizon. Revenue forecasts are paramount in the corporate planning process and I present evidence consistent with these forecasts being miscalibrated (see also Ben-David et al., 2013 and Barrero, 2022). The short horizon and miscalibration likely affect other corporate decisions, as discussed below. CFOs also say that corporate plans include a detailed base case and typically also include (less detailed) downside and upside scenarios. When plans are not realized ex post (i.e., forecast errors), or in response to shocks, companies adjust their future plans. For the data I examine, second moments appear to be adjusted more than first moments. Notably, Boutros et al. (2021) indicate that companies adjust enough to reduce but not eliminate miscalibration in CFO forecasts.

My analyses of internal forecasts and scenario plans are only initial steps. More research is needed to understand the economic elements of corporate planning, how planning affects other corporate decisions, and how realized outcomes circle back to affect future corporate plans. A question for future research is how not fully fleshing out downside and especially upside plans affects corporate decisions and the overall economy. To better understand 1) from the first paragraph of this section, we need detailed research about the creation and uses of internal base case forecasts and scenario plans within companies. At a deeper level, we need to understand how these plans filter into and affect 2) and 3) from the initial paragraph. Though it would be ambitious, an ideal study would obtain actual planning forecasts for a panel of firms over many years – and map these plans into cash flow forecasts. Given that previous sections imply that expected cash flows play an important role driving corporate decisions, these internal cash flow forecasts could then be

tied to capital allocation and other actions. Studying the feedback effect of realizations on future forecasts and plans would also be informative. Finally, research is needed into how corporate budgeting, which is difficult to change within-year given the elaborate negotiation behind budget construction, affects the corporate decision process. Better understanding these foundational aspects of corporate planning has the potential to enhance academic models of a broad range of corporate actions and outcomes.

To investigate 2), research should carefully consider the objectives that firms prioritize. A traditional assumption is that companies strive to maximize shareholder value. Reality differs in several ways. The surveys identify a trend towards a more balanced shareholder/stakeholder objective; however, more work is needed to determine the degree to which this is an authentic change and if so, the implications of such a change (see Section VI). To what extent do changes in investor preferences towards ESG and stakeholder objectives lead to true changes in corporate objectives, policies, and outcomes? How well can stakeholder firms compete against shareholder-focused firms? Another important high-level consideration is the importance of sales revenue as an objective in the corporate planning process. Do companies attempt to maximize revenues (instead of profits or shareholder value) or is the importance of revenues driven by the variable being an important summary statistic?

There are also important considerations related to the objectives of specific policies. For example, the evidence implies that cash flows are a more important driver of corporate investment than are discount rates. In addition, most capital structure research measures leverage as debt/value or debt/assets. In reality, few companies emphasize these measures and most instead focus on Debt/EBITDA and credit ratings. As another example, we need to better understand the economic implications of objectives that prioritize payout as at least as important as investment. Research should identify when alternate objectives and measurement matter and re-evaluate past conclusions in these instances.

In terms of 3), research should consider carefully the stylized facts and commonalities of the corporate decision-making processes and economic decision rules that companies follow as they take specific actions, as well as the motives of the people making those decisions. The preceding sections

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document numerous decision rules used in various settings. Looking across these rules, there is some alignment between academia and the practice of finance; however, the continuing popularity of certain rudimentary decision rules (e.g., payback) is at one level surprising.

Comparing across corporate policies and through time, a number of common elements emerge with respect to the practice of finance: many corporate decision processes i) are based on near-term focused and ii) miscalibrated forecasts, iii) appear to be conservative (and greatly value flexibility),[53] iv) are based on criteria that have changed little over time,[54] v) rely on simple methods, and vi) reflect attempted market-timing.[55] As one example, corporate investment decisions are based on sticky, hurdle rates that are set well above the cost of capital. Sticky hurdle rates imply that investment is interest rate insensitive, and furthermore suggest 'stable' decision-making in the face of moderate positive or negative economic changes, with lags in when economic changes lead to changes in corporate decisions. More broadly, why are these themes prevalent in corporate decision-making? Do they reflect constraints on funding, time, or cognition? Can they be adequately modeled as costly biases? Under which conditions do these themes approximate first-best decision-making versus when do they alter decisions in important ways?

Future research might focus on these themes one at a time, or consider subsets of themes and how the themes interrelate with each other and other corporate policy choices. Consider miscalibration. Rather than fixing miscalibration, do companies instead attempt to offset it by adopting conservative financial policies?[56] On net, how does pairing miscalibration with conservative policies compare to pairing proper

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[53] Consistent with the downside risk theme, Bolton, Wang, and Yang (2021) incorporate left tail risk into a dynamic valuation model with costly external financing and show that due to the firm's aversion to costly external equity issuance, the firm prudently keeps Debt/EBITDA low (see also DeAngelo, DeAngelo, and Whited, 2011). Bolton et al. show that concern about financial flexibility affects other financial policies (e.g., payout, equity issuance, credit risk pricing and ratings, and earnings retention) via a single budget equation that equates sources and uses of funds.

[54] Blinder (1994) presents evidence that prices are sticky: The typical firm changes a product's price only one time per year and takes on average three months to change prices in reaction to an economic shock. Nakamura and Steinsson (2008) argue that non-sale prices have a duration of 8 to 11 months.

[55] A growing literature examines effects of managerial optimism and overconfidence (e.g., Heaton (2002), Malmendier and Tate (2005), Hackbarth (2008), Graham, Harvey, Puri (2013), and Malmendier (2018), as well as cites therein.) Also, Bolton, Chen, and Wang (2013) examine the interaction of financial flexibility and market timing.

[56] Rather than attempting to fix miscalibration, is it a more efficient and practical use of resources to build in slack for when negative surprises occur? A benign view of building conservative slack is that rational managers are aware of the complexity of the economy and accept that tail risks can not be precisely anticipated (without very high cost) in likelihood or magnitude. A less

calibration with polices that are not conservative; and how does corporate hedging affect these relations? Is miscalibration too ingrained psychologically to fix? Are CFOs hesitant to include realistic left-tail planning outcomes because it might hurt how rating agencies or investors (or bosses) view their potential (and hence their career opportunities)?[57] Conservative policies are sensible if the penalty for missing on the downside is severe for the executive or the firm. Research is needed to understand why miscalibration persists, as well as the effects of miscalibration on valuation and real decisions.[58]

A notable practice of finance theme is that internal plans are thought to be reliable only a couple years out, which likely affects many other corporate finance decisions. Another notable theme is the stickiness or stability through time of real-world decision processes (item iv above).[59] Is there a rational model that produces this stability? Does the conservative "slack" mentioned above facilitate sticky decision processes by providing managers sufficient buffer that they do not need to frequently re-optimize (e.g., Bolton, Chen, and Wang, 2011)?[60] Does stickiness (and lack of innovation) result from companies becoming more bureaucratic as they age (Holmstrom, 1989)? For stickiness to be optimal, does it require both decision rules that work well and a world that has not changed much over time? The latter seems unlikely given large changes in recent decades in the types of firms and products that dominate the

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benign view is that building slack to offset persistent miscalibration is due to insufficient effort (perhaps in pursuit of a quiet life) combined with weak governance and monitoring (e.g., Myers, 2002). More research is needed to determine which of these or other explanations is most plausible.

[57] Adopting policies to offset expected left-tail surprises is different than miscalibration being a behavioral bias about which CFOs and firms are unaware. Also, an explanation for leaving downside miscalibration unfixed could be to offset actions by managers that are otherwise too conservative; of course, being miscalibrated on the upside would reinforce the tendency to make conservative managerial decisions.

[58] As one example, Barrero (2022) uses a structural model to study the interaction of miscalibration and extrapolation in managerial beliefs. He finds that extrapolation causes forecasts to overshoot on the upside and downside, leading to excessive adjustment costs that reduce firm value by 2% to 7%. There is ample room for additional research to consider how the costs imposed by managerial biases affect corporate decisions. Stulz (2008) discusses in a risk management context the difficulty in anticipating the frequency and magnitude of extreme left-tail outcomes.

[59] This inertia in decision outcomes can affect *when* companies next change policies. Conditional on making a policy change (e.g., issuing debt), inertia can also affect *how* the decision is affected by economic factors; for example, stickiness could result in current decisions being based on factors that were important in the past and/or on the historic values of factors. In terms of how decisions are made, if the reliable planning horizon is short (Section III), does this encourage companies to continue doing what they have been doing if it has been working well enough? A related question is whether policies only become 'unstuck' in response to a sizable shock.

[60] Or might it go the opposite direction: If for some reason firms know they can not respond quickly to changes, they may build in more slack.

economy.[61] In terms of the former, does stability mean that companies have been implementing near-optimal decision rules, or processes that are not necessarily optimal but work in a satisficing way? Or, do managers potentially repeat approaches that were used by the previous generation of managers even though the processes are not near optimal? Has there been stability in corporate culture and employees? In any of these cases, how are decision process norms formed and how are they handed down to the next generation of managers?[62] Importantly, how is change management implemented in companies? The stickiness of decision processes raises the possibility that change management faces large costs and constraints. Similar issues can be explored in the context of the other themes.

A satisficing framework aligns with many elements of observed corporate decision-making. The world is complex, with substantial uncertainty and poor understanding of tail risks, and companies have difficulty planning very far into the future. Executives oversee numerous projects and in the words of one CFO, "the time and manpower needed to implement a full analysis is a luxury that is not available." Given this setting, managers may make satisficing choices (Simon, 1956a).[63] Perhaps the best management can do is make incremental (and path-dependent) improvements relative to their current situation (Kay and King 2020); and perhaps simple, conservative decision rules work as well as any in deciding the direction for that step. As one CFO said, "you can't rely on Black-Scholes in this setting."

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[61] One might hypothesize that the creation of new firms leads to new processes and decision rules being introduced, with natural selection allowing these new methods to become dominant. Said differently, stickiness in decision method innovation might be exacerbated by lulls in new firm creation.

[62] Related to this point, future research should also investigate how a given company begins using an approach in the first place. About two decades ago, a financial executive from Company A presented as a guest speaker in a corporate finance class I was teaching. This individual later moved to Company B and then to Company C, taking along with him to Companies B and C the methodologies used (down to the notation), even though these three companies were in different industries. Recently, a different executive from C presented in class and her presentation substantially overlapped with the approach and notation described two decades earlier by A. Though just an anecdote, this suggests a person-dependent introduction of finance norms and aligns with executive fixed effects as in Bertrand and Schoar (2003). Mukhlynina and Nyborg (2020) argue that this sort of sociological norm explains the clusters of common valuation techniques used by analysts. Better understanding how decision rules are propagated will help us better interpret whether executive fixed effects are evidence of optimal matching vs. being ad hoc.

[63] Baumol (1979) describes satisficing in the context of looking for a needle in a haystack that contains many needles. The optimal needle is in the haystack, the one that would allow the searcher to sew optimally. Satisficing behavior occurs when the searcher stops searching once a needle is found that allows the sewing to be completed in a reasonable manner (rather than searching until the perfect needle is found). In a complex and uncertain world, it may be impossible for businesses to optimize in a sophisticated way (or the benefits of finding better decision rules may be outweighed by the costs of continuing to search). Simon (1957) associates satisficing choices with individuals for whom bounded rationality prevents global optimization.

A satisficing view in a complex world can explain why different firms use different decision rules, respond to shocks heterogeneously, and stick with simple rules that work adequately. Future research should more broadly explore the types of corporate outcomes that we might expect to observe if managers satisfice one-step-at-a-time, as well as the types of models and empirical tests that would be ideal to investigate these outcomes. This is of course not to say that satisficing is the only modeling approach that should be explored in explaining observed corporate behavior (see footnote 58).

Another consideration is whether financial policies are the primary driver of corporate decisions versus being one part of an interdisciplinary approach that includes strategic (nonfinancial) managerial objectives, perhaps in somewhat of a Modigliani and Miller (1958) sense. Settings where nonfinancial objectives dominate, and finance plays more of a support role, may help explain how simple, sticky financial decision making persists.

How should we evaluate whether the gap between academia and the practice of finance is narrowing? We can of course evaluate the alignment of academic research with real world outcomes using traditional measures of in-sample goodness of fit in empirical analysis of specific polices like hiring, investment, capital structure and payout. A more stringent test would evaluate out-of-sample performance, which can help address the concern of over-fitting models in sample (see Harvey (2017) for a discussion of overfitting). It would also be useful to gauge whether an area of research aligns well enough with reality to provide reliable guidance to practitioners and policy-makers. Finally, another test of academic models would measure the degree to which their predictions are consistent with other characteristics of the decision process itself. For example, academic modeling makes simplifying assumptions in an attempt to highlight key principles of a complex world. Simplification is also evident in real-world decision processes. Ideally, these academic and practitioner simplifications would align in a way that helps research explain the common themes that pervade the practice of finance. For example, if a model assumes miscalibration or another trait, the model could be tested by whether it leads to decision rules that are conservative, simple, sticky and/or other themes.

Many excellent research papers are published every year. And yet, a gap remains between the body of existing academic research and the practice of corporate finance. An opportunity awaits for researchers to close this gap and in the process address a number of important, unanswered questions. Closing the gap will benefit practitioners, policy-makers, researchers, and teachers alike. I believe that it makes sense to use what expert executives actually do and why they do it, as well as their expectations and plans for the future, as the foundation of academic research that pursues this endeavor.

VIII. Conclusion

The preceding sections document important elements of the practice of corporate finance, providing a benchmark to guide and against which to evaluate academic research. To be sure, companies incorporate certain basic economic principles into their financial decision-making. Nonetheless, there is a gap between academic corporate finance research and practice. The impact and relevance of research would increase if this gap were narrowed.

In my view, there is much to gain by carefully grounding research in what skilled real-world practitioners actually do.[64] When academic models and practice align, a thorough understanding of the latter enhances our ability to understand the mechanisms behind real economic outcomes. When models and practice do not align, knowledge about practice helps differentiate whether practice or theory (or both) is at fault. When managers are at fault, a detailed understanding of practice allows researchers to assess whether managers make correctable mistakes; and if so, evaluate the consequences of those mistakes; and if those consequences are large, determine what changes could be made to measurably improve corporate

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[64] At a minimum, instructors should accurately describe to students what companies actually do. In some dimensions, there is notable alignment between the textbook view and the practice of finance. In other dimensions of practice, there are long-standing exceptions to textbook recommendations. Classroom instruction may therefore need renewed emphasis on foundational corporate finance, including the risks and pitfalls of not following academic recommendations. At the same time, academics should acknowledge that the practice of finance differs from the classroom perspective for reasons not fully understood. Do these differences imply suboptimality among firms? Alternatively, do they reflect too little emphasis on basic but important issues in academic research and teaching?

decisions.[65] By construction, this series of steps connects research to practice and may ultimately lead to extra emphasis on affecting practice by producing actionable guidance and practical business education.

To the extent that academic models are at fault, how should researchers proceed to try to close the research-practice gap? One approach would be to work in traditional or new frameworks that integrate the common elements of the practice of finance. A related approach would be to take managers' behavior (the themes and stylized facts described above) as given and determine whether there is a rational or behavioral model that is consistent with the real-world practice of corporate finance. Researchers following this approach should be careful not to 'model mine' or develop a separate theory for each fact. Furthermore, it is not clear that attacking the issues raised herein with the traditional research tool-kit will suffice.

A third approach involves a more fundamental assessment of whether common academic paradigms can adequately explain the practice of finance, considering the possibility that for some important real world decisions, choices are not made in a manner that aligns with optimizing traditional academic models.[66] It stands to reason that disciplining academic research against realistic elements of the practice of finance will improve the ability of academics to predict and explain real-world outcomes, as well as provide managers and students with valuable guidance.

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[65] Careful consideration should be given to the interplay between managers potentially being at fault, value implications, and possible corrective actions. If managers are at fault and value-increasing improvements are easy to identify, then why has not arbitrage, the market for corporate control, or the market for managerial talent eliminated actions that reduce value? Are these markets not competitive and well-functioning? Does weak governance permit reduced effort and the retention of slack to compensate for operational and financial deficiencies? Or, are value implications and the ability to improve on the status quo modest, suggesting that managerial actions are close-to-optimal given the real world circumstances that managers face?

[66] A related possibility is that the noise-to-signal ratio is very high and it is very difficult for academic models to predict corporate finance outcomes. In this case, knowing the facts about the practice of finance is particularly useful.

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Table I. Capital Budgeting Techniques

This table presents survey responses to the following question about capital budgeting methods: *How frequently does your firm use the following techniques when deciding which projects or acquisitions to pursue? {0 = Never, 1, 2, 3, 4 = Always}.* Panel A compares results from the Graham and Harvey (2001) survey to results from the 2022 Duke CFO Survey (March 2020 wave). Columns (1) and (2) display the percentage of large firms that use each technique always or almost always (i.e., they answered a score of 3 or 4 to the question above). Columns (3) and (4) display the same for small firms. Large (small) firms have revenue greater (less) than $1 billion. No statistical tests are performed in Columns (1) to (4). Columns (5) and (6) display the average score (on a zero to four scale) given to each technique in the 2001 and 2022 surveys, respectively. Columns (7) to (10) display analogous information for large and small firms. For each pair of columns and each technique, a comparison of means (t-test) is performed (e.g., in Columns (5) and (6), the mean scores for each technique are compared across the full samples in the 2001 and 2022 surveys). Panel B uses data solely from the 2022 Duke CFO Survey and displays comparisons of the frequency of use of each technique across different company characteristics (e.g., small and large firms are compared in Columns (1) and (2)). Definitions of demographic variables are given in Appendix Table A2.II. *, **, *** display significance at 10%, 5% and 1%, respectively.

Panel A: Capital Budgeting Techniques, 2001 vs. 2022 Comparison

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Percent Always or Almost Always				Score					
	Large Firms		Small Firms		Full Sample		Large Firms		Small Firms	
Survey	2001	2022	2001	2022	2001	2022	2001	2022	2001	2022
N	161	85	217	376	378	461	161	85	217	376
Net Present Value	84.52	77.38	67.92	40.22	3.08	2.04***	3.42	3.10**	2.83	1.80***
IRR/Hurdle Rate	84.81	75.00	68.72	39.67	3.09	2.10***	3.41	3.02**	2.86	1.89***
Scenario Analysis	58.67	68.67	46.38	51.78	2.31	2.38	2.56	2.81	2.13	2.28
Payback	45.89	63.86	64.29	66.40	2.53	2.80***	2.25	2.82***	2.72	2.80
ROIC ('22) Book Return ('01)	18.18	56.79	21.78	43.99	1.34	2.15***	1.25	2.60***	1.41	2.05***
P/E Multiples	40.97	48.78	37.50	41.24	1.89	1.92	2.01	2.33	1.80	1.82
Profitability Index	8.03	38.75	14.50	30.56	0.83	1.59***	0.75	1.81***	0.88	1.54***
Real Options	28.03	37.50	25.63	40.28	1.47	1.90***	1.57	1.94*	1.40	1.90***
Simulation Analysis/VAR	16.08	35.80	11.94	17.65	0.95	1.19***	1.22	1.79***	0.76	1.06***
Adjusted Present Value	7.30	18.75	13.20	14.85	0.85	0.99	0.72	1.11**	0.93	0.96

Panel B: Capital Budgeting Techniques, Conditional on Company Characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Size		Public		Growth Prospects		Pay Dividends		Leverage		Cash		Financial Flexibility	
	Small	Large	No	Yes	No	Yes	No	Yes	Low	High	Low	High	No	Yes
N	376	85	373	88	201	215	183	57	92	70	195	188	95	366
Net Present Value	1.80	3.10***	1.78	3.17***	1.81	2.13**	2.04	2.43	1.60	2.10**	2.13	1.84*	1.87	2.09
IRR/Hurdle Rate	1.89	3.02***	1.86	3.10***	1.90	2.20**	1.96	2.60***	1.73	2.44***	2.11	2.01	1.68	2.21***
Scenario Analysis	2.28	2.81***	2.25	2.92***	2.15	2.51**	2.44	2.77	1.94	2.31*	2.22	2.48*	2.00	2.48***
Payback	2.80	2.82	2.75	3.03**	2.80	2.80	2.92	3.07	2.55	2.75	2.76	2.90	2.80	2.81
Return on Invested Capital	2.05	2.60***	2.02	2.73***	1.99	2.23*	2.00	2.36*	1.88	2.58***	2.18	2.06	1.87	2.23**
P/E Multiples	1.82	2.33***	1.74	2.67***	1.59	2.12***	1.91	2.52***	1.43	1.82	1.86	1.92	1.44	2.04***
Profitability Index	1.54	1.81	1.50	1.99***	1.48	1.59	1.69	1.59	1.26	1.63	1.67	1.43	1.37	1.65
Real Options	1.90	1.94	1.91	1.89	1.89	1.86	2.01	2.14	1.61	1.85	1.84	1.90	1.95	1.89
Simulation Analysis/VAR	1.06	1.79***	1.12	1.53***	1.06	1.20	1.20	1.70**	0.82	1.24**	1.11	1.21	0.89	1.27**
Adjusted Present Value	0.96	1.11	0.96	1.12	0.82	1.07**	1.05	1.25	0.84	0.85	0.87	1.08	0.69	1.07**

Table II. Hurdle Rates and the Cost of Capital

This table presents survey responses to the following question about hurdle rates and the cost of capital: *What is the hurdle rate (weighted average cost of capital, or WACC) that your company uses to evaluate investment projects? (The "hurdle rate" is typically the minimum rate of return a project is required to earn in order for a company to pursue the project.)* The table uses data solely from the 2022 Duke CFO Survey (March 2019 wave) and compares results across different company characteristics (e.g., small and large firms are compared in Columns (2) and (3)). For each pair of columns and each pair of numbers, a comparison of means (t-test) is performed. Definitions of demographic variables are given in Appendix Table A2.II. *, **, *** display significance at 10%, 5% and 1%, respectively.

Hurdle Rates and the Cost of Capital Conditional on Company Characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	All Firms	Size		Public		Growth Prospects		Pay Dividends		Leverage		Cash		Financial Flexibility	
		Small	Large	No	Yes	No	Yes	No	Yes	Low	High	Low	High	No	Yes
N	220	138	82	131	89	101	112	132	88	111	101	112	79	22	198
Hurdle Rate	15.02	16.15	13.11**	16.03	13.52**	13.37	16.62**	15.44	14.39	14.79	15.65	16.07	14.72	15.18	15.00
WACC	9.04	9.10	8.95	8.95	9.17	8.05	9.86***	9.00	9.11	8.79	9.28	8.94	9.17	9.48	8.99
Buffer (Hurdle Rate - WACC)	5.98	7.06	4.16**	7.08	4.35**	5.32	6.76	6.44	5.28	6.00	6.37	7.13	5.55	5.70	6.01

Table III. How Do Companies Estimate the Cost of Equity?

This table presents survey responses to the following question about cost of equity methods: *How do you determine your firm's cost of equity capital? {0 = Never, 1, 2, 3, 4 = Always}.* CFOs are asked this question only if they first answered "Yes" to the question: *Does your firm estimate the cost of equity capital? {Yes, No}.* Panel A compares results from the Graham and Harvey (2001) survey to results from the 2022 Duke CFO Survey (March 2020 wave). Columns (1) and (2) display the percentage of large firms that use each technique always or almost always (i.e., they answered a score of 3 or 4 to the question above). Columns (3) and (4) display the same for small firms. Large (small) firms have revenue greater (less) than $1 billion. No statistical tests are performed in Columns (1) to (4). Columns (5) and (6) display the average score (on a zero to four scale) given to each technique in the 2001 and 2022 surveys, respectively. Columns (7) to (10) display analogous information for large and small firms. For each pair of columns and each technique, a comparison of means (t-test) is performed (e.g., in Columns (5) and (6), the mean scores for each technique are compared across the full samples in the 2001 and 2022 surveys). Panel B uses data solely from the 2022 Duke CFO Survey and displays comparisons of the frequency of use of each technique across different company characteristics (e.g., small and large firms are compared in Columns (1) and (2)). Definitions of demographic variables are given in Appendix Table A2.II. *, **, *** display significance at 10%, 5% and 1%, respectively.

Panel A: Cost of Equity, 2001 vs. 2022 Comparison

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Percent Always or Almost Always				Score					
	Large Firms		Small Firms		Survey		Large Firms		Small Firms	
Survey	2001	2022	2001	2022	2001	2022	2001	2022	2001	2022
N	126	51	105	87	231	138	126	51	105	87
CAPM	83.05	82.61	61.86	26.58	2.92	2.14***	3.27	3.20	2.49	1.53***
Multi-Factor Model	37.84	69.05	30.30	28.77	1.56	1.81	1.70	2.62***	1.39	1.34
Historical Average	37.96	32.56	41.05	17.33	1.72	1.20***	1.65	1.51	1.80	1.03***
Investor Expectations	6.60	29.55	22.11	18.18	0.86	1.12*	0.54	1.27***	1.22	1.04
Dividend Discount Model	15.69	17.50	15.79	13.33	0.91	0.76	0.87	0.92	0.96	0.67
Market Return ('22 only)		16.67		20.51		1.06		0.95		1.12
Regulatory Decisions	8.57	14.29	5.32	18.67	0.44	0.89***	0.50	0.83*	0.37	0.92***
Unchanged Estimate ('22 only)		11.36		29.11		1.21		0.66		1.52

Panel B: Cost of Equity, Conditional on Company Characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Size		Public		Growth Prospects		Pay Dividends		Leverage		Cash		Financial Flexibility	
	Small	Large	No	Yes	No	Yes	No	Yes	Low	High	Low	High	No	Yes
N	87	51	81	57	43	82	41	33	23	23	66	47	14	124
CAPM	1.53	3.20***	1.66	2.78***	1.66	2.31**	1.78	2.14	2.14	2.50	2.19	1.70	0.91	2.26***
Multi-Factor Model	1.34	2.62***	1.59	2.13*	1.36	1.87	1.61	2.11	1.37	2.05	1.76	1.56	1.82	1.81
Historical Average	1.03	1.51*	1.06	1.42	1.60	0.92**	1.14	1.59	0.90	1.00	0.98	1.34	1.23	1.20
Investor Expectations	1.04	1.27	0.90	1.45**	1.34	0.82**	1.00	1.45	1.05	0.78	0.98	1.12	1.00	1.14
Dividend Discount Model	0.67	0.92	0.71	0.82	0.64	0.63	0.83	0.81	0.45	0.78	0.78	0.59	0.33	0.81
Market Return	1.12	0.95	1.21	0.83	1.17	1.01	0.94	1.33	1.33	0.72	0.87	1.44**	0.27	1.14**
Regulatory Decisions	0.92	0.83	0.93	0.84	1.26	0.62***	0.76	1.29	0.71	0.90	0.73	1.05	0.67	0.91
Unchanged Estimate	1.52	0.66***	1.59	0.63***	1.35	1.17	1.56	1.19	1.33	0.75	1.05	1.57*	1.83	1.14

Table IV. What Metrics Do Companies Use to Measure Debt Usage?

This figure displays CFO responses to the following question about their primary debt measures: *When you consider the appropriate amount of debt for your firm (optimal capital structure), what are the primary metrics your company uses?(rank your top 3)* This table displays comparisons of the percentage across different company characteristics (e.g., small and large firms are compared in Columns (4) and (5)). The rankings in Columns (4) to (13) are averages with primary=3, secondary=2, and tertiary=1. This table uses data from the 2022 Duke CFO Survey. For each pair of columns and each debt measure, a comparison of means (t-test) is performed in Columns (4) to (13). Definitions of demographic variables are given in Appendix Table A2.II. *, **, *** display significance at 10%, 5% and 1%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Percent Primary, Secondary or Tertiary (all firms)			Conditional on Company Characteristics									
				Size		Public		Leverage		Cash		Financial Flexibility	
	Primary	Secondary	Tertiary	Small	Large	No	Yes	Low	High	Low	High	No	Yes
N				263	111	251	123	183	167	185	129	41	333
Debt/EBITDA	37.84	17.03	11.08	1.46	1.91***	1.44	1.90***	1.45	1.78**	1.74	1.47*	1.56	1.59
Interest Coverage	11.89	22.43	20.00	1.10	0.80**	1.16	0.71***	1.00	1.07	1.15	0.88**	1.02	1.01
Debt/Assets	16.22	14.86	14.05	1.07	0.56***	1.16	0.44***	1.11	0.73***	0.72	1.23***	0.90	0.92
Credit Rating	7.30	16.31	14.16	0.31	1.35***	0.29	1.29***	0.51	0.80**	0.72	0.52	0.58	0.69
Liabilities/Assets	7.84	11.89	11.08	0.76	0.19***	0.76	0.24***	0.73	0.40***	0.38	0.94***	0.83	0.56*
Debt/Equity	10.00	7.30	8.92	0.65	0.25***	0.60	0.38**	0.57	0.49	0.54	0.54	0.56	0.53
Debt/Value	4.86	6.22	7.57	0.32	0.42	0.26	0.54***	0.31	0.40	0.45	0.21***	0.37	0.35

Table V. Do Companies Have Target Debt Ratios?

This table presents survey responses to the following question about target debt ratios: *Does your firm have a target for how much debt to use? {No Target/Range, Flexible Target/Range, Somewhat Tight Target/Range, Strict Target/Range}*. The percentage of CFOs that choose a given answer are shown in the bottom four rows. In the conditional analysis, large (small) firms have revenue greater (less) than $1 billion. Panel A compares results from the Graham and Harvey (2001) survey to results from the 2022 Duke CFO Survey (March 2020 wave). For each pair of columns, a Pearson's chi-squared test for differences in proportions (reflected in the bottom four rows) is performed. For example, in columns (1) and (2) of Panel A, the frequency of firms in each target debt range are compared and tested across the full samples in the 2001 and 2022 surveys. Panel B uses data solely from the 2022 Duke CFO Survey and displays comparisons conditional on company characteristics (e.g., public and private firms are compared in Columns (3) and (4)). In both panels, the row "Score" gives the average score and the significance from the comparison of proportions. The values used in each score are 0=No Target, 1=Flexible, 2=Somewhat Tight, 3=Strict. Definitions of demographic variables are given in Appendix Table A2.II. *, **, *** display significance at 10%, 5% and 1%, respectively.

Panel A: Target Debt Ratios, 2001 vs. 2022 Comparison

	(1)	(2)	(3)	(4)	(5)	(6)
	Full Sample		Large Firms		Small Firms	
Survey	2001	2022	2001	2022	2001	2022
N	361	385	148	111	213	274
Score	1.62	1.33***	1.57	1.66	1.66	1.20***
No Target	9.70	27.53	10.14	9.01	9.39	35.04
Flexible	37.12	27.27	33.78	30.63	39.44	25.91
Somewhat Tight	34.35	29.87	45.27	45.95	26.76	23.36
Strict	18.84	15.32	10.81	14.41	24.41	15.69

Panel B: Target Debt Ratios, Conditional on Company Characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Size		Public		Growth Prospects		Pay Dividends		Leverage		Cash		Financial Flexibility	
	Small	Large	No	Yes	No	Yes	No	Yes	Low	High	Low	High	No	Yes
N	274	111	262	123	166	164	268	117	188	169	186	130	44	341
Score	1.20	1.66***	1.22	1.57***	1.29	1.32	1.25	1.50***	1.16	1.56***	1.53	1.10***	1.14	1.35***
No Target	35.04	9.01	34.73	12.20	28.92	26.22	32.09	17.09	34.04	18.34	18.28	36.15	47.73	24.93
Flexible	25.91	30.63	25.95	30.08	27.11	28.05	27.99	25.64	27.13	26.63	27.96	27.69	18.18	28.45
Somewhat Tight	23.36	45.95	22.14	46.34	30.12	32.93	22.39	47.01	27.13	36.09	36.02	26.15	6.82	32.84
Strict	15.69	14.41	17.18	11.38	13.86	12.80	17.54	10.26	11.70	18.93	17.74	10.00	27.27	13.78

Table VI. High and Low Debt Bounds and Timetables to Return to Target

This table presents survey responses to the following question about whether companies set and upper or lower bounds as part of an acceptable range for their target debt ratios. These responses are only displayed for firms that indicate they had a strict, somewhat tight, or flexible debt target/range in Table V. This table uses data from the 2022 Duke CFO Survey (March 2019 wave). The percentage of responses is displayed conditional on company characteristics (e.g., small and large firms are compared in Columns (1) and (2)). For each pair of columns, a comparison of means (t-test) is performed. For example, 59.9% of small firms indicate that they set an upper limit debt ratio. Among this subset of firms, 67.6% set a timetable to reduce their debt ratio when they hit the upper debt limit. The lower limit information is interpreted analogously. Definitions of demographic variables are given in Appendix Table A2.II. *, **, *** display significance at 10%, 5% and 1%, respectively.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		Size		Public		Growth Prospects		Pay Dividends		Leverage		Cash		Financial Flexibility	
		Small	Large	No	Yes	No	Yes	No	Yes	Low	High	Low	High	No	Yes
	N	257	89	246	100	153	149	242	104	173	160	171	123	41	305
We set an upper limit on our debt ratio		59.92	74.16**	58.13	77.00***	60.13	67.79	57.44	77.88***	61.85	70.00	71.93	59.35**	48.78	65.57**
We set a lower limit on our debt ratio		29.80	52.81***	28.69	53.00***	30.07	42.28**	32.50	43.27*	28.49	46.25***	43.86	27.64***	26.83	36.96
We set a timetable to bring down our debt ratio		67.57	76.19	65.94	78.08*	70.45	70.10	71.11	68.42	67.33	72.48	71.67	63.77	80.00	69.11
We set a timetable to bring up our debt ratio		44.59	52.17	40.58	56.86*	57.78	39.34*	42.31	57.14	40.43	52.05	55.56	38.24*	36.36	48.62

Table VII. Which Factors Drive Debt Decisions?

This table presents survey responses to the following question about key debt factors: *Which of the following factors affect how your firm chooses the appropriate amount of debt for your firm? {0 = Not Important, 1, 2 = Moderate Importance, 3, 4 = Very Important}.* Panel A compares results from the Graham and Harvey (2001) survey to results from the 2022 Duke CFO Survey (March 2020 wave). Columns (1) and (2) display the percentage of large firms that regard each factor important or very important (i.e., they answered a score of 3 or 4 to the question above). Columns (3) and (4) display the same for small firms. Large (small) firms are firms with revenue greater (less) than $1 billion. No statistical tests are performed in Columns (1) to (4). Columns (5) and (6) display the average score (on a zero to four scale) given to each factor in the 2001 and 2022 surveys, respectively. Columns (7) to (10) display analogous information for large and small firms. For each pair of columns and each technique, a comparison of means (t-test) is performed (e.g., in Columns (5) and (6), the mean scores for each factor are compared across the full samples in the 2001 and 2022 surveys). For example, 87.38% of large firms in the 2022 survey regard maintaining financial flexibility as an important or very important factor that affects their debt decisions. Panel B uses data solely from the 2022 Duke CFO Survey and displays comparisons of the frequency of use of each factor across different company characteristics (e.g., small and large firms are compared in Columns (1) and (2)). Definitions of debt factors and demographic variables are given in Appendix Table A2.II. *, **, *** display significance at 10%, 5% and 1%, respectively.

Panel A: Key Debt Factors, 2001 vs. 2022 Comparison

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Percent Important or Very Important				Score					
	Large Firms		Small Firms		Full Sample		Large Firms		Small Firms	
	2001	2022	2001	2022	2001	2022	2001	2022	2001	2022
N=	156	107	211	262	367	369	156	107	211	262
Financial Flexibility	59.87	87.38	59.02	78.17	2.59	3.20***	2.65	3.47***	2.54	3.09***
Credit Rating	81.70	63.46	38.83	21.43	2.46	1.73***	3.14	2.82*	1.95	1.28***
Level of Interest Rates	50.99	55.34	42.93	50.80	2.22	2.47**	2.40	2.53	2.08	2.44**
Earnings and Cash Flow Volatility	48.05	53.33	48.10	54.76	2.32	2.50*	2.36	2.49	2.28	2.50*
Insufficient Internal Funds	39.33	37.25	52.17	60.40	2.13	2.34*	1.88	1.80	2.31	2.55
Transaction Costs and Fees	26.00	30.39	38.94	33.33	1.95	1.89	1.81	1.75	2.05	1.95
Comparable Firm Debt Levels	32.24	26.92	16.91	15.54	1.49	1.24**	1.77	1.70	1.29	1.05*
Equity Under/Over-Valuation	34.87	25.49	27.72	20.99	1.56	1.48	1.76	1.58	1.41	1.44
Amount of Collateral Available ('22 only)		25.24		40.94		1.85		1.30		2.07
Interest Tax Savings	60.26	24.04	33.65	17.13	2.07	1.30***	2.44	1.62***	1.80	1.16***
Bankruptcy/Distress Costs	16.11	21.36	25.12	23.11	1.24	1.25	1.10	1.21	1.33	1.27
Customer/Supplier Concerns	20.13	11.76	17.70	17.36	1.24	1.17	1.30	1.15	1.21	1.18
Investor Interest and Tax Costs	5.33	4.95	4.39	6.10	0.68	0.64	0.72	0.49*	0.64	0.70

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Panel B: Key Debt Factors, Conditional on Company Characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Size		Public		Growth Prospects		Pay Dividends		Leverage		Cash		Financial Flexibility	
	Small	Large	No	Yes	No	Yes	No	Yes	Low	High	Low	High	No	Yes
N	262	107	252	117	163	156	253	116	184	167	183	128	41	328
Financial Flexibility	3.09	3.47***	3.09	3.44***	3.22	3.14	3.12	3.38*	3.26	3.12	3.19	3.23	3.08	3.22
Credit Rating	1.28	2.82***	1.27	2.73***	1.80	1.59	1.55	2.12***	1.55	1.92*	1.85	1.46*	1.59	1.75
Level of Interest Rates	2.44	2.53	2.46	2.48	2.39	2.54	2.40	2.61	2.42	2.50	2.42	2.54	2.08	2.52*
Earnings and Cash Flow Volatility	2.50	2.49	2.43	2.63	2.54	2.43	2.49	2.51	2.45	2.60	2.46	2.51	2.77	2.46
Insufficient Internal Funds	2.55	1.80***	2.58	1.80***	2.50	2.16*	2.55	1.89***	2.37	2.31	2.30	2.43	3.30	2.21***
Transaction Costs and Fees	1.95	1.75	1.96	1.73	1.99	1.84	1.91	1.84	2.03	1.73*	1.77	2.02	1.92	1.89
Comparable Firm Debt Levels	1.05	1.70***	0.97	1.82***	1.25	1.19	1.19	1.35	1.11	1.35	1.31	1.03*	1.18	1.25
Equity Under/Over-Valuation	1.44	1.58	1.27	1.91***	1.39	1.58	1.48	1.48	1.28	1.69**	1.44	1.49	1.34	1.50
Amount of Collateral Available	2.07	1.30***	2.09	1.35***	1.89	1.77	2.05	1.43***	1.80	1.93	1.98	1.75	2.30	1.79*
Interest Tax Savings	1.16	1.62**	1.14	1.63***	1.18	1.32	1.27	1.35	1.26	1.27	1.26	1.27	0.82	1.35*
Bankruptcy/Distress Costs	1.27	1.21	1.24	1.29	1.32	1.14	1.27	1.22	1.19	1.32	1.32	1.28	1.71	1.20*
Customer/Supplier Concerns	1.18	1.15	1.13	1.25	1.32	1.11	1.22	1.06	1.02	1.32*	1.13	1.15	1.59	1.12*
Investor Interest and Tax Costs	0.70	0.49	0.65	0.61	0.73	0.56	0.63	0.64	0.61	0.61	0.59	0.63	0.45	0.66

Table VIII. Why Do Companies Maintain Financial Flexibility?

This table presents survey responses to the following question about the reasons to maintain financial flexibility: *Why is it important for your firm to maintain financial flexibility? (Choose up to three).* This question was only asked of firms that indicated that financial flexibility was at least moderately important (at least 2 on a scale of 0 to 4) in a previous question: *Which of the following factors affect how your firm chooses the appropriate amount of debt for your firm? {0 = Not Important, 1, 2 = Moderate Importance, 3, 4 = Very Important}.* This table shows the percentage of firms that chose a given reason for it being important to maintain financial flexibility, conditional on different company characteristics. For each pair of columns, a comparison of means (t-test) is performed. For example, 65.95% of small firms indicate that maintaining financial flexibility is important to help avoid financial distress. Definitions of demographic variables are given in Appendix Table A2.II. *, **, *** display significance at 10%, 5% and 1%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Size		Public		Growth Prospects		Pay Dividends		Leverage		Cash		Financial Flexibility	
	Small	Large	No	Yes	No	Yes	No	Yes	Low	High	Low	High	No	Yes
N	232	101	222	111	144	143	226	107	167	149	170	118	36	297
Pursue investment opportunities	52.16	68.32***	49.55	72.07***	51.39	62.94**	51.33	69.16***	53.89	57.72	60.59	49.15*	41.67	58.92**
Access long-term debt markets	26.29	61.39***	26.58	57.66***	34.72	37.76	33.19	44.86**	27.54	48.99***	47.65	24.58***	30.56	37.71
Avoid financial distress during downturns	65.95	53.47**	66.22	54.05**	63.89	63.64	62.83	60.75	67.66	59.73	61.76	65.25	52.78	63.30
Access short-term funding	27.16	37.62*	29.28	32.43	31.25	31.47	30.97	28.97	27.54	32.21	25.29	33.05	44.44	28.62*
Preserve lines of credit	48.71	26.73***	48.65	28.83***	46.53	36.36*	44.69	36.45	44.31	41.61	47.06	36.44*	50.00	41.08
Maintain a large cash balance	25.86	15.84**	29.28	9.91***	30.56	18.18**	24.34	19.63	28.14	15.44***	13.53	39.83***	22.22	22.90
Access equity markets	12.50	7.92	8.11	17.12**	7.64	13.29	11.95	9.35	12.57	9.40	10.00	13.56	19.44	10.10*

Table IX. Payout

This table presents CFO views on capital allocation and payout decisions. Panel A displays the importance of various factors that drive payout decisions, in the context of the following question: *How important are the following factors to your company's dividend/repurchase decisions? {0 = Not Important at All, 1 = Somewhat Unimportant, 2, 3 = Important, 4 = Very Important}.* Data are from the 2022 CFO Survey (March 2020 wave). The "Div." (Rep.") column shows responses for the subset of firms that pay dividends (repurchase shares); a firm can be in both groups. Columns (1) and (2) of Panel A display the percentage of CFOs that answered three or four. For example, 77.5% of dividend payers state that the stability of future earnings is important or very important to dividend decisions. Panel B displays the 2020 CFO responses to the following question: *Please indicate the priority of the following items as your firm allocates capital. {1 = Not important; 2 = Like to do but only moderately important; 3 = Important, do if possible; 4 = Top priority}.* The percentage of firms that answer "Important, do if possible" or "Top priority" are shown in Columns (1) and (2); the other columns present the mean scores based on a 1 to 4 scale for the four choices. For example, 77.3% of dividend-paying firms say that maintaining historic levels of dividends is important or a top priority. Public firms are listed on a stock exchange and large firms have sales revenue of at least $1 billion. For each pair of columns, a comparison of means (t-test) is performed. No statistical tests are performed on Columns (1) and (2). Definitions of demographic variables are given in Appendix Table A2.II. *, **, *** display significance at 10%, 5% and 1%, respectively.

Panel A: Important Factors Driving Payout Decisions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Percent Important or Very Important		Sub-Sample Comparisons							
	All Firms		All Firms		Public Firms		Large Firms		Small Firms	
	Rep.	Div.	Rep.	Div.	Rep.	Div.	Rep.	Div.	Rep.	Div.
N	52	89	52	89	32	33	25	33	27	56
Stability of future earnings	57.69	77.53	2.46	3.06**	2.57	3.13	2.57	3.09	2.37	3.04*
Preferences of our investors	50.00	71.91	2.33	2.87**	2.45	2.61	2.71	2.81	2.00	2.91***
Sustainable change in earnings	53.85	71.91	2.24	2.95**	2.32	3.00*	2.29	2.75	2.19	3.08**
Having extra cash/liquid assets	67.31	58.43	2.76	2.55	3.03	1.97**	3.17	2.00***	2.38	2.87
Availability of investment opportunities	57.69	39.33	2.53	2.19	3.03	2.20*	3.25	2.16**	1.89	2.21
Personal taxes of stockholders	13.46	31.46	0.94	1.66**	0.74	0.74	0.62	0.78	1.22	2.19**
Temporary change in earnings	25.00	17.98	1.33	1.41	1.45	0.97	1.42	1.00	1.26	1.67
Payout policy of competitors	11.54	15.73	0.98	0.99	1.39	1.84	1.33	1.56	0.67	0.64
Market price of stock	55.77	14.61	2.48	1.01***	3.07	1.68***	3.12	1.53***	1.88	0.70***

Panel B: How Do Companies Prioritize Capital Allocation of Funds?

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		Percent Important or Top Priority		Sub-Sample Comparisons							
		All Firms		All Firms		Public Firms		Large Firms		Small Firms	
		Rep.	Div.	Rep.	Div.	Rep.	Div.	Rep.	Div.	Rep.	Div.
	N	60	128	60	128	39	49	30	46	30	82
Maintain historic levels of dividends		56.67	77.34	2.82	3.28**	3.21	3.46	3.38	3.48	2.24	3.18***
Fund existing capital spending		78.33	77.34	3.32	3.22	3.55	3.53	3.72	3.67	2.89	2.96
Fund new capital spending		80.00	75.00	3.32	3.07	3.41	3.30	3.41	3.33	3.22	2.92
Increase dividend per share		46.67	60.16	2.30	2.71*	2.53	2.72	2.59	2.70	2.00	2.72**
Pay down debt		53.33	57.03	2.68	2.74	2.53	2.63	2.57	2.67	2.80	2.78
Increase cash holdings		41.67	47.66	2.43	2.46	2.38	2.09	2.22	2.07	2.63	2.67
Fund R&D		51.67	46.88	2.75	2.51	2.97	2.72	3.07	2.85	2.40	2.32
Acquisitions		58.33	32.81	2.80	2.22***	2.92	2.58	2.82	2.42	2.79	2.10**
Repurchasing shares		73.33	24.22	2.91	1.85***	3.03	2.40**	3.07	2.35**	2.75	1.53***

Appendix 1

This project is the culmination of 25 years of survey research using the Duke CFO survey to document the practice of corporate finance. I thank my outstanding coauthors for their significant contributions to the following papers:

- Graham and Harvey (2001) examine capital structure, capital budgeting, and cost of capital.
- Brav, Graham, Harvey, and Michaely (2005, 2008) study payout policy.
- Graham, Harvey, and Rajgopal (2005) examine financial reporting and whether firms sacrifice value to deliver earnings.
- Campello, Graham, and Harvey (2010) study how financial constraints affected corporate decisions during the Great Financial Crisis.
- Graham and Harvey (2010) examine equity risk premia. This analysis has been updated many years between 2007 and 2018; see https://faculty.fuqua.duke.edu/~jgraham/resume.html
- Graham, Hanlon, and Shevlin (2010) examine trapped foreign profits.
- Graham, Hanlon, and Shevlin (2011) study tax effects on profit repatriation.
- Campello, Giambona, Graham, and Harvey (2011, 2012) explore liquidity management and investment during the Great Financial Crisis.
- Graham, Harvey, and Puri (2013) examine behavioral characteristics of executives and how they affect corporate policies.
- Dichev, Graham, Harvey, and Rajgopal (2013) study earnings quality.
- Ben-David, Graham, and Harvey (2013) and Boutros et al. (2021) examine managerial miscalibration in stock market forecasts, risk premia, and whether firms learn from forecasting errors.
- Graham, Hanlon, Shevlin, and Shroff (2014) study incentives for tax planning.
- Graham, Harvey, and Puri (2015) examine capital allocation and delegation of decision-making.
- Graham, Hanlon, Shevlin, and Shroff (2017) examine how taxes affect corporate decision-making, including value loss due to non-optimal tax considerations.
- Giambona, Graham, and Harvey (2017) examine how managerial views on political risk affect investment.
- Giambona, Graham, Harvey and Bodnar (2018) broadly review the practice of risk management.
- Bodnar, Giambona, Graham, and Harvey (2019) examine how executive risk aversion affects corporate risk management decisions.
- Graham, Grennan, Harvey, and Rajgopal (2021) explore corporate culture.
- Graham, Hanlon, and Shroff (2021) examine the effects of the 2018 TCJA tax reform and 2020 CARES Act effects on corporate decision-making.
- Barry, Campello, Graham, and Ma (2022) study how financial flexibility, work-from-home flexibility, and investment flexibility affect corporate plans during the COVID crisis.

An archive of Duke's quarterly Global Business Outlook survey, which underlies most of these projects, can be found at cfosurvey.fuqua.duke.edu.

Appendix 2 (accompanies Section I)
Survey Details, Data Definitions, Concerns about Survey Data

The March 2019 survey ("Wave 1") was conducted from February 28, 2019 to April 12, 2019 and covered topics related to internal forecasts and plans for 2019, capital structure, funding sources, issuances and retirements, and cost of capital. As part of validating the survey instrument, 13 firms were surveyed from January 14 through February 10, 2019 to test the survey instrument; these firms are included in the sample, though results do not change if they are excluded. The survey instrument can be found at https://cfosurvey.fuqua.duke.edu/2019q1/survey/index.htm. Many of the questions are conditional on previous survey answers. For example, if and only if a respondent indicates that financial flexibility is of medium or greater importance to capital structure decisions is she asked a follow-up question on which aspects of by financial flexibility are most important. As another example, after a respondent indicated that a given debt metric (e.g., Debt/EBIDTA) was their preferred method to measure capital structure, the capital structure questions that followed would be worded in the context of this debt metric. See http://faculty.fuqua.duke.edu/~jgraham/CFandReality2019survey.pdf for a high-level review of the survey questions and branching.

In North America, 6900 surveys were sent out and 980 responses were received, for a 14.2% response rate relative to the 6900 surveys; if CFOs who did not respond to any quarterly Duke survey from 2016 to 2018 are assumed to have defunct email addresses and are deleted, the response rate from active CFO survey participants is approximately 50%. After filtering, there are 51 Canadian responses among the North American responses; I include them when I refer to US data in the text, though the results do not change if the Canadian firms are deleted.

The March 2020 survey ("Wave 2") covered topics related to capital budgeting and investment, evaluating internal 2019 forecasts and making 2020 forecasts, stakeholder emphasis, and payout. Several of the questions on the March 2020 survey followed up on the March 2019 survey; for example, asking CFOs for 2019 realizations for certain 2019 forecast variables and asking how the firm reacted if the 2019 forecast and 2019 realization differed. As part of validating the survey instrument, 11 firms were surveyed from February 11 to February 21, 2020 to test that the branching and follow-up survey software worked well; these 11 firms are included in the March 2020 analysis, though results do not change if they are excluded. The main part of the 2020 survey was conducted from March 3, 2020 to April 15, 2020. The survey instrument can be found at https://cfosurvey.200bfuqua.duke.edu /2020q1/survey/index.htm See http://faculty.fuqua.duke.edu/~jgraham/CFandReality2020survey.pdf for a high-level review of the survey questions and branches.

In North America, the response rate was approximately 20% for the March 2020 survey. Again, Canadian firms are included and sometimes referred to as US firms in the text. Of the March 2019 firms, 343 also responded to the March 2020 survey. Research assistants and I emailed and attempted to phone call March 2019 respondents to encourage them to also respond to the March 2020 survey.

Figure A2.1 contains demographic data for the survey responses. Table A2.I compares the survey respondent firms to Compustat firms and reveals that Compustat firms and survey firms are relatively similar in terms of revenue and employment. While there are proportionally more large firms (revenue greater than $1B) in Compustat, within each revenue category the quartiles of employee counts are very similar. Considering that having a large number of private firms aligns the survey sample with the overall economy, this suggests that survey firms are generally representative of Corporate America in the dimensions explored.

Figure A2.1. Survey Demographics

This figure displays demographic breakdowns along characteristics of North American firms in the 2022 Duke CFO Survey. Data are from both waves (2019 and 2020) of the focal survey. "Family Firm," "CFO Age," "CFO Tenure," and "CFO Education" are only available for firms in the second wave of the survey. Panel H displays percentages only for firms that provide a credit rating (around 40% of the sample). In Panel O, "PG" and "UG" indicate postgraduate and undergraduate, respectively, as the highest education for responding CFOs.
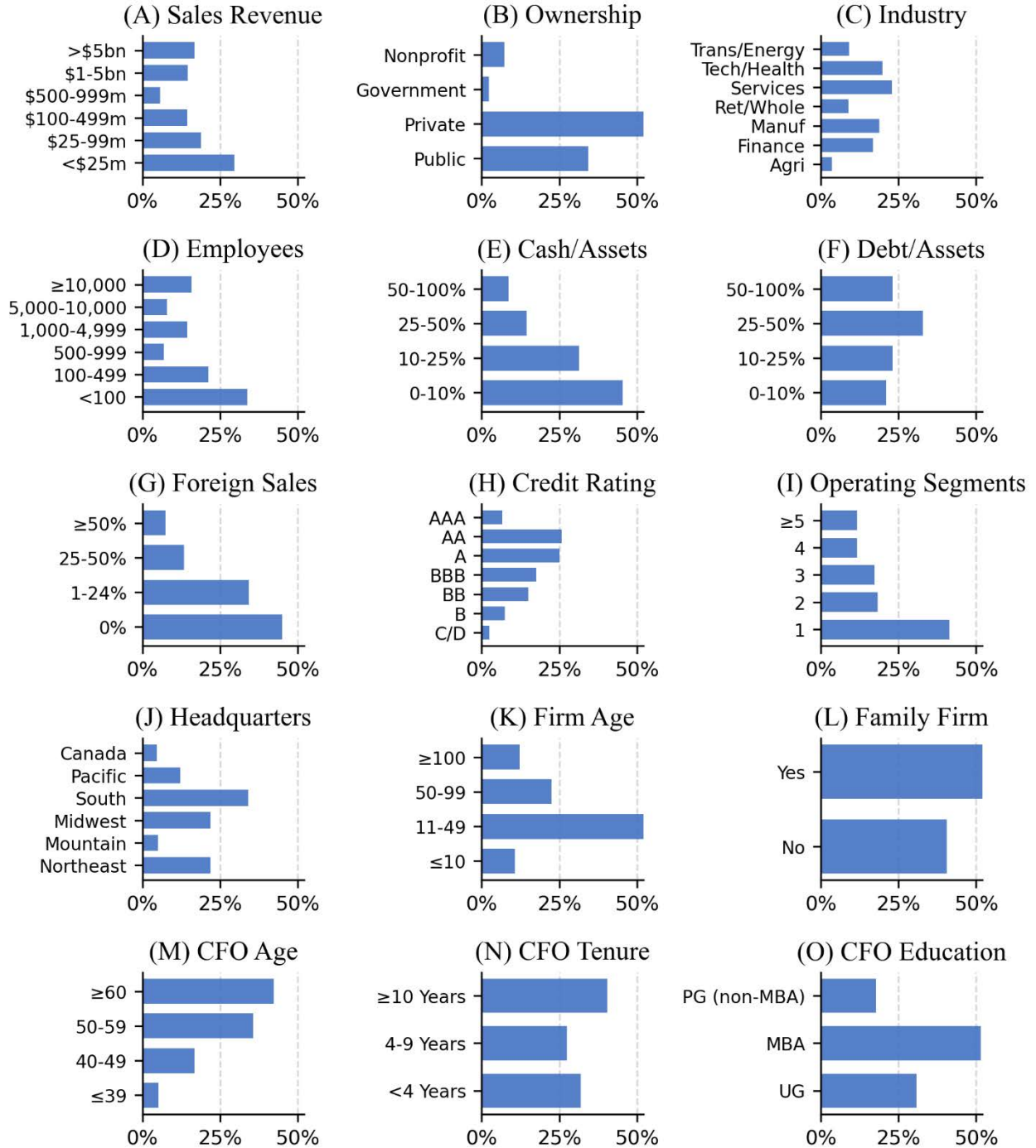
Table A2.I Survey Demographic Summary Statistics and Compustat Comparison

This table displays a comparison of Survey and Compustat Firms using the second wave of the 2022 CFO Survey, based on financial information for 2019. It displays the distribution of employee counts across different revenue categories for both survey and Compustat firms. Columns (1) displays the percentage of survey firms that fall in each revenue category. For example, 19.8% of survey firms have $5 million or less in sales revenue for the year 2019. Columns (2) to (4) display the 25th, 50th and 75th percentiles of employee counts for survey firms within each revenue category. Columns (5) to (8) display the same for Compustat firms for fiscal year 2019. Overall, this table shows that conditional on sales, survey and Compustat employment are similarly distributed.

| | Survey Sample | | | | Compustat | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
	% of Sample	25%	50%	75%	% of Sample	25%	50%	75%
≤ 5m	19.8	2	9	27	15	3	12	35
5-25m	16.2	31	59	100	7.2	26	56	94
25-100m	26.9	99	198	350	13	91	162	266
100m-1bn	21.3	425	925	1,900	30.4	341	762	1,700
1-5bn	8.1	2,150	5,200	10,000	21.4	2,217	4,900	9,100
> 5bn	7.7	10,000	35,500	82,500	12.9	10,700	23,200	55,000

Table A2.II Demographic Variable Definitions

This table defines some of the demographic conditioning variables that are used in the paper. All variables are created using survey responses from CFOs that responded to the 2001 or 2022 Duke CFO Surveys. For each table in which these variables are used, if the CFO did not answer a given question (their response was missing for a given variable), their responses are excluded when defining the denominator for the demographic variable in the table's results. These variables are all binary.

Demographic Variable	Definition
Size	Small: Revenue below $1B; Large: Revenue greater than or equal to $1B. Note that results do not change if the large size cutoff were changed to $1.4B in 2022, to adjust for inflation in the 20 years since Graham and Harvey (2001) used a $1B cutoff.
Public	No: Firm is private, non-profit, or government; Yes: Firm is publicly listed
Growth Prospects	Yes: An answer of 4 or 5 to the question *Over the next three years, we expect our firm's growth will be... {1 = Much Slower than other firms in our industry, 2 = Slower..., 3 = About the same..., 4 = Faster..., 5 = Much faster...}.*
Pay Dividends	Yes: the firm pays dividends to its shareholders
Leverage	Low: the firm's debt/assets is below 30 percent; High: the firm's debt/assets is equal to or above 30 percent
Cash	Low: the firm's cash/assets is below 10 percent; High: the firm's cash/assets is equal to or above 10 percent
Financial Flexibility	No: None or a little financial flexibility; Yes: more than a little to the question *About how much financial flexibility would you say your company has right now? {0 = None, 1 = A little, 2, 3 = Moderate, 4, 5 = A lot}.*
Family Firm	Yes: An answer of 1 or 2 to the question *To what extent is your firm a "family firm"? {1 = Primarily controlled by, 2 = Not controlled but have influence, 3 = Not family firm, 4 = Don't Know}.* The firms that answered 4 are excluded.
CEO Performance Pay	Yes: An answer of 3, 4, 5, or 6 to the question *What proportion of your company's CEO pay is performance based? {1 = None, 2 = 1-10%, 3 = 11-30%, 4 = 31-50%, 5 = 51-80%, 6 => 80%, 7 = Don't Know/Not Applicable}.* The firms that answered 7 are excluded.

Concerns about Survey Data: Archival data are used in most empirical corporate finance studies. Many archival studies offer, among other things, statistical power and cross-sectional and time-series variation. However, such data can have weaknesses related to variable specification and the inability to explore qualitative issues. In this paper I instead rely on survey data. One advantage of the survey approach is that it allows researchers to directly ask decision-makers how they make decisions.

There are well-known concerns about surveys. Surveys measure beliefs and not necessarily actions. Survey questions could be misunderstood. Managers might say one thing but do another. Managers might also act 'as if' they follow a model's recommendations without following the specific assumptions of the model (Section I discusses limitations of the as-if argument in the context of this paper).

There can also be concerns about sample selection and sample representativeness. One of the key findings of this paper is similarity (stickiness) of results in surveys conducted in the early 2000s versus the 2022 surveys. This stickiness tempers several of the concerns (for example, the concern about CFOs not understanding the survey questions); among other things, if the responses are unrepresentative, stickiness would require that the samples from the early 2000s and the current surveys be similarly unrepresentative. Broadly, while some of the concerns about surveys could potentially affect the magnitudes of certain answers, the themes (which are derived by making relative comparisons across time and across decisions) seem less likely to be affected.

Occasionally survey critics argue that managers are not truthful in their survey responses. Given that the executives can skip or stop participating in the survey at no cost, and the survey is confidential for those who participate, it seems unlikely that CFOs would participate in the survey and not answer truthfully. Moreover, often-times survey responses align closely with archival data, especially about factual information. For example, the ex ante sources and uses of funds that CFOs describe in Appendix Figure A7.3 of this paper align closely with the ex post financial statement data found in Korteweg et al. (2020). Finally, my assessment from conducting surveys and talking with CFOs for 25 years is that executives would not take the time to fill out a survey if their intent was to be untruthful.

I performed two specific sets of tests to explore the possibility of nonresponse bias in the survey data. The first experiment, suggested by Wallace and Mellor (1988) and also conducted by Graham and Harvey (2001), compares the responses for firms that returned the survey early in the process to those that did not return the survey until later in the process after receiving reminders and possibly receiving a phone call (interpreting the late responders as pseudo-nonresponders). This test used the Monday that approximately split the sample into two even groups as the early versus late cutoff. I applied this test to two key topics, both of which received a reasonable response rate: Capital Budgeting Techniques (Figure 2) and Debt Factors (Figure 16). For debt factors, the differences are tiny for early versus late respondents and the rankings of the importance of various debt factors are virtually unchanged. For the capital budgeting analysis, the rankings are nearly unchanged, though small firms that responded late rate NPV and P/E multiples as more important than do small firms that responded early. I do not have an explanation for this latter result, and it does contribute to a significant difference between early and late respondents based on a chi-square test comparing the equality all 10 capital budgeting techniques as a group for early versus late respondents. Overall, however, this analysis does not suggest that non-response bias (as proxied by late responders) drives the findings in this paper.

The second experiment, suggested by Moore and Reichert (1983) and also conducted by Graham and Harvey (2001), investigates possible non-response bias by comparing characteristics of responding companies to characteristics for an approximation of the population at large. In this experiment, a sample of 520 firms (the number of observations in the 2020 wave of the survey) was drawn from Compustat for

fiscal year 2019. I performed a non-stratified Monte Carlo experiment in which any firm from Compustat can be drawn in the Monte Carlo simulation to match a given survey firm. In a separate stratified version of the Monte Carlo experiment, the 520 Compustat firms are selected to match the observed number of employees of the 520 sample firms.

A single draw of a Monte Carlo simulation of the 520 Compustat firms consisted of average values for the following variables: sales revenue, debt/assets, cash/assets, and a binary measure of whether a firm pays a dividend. This was repeated 1,000 times with replacement. Comparing the survey sample averages for these same four variables allows me to determine whether a given survey variable is significantly different (e.g., greater than the 950th Monte Carlo value of this variable). For debt ratios and cash holdings there is no evidence of statistical differences between the survey sample and the Monte Carlo Compustat sample; in fact, median debt ratios in the sample are within one percentage point of the Monte Carlo median, and likewise for cash holdings. Considering both public and private firms, the propensity of survey sample firms to pay dividends is 24%, compared to about 30% in the Monte Carlo samples, which is not surprising given that my sample contains private firms and Compustat for the most part does not. Finally, also not surprisingly given the information in Table A2.I and the fact that the survey contains many small private firms, the sales revenue for sample firms is statistically smaller relative to the Monte Carlo distribution. Among just the public firms in the survey sample, the median sales is lower than the Compustat median but the 75th percentile is larger. Thus, the survey has a wide range of sales revenue data but is somewhat light in terms of medium-sized firms. I have no reason to suspect that this is due to nonresponse bias, nor that nonresponse bias drives the results of this paper.

The set of potential concerns about survey data is impossible to completely refute. Ultimately, therefore, the analysis performed in this paper and the conclusions reached must be interpreted keeping in mind that the data are from surveys. Having said this, the survey data provide unique information that complements what we can learn from traditional archival analyses and clinical studies. Moreover, a better understanding of management beliefs is helpful when interpreting possible causality in theoretical models and large-scale empirical analyses predicting outcomes. On net, surveys are a valuable complement to other data sources but still, they should be interpreted with appropriate caveats.

As summarized in the text, most companies calculate NPV when evaluating projects. Among firms that do not rely heavily on NPV, the following table summarizes explanations conveyed by respondents in open-ended text.

Table A3.I
The Relative Importance of the NPV Decision Rule

This table summarizes CFO responses to an open-ended question that asked why NPV was not a dominant decision criterion. Only the subset of CFOs who indicated on the March 2019 survey that NPV was not a top 3 decision rule were asked this question.

▪ NPV is a factor but strategic considerations come first.

▪ We always calculate NPV but it is one among several techniques we rely upon (in addition to IRR, payback/breakeven, and ROIC).

➢ Quick positive cash flow/payback is essential, as is high ROI.

➢ Use NPV and IRR in tandem, both must be superior.

▪ NPV plays a support role.

➢ NPV plays a confirming role, back-up role, secondary role.

➢ NPV is tie-breaker, or to justify a decision.

▪ We tend to be unsophisticated and rely on cash return analysis.

▪ We focus most on growth (to survive), NPV is more of a long run evaluation.

▪ NPV requires cash flow forecasts many years into the future but these forecasts are not reliable beyond a year or two; therefore, we can't rely just on NPV.

▪ Highest return (IRR) is most important.

▪ To use NPV (DCF) correctly requires a lot of detail and effort, which we often skip.

➢ More likely to rely on NPV the larger the project.

▪ NPV will be less relevant in a pandemic environment.

Table I in the text demonstrates that NPV is relied upon somewhat less heavily today than it was two decades ago. Future research should examine the causes of this trend. Has the composition of firms or industries changed? Are there now more tail risks or difficult to forecast cash flows (e.g., movement away from traditional manufacturing) that drives need for different emphasis in decision rules? Does the shorter horizon of reliable planning data play a role? When NPV is not used, what is used instead? How does the NPV trend square with other trends (e.g., a small uptick in both large and small firms using simulation analysis and real options)?

Frequency of hurdle rate changes and explanations of why not more frequent

Figure A4.1. How Frequently Do Companies Change Hurdle Rates?

This figure displays frequency distributions of the number of times that a firm changes its hurdle rate by 1% or more over the past 10 years. Results are presented by region of the world. This figure presents answers to the following question: *Over the past 10 years, how many times has your firm changed your hurdle rate by 1% or more? {0, 1, 2, 3, 4, 5, 6+, Don't Know}*
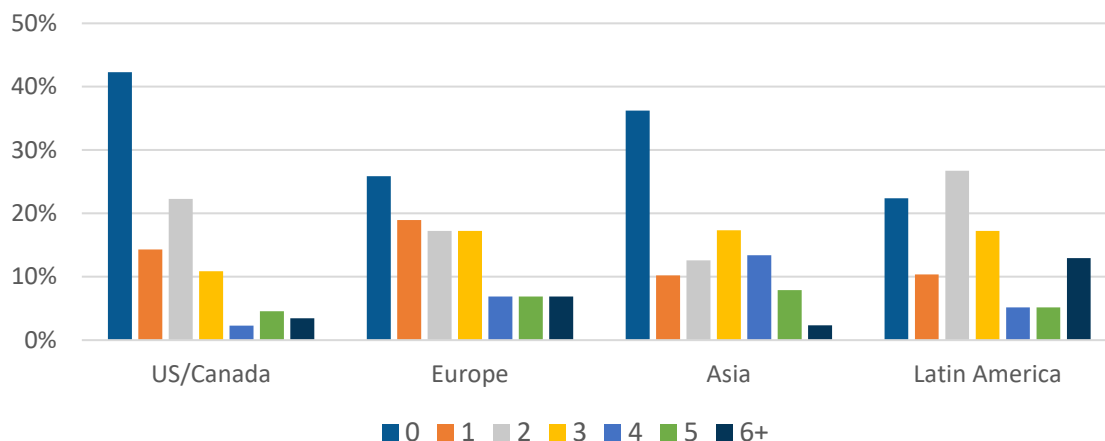
Table A4.I
Why are Hurdle Rates Changed Infrequently?

This table summarizes CFO responses to an open-ended question that asked why their firms had not changed their hurdle rates more often in the past decade. Only the subset of CFOs who indicated on the March 2019 survey that they had changed their hurdle rate 0, 1, or 2 times in the past decade were asked this question.

▪ Investment decisions are long-term, need to surpass long-term (average) hurdle rates, so we pick a hurdle rate that we think will be reasonable for many future years.

➢ Don't want investment decisions affected by 'point in time' WACC calculations, or short-term changes in WACC, or 'overly precise' WACC calculations.

▪ Hurdle (and WACC) are 'first pass' calculations, want these approximations to be stable over time.

▪ For some firms, hurdle = long-term return on equity (and by implication, these firms consider return on equity to be very stable) and these firms strive to pay shareholders a constant/reliable return.

▪ Industry stable for a long time, so cost of capital should be very stable.

▪ Current hurdle rate has always worked in the past.

▪ Hurdle is sufficiently greater than WACC and therefore it achieves the 'buffer' objectives (high return earned, pick best projects, account for unforeseen risk or high risk).

▪ Hurdle changes but only by 0.5% or so at any given time.

▪ Lack expertise for detailed analysis of 'correct' hurdle rate; we make decisions in a 'simple' way.

▪ WACC versus Hurdle is not crucial to decision on whether to choose a specific investment.

▪ Regulators tell us our hurdle rate, and it does not change often.

Corporate Planning and Internal Forecasting

<u>Scenario Planning</u>: The survey documents details about corporate scenario planning. Much academic research presumes that companies make ex ante decisions by analyzing expected (probability-weighted) costs and benefits. Classroom instruction may suggest that students consider low, medium, and high future paths when making ex ante decisions, even though very little is known about how companies actually plan, nor how they factor in possible scenarios. The survey gathers information about how companies use scenario planning, and the extent to which they focus on downside vs. upside, among other things.

Nearly two-thirds of U.S. firms indicate that they use scenario planning, most commonly developing scenarios at the level of the entire firm level (versus divisional or project level); see Panel A of Figure A5.1. The median number of scenarios created by both large and small firms is 3 (e.g., downside, base case, upside). From left to right, the mean responses to the four choices in Panel A for large/small firms are 18%/40%, 21%/16%, 32%/12%, and 64%/45%.

Among companies that plan with scenarios, more than 80% indicate that they use downside-upside types of scenarios (Panel B). Their plans lean towards downside scenarios more so than upside (see Figure A5.2), perhaps in recognition that negative misses are more damaging than positive misses, or perhaps to partially compensate for left tail miscalibration (though it is worth noting that internal forecasts are also right-tail miscalibrated).

Figure A5.1. Scenario Planning

This figure displays information on whether firms do scenario planning (Panel A) and which types of scenario planning firms undertake (Panel B). Data are from the June 2019 Duke CFO Survey (not part of the two-wave 2022 survey). Panel A displays the percentage of CFOs that chose each option in response to the question: *Does your company conduct scenario analysis (e.g., good, medium, bad outcomes) as part of your planning? (Choose all that apply.)* Panel B displays the percentage of CFOs that chose each option in response to the following question: *What types of scenarios does your firm consider? (Choose all that apply.)* The question in Panel B is conditional on answering affirmatively to the question in Panel A.

Panel A. Does Your Firm Do Scenario Planning?

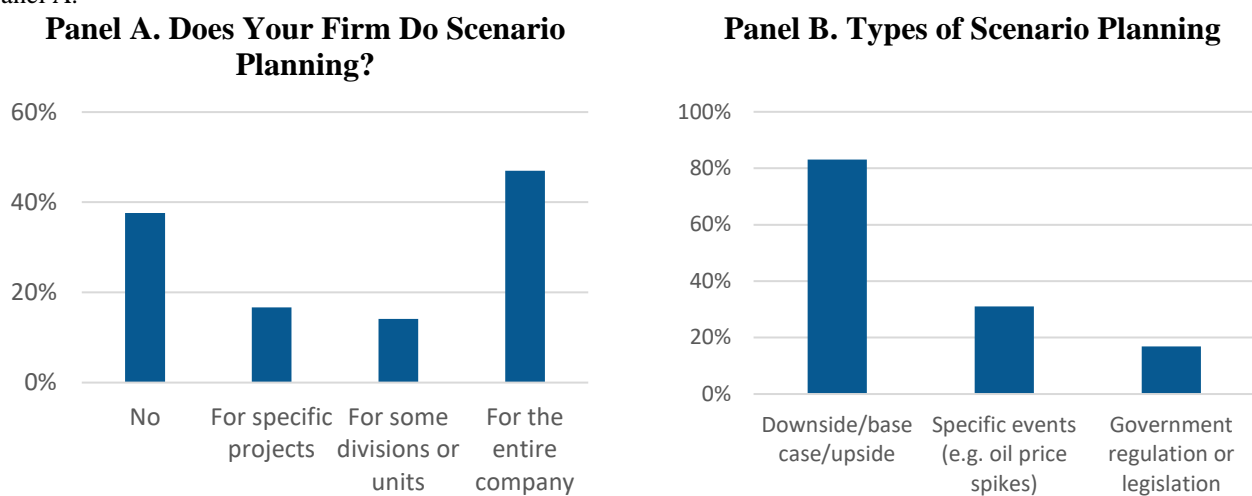**Panel B. Types of Scenario Planning**

Figure A5.2. Scenario Planning for Cases

This figure displays information on which types of scenarios are part of a given company's plans. Data are from the 2022 Duke CFO survey (March 2019 wave), which asked: *In your scenario planning, which scenarios receive most of your company's attention and planning?* The figure displays the percentage of CFOs that chose each option. For example, 63% of companies include a downside plan among the scenarios they consider (among firms that perform scenario planning). Also shown is the mean forecast among each of the five types of forecasts; for example, among firms making downside (extreme downside forecasts), the mean revenue forecast was +2% (-9%). The modal number of scenarios considered was 3 (i.e., CFOs most often include three scenarios in their plans).
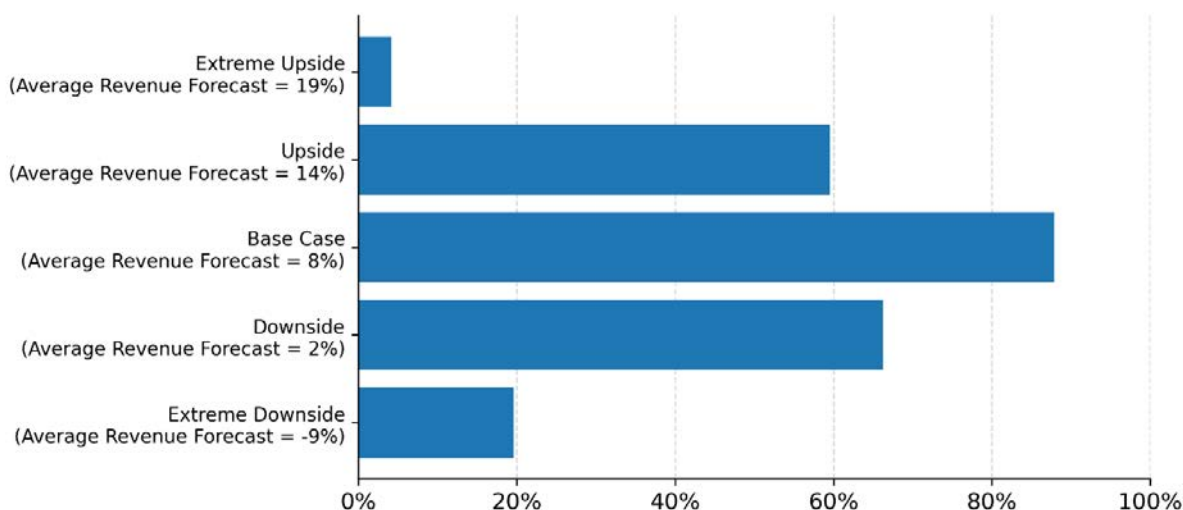
Accuracy of Forecasts. Table A5.I presents information related to the forecast accuracy of 13 variables for which CFOs provided forecasts for 2019. CFO forecasts are least accurate for sales revenue, followed by cash holdings, employment, and profit margin. They are most likely to be accurate for payout, patents, and trademarks, perhaps because the value of realizations for these variables is more within a firm's control. These results of course only apply to 2019, a year without too many macroeconomic surprises, though the economy in the second half of the year was somewhat weaker than expected.

Table A5.I. Accuracy of Internal Forecasts

Forecast accuracy of 13 variables for which CFOs provided internal forecasts of 2019 as part of the 2019 survey and also provided 2019 realizations as part of the 2020 survey. An accurate forecast is defined as a forecast that is within +/- 20% bands; for example, a forecast of 15% is deemed accurate if the realization is within [12%,18%]. About 23% of revenue forecasts were accurate, while 46% (31%) had low (high) realizations relative to forecast.

	Realization $< 0.8\times$Forecast	Accurate	Realization $> 1.2\times$Forecast
Revenue Growth	46.28	22.87	30.85
Year-end Cash/Assets	16.22	27.03	56.76
Employment Growth	31.11	42.78	26.11
Profit Margin	25.00	50.00	25.00
Wage Growth	30.11	50.54	19.35
Capital Spending	30.34	55.86	13.79
Long-Term Interest Rate	32.70	60.38	6.92
Year-end Debt Measure	18.60	69.77	11.63
R&D Spending	9.60	75.20	15.20
Trademarks	11.30	83.48	5.22
Patents	7.83	85.22	6.96
Dividends	6.15	86.15	7.69
Repurchases	4.92	89.34	5.74

Company changes due to revenue forecast error. The next chart summarizes the extent to which companies change 2020 plans and actions in response to having missed the 2019 revenue forecast. Among the 65% of firms for which the 2019 actual fell short of the 2019 forecast, 64% indicated that they changed corporate policies in an attempt to insulate profitability. In contrast, among the 35% of firms for which the 2019 actual exceeded forecast, only 43% changed other corporate policies in response. In open-ended responses, CFOs describe what other steps they did (or did not) take in response to missing the revenue forecast. The following tables summarize actions that companies take when they experience revenue forecast error (Table A5.II), why they do not take actions following revenue forecast error (Table A5.III), and explanations of why their revenue forecasts proved inaccurate (Table A5.IV).

Figure A5.3. Does Your Firm Take Actions to Insulate Profitability?

This figure represents the distributions of whether firms have taken actions to insulate profits when actual revenue is greater (or less than) forecasted value. The question was worded *As it became clear that 2019 actual revenue growth would differ from forecast, did your firm change any other plans/policies or take any actions to insulate profitability? {1 = No, 2 = Yes, 3 = Don't Know}* Only CFOs who answered "No" or "Yes" are shown. 65% of these firms are in the left column, 35% are in the right column.
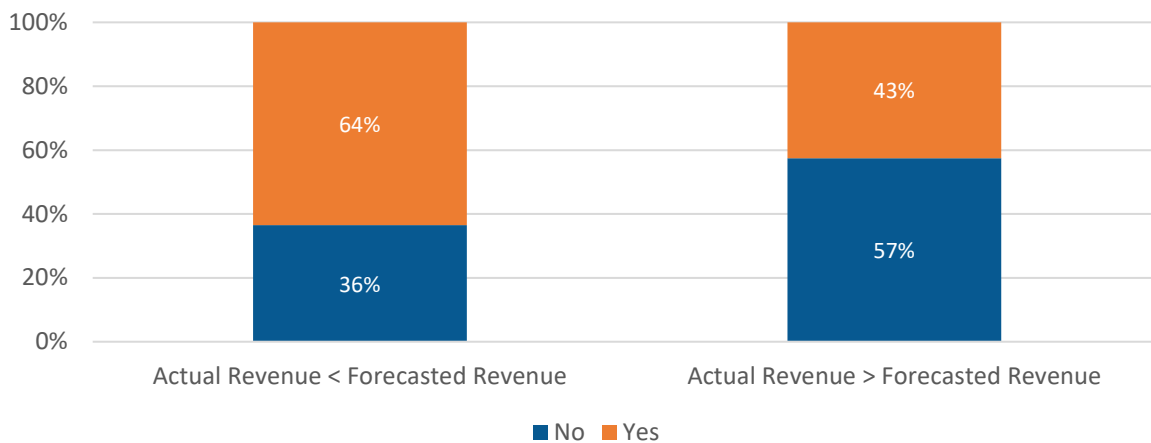
Table A5.II

What Actions Do Companies Take When Realized Revenues Differ from Forecasted Revenue?

This table summarizes CFO responses to an open-ended question that asked what actions their firms took when actual sales revenue exceeded or fell short of forecasted revenue in their plan. This question was asked on the March 2020 survey about corporate actions taken in 2019 if actual 2019 revenues did not align expected 2019 revenues. Only the subset of CFOs for whom 2019 revenues did not equal 2019 plan revenues, and their firms indicated that they took action in response, were asked this question. Panel A (Panel B) shows the answers for the set of firms for which revenues exceeded (fell short) of expected revenues.

Panel A: Actions taken when actual revenue > forecasted revenue

- Hired more employees, laid off fewer employees
- To keep positive momentum
  - Hired key staff or staffed key units.
  - Modified supply chains.
  - Obtained critical parts.
- Capital spending
  - Accelerate.
  - Improve efficiency; increase tech spending.
  - Upgrade/renovate.

Panel B: Actions taken when actual revenue < forecasted revenue

- Reduce headcount
  - Lay off temporary workers.
  - Reduce permanent workforce.
- Reduce wage growth
- Capital spending
  - Decelerate.
  - Reduce.
- Cut costs, reduce fixed costs, reduce discretionary spending
  - Increase efficiency (less inventory).
- Stop production 30 days early
- Increase marketing, reduce marketing
- Restructuring
- Preserve cash

Table A5.III

Why Some Companies Do Not Take Specific Actions When Realized Revenues Differ from Forecasted Revenue

This table summarizes CFO responses to an open-ended question that asked why their firms did not take specific actions in response to their actual sales revenue exceeding or falling short of forecasted revenue in 2019. This question was asked on the March 2020 survey with respect to the alignment of actual 2019 revenues and expected 2019 revenues. Only the subset of CFOs for whom 2019 revenues did not equal 2019 plan revenues, and their firms indicated that did not take specific actions in response, were asked this question. Panel A (Panel B) shows the answers for the set of firms for which revenues exceeded (fell short) of expected revenues.

Panel A: Why no actions taken when actual revenue > forecasted revenue

- In midst of previously implemented actions, which were paying off.
- Still digging out of a hole (from previous year).
- Late in year positive seasonality, no time to alter plans.
- Lack financial management know-how/time to make midstream change.
- Had a strategic plan and just followed the plan.
- Increase is not large enough to make a change.
- Needed a full cycle to determine whether to make a change.
- No changes needed, just accumulate cash.
- Happy to ride the wave.

Panel B: Why no actions taken when actual revenue < forecasted revenue

- Can't cut our costs/price much because
  - Suppliers need to keep prices at same level.
  - We still have to provide a certain quality/level of service.
- Variance is within acceptable range.
- Don't provide revenue guidance, so not required to hit any certain revenue number.
- Occurred very late in year.
- Lack of resources; lack of flexibility.
- Profitability
  - Still on target, even if revenues down.
  - We don't focus on short-term profits.
- Believe conditions temporary (rebound expected in 2020, 2021)
  - For our company.
  - Or for key customer.

Table A5.IV

Why Do Actual Revenues Differ from Forecasted Revenue?

This table summarizes CFO responses to an open-ended question that asked why their firms actual sales revenue exceeding or fell short of forecasted revenue. This question was asked on the March 2020 survey about the alignment of actual 2019 revenues and expected 2019 revenues. Only the subset of CFOs for whom 2019 revenues did not equal 2019 plan revenues were asked this question. Panel A (Panel B) shows the answers for the set of firms for which actual revenues exceeded (fell short) of expected revenues.

Panel A: Why is actual 2019 revenue > forecasted revenue?

- **Market**
  - ➢ Strengthening of market, demand higher, more customers.
  - ➢ Prices higher.
  - ➢ Overall improvement of our industry; overall economy; our region.
- **Firm**
  - ➢ New clients, new customers.
  - ➢ Were able to raise more capital than expected.
  - ➢ Successful new products.
  - ➢ Better marketing, better word of mouth.
  - ➢ Improved management and processes.

Panel B: Why is actual 2019 revenue < forecasted revenue?

- **Market**
  - ➢ Prices lower.
  - ➢ More competition.
  - ➢ Customers worse off, lower demand.
  - ➢ Industry down; economy down.
  - ➢ Weather.
  - ➢ Virus in China; tariffs; trade wars.
  - ➢ Aging population.
  - ➢ Crop harvest poor
- **Firm**
  - ➢ Loss of key customers; delays in demand; failed to close big deal; some projects fell behind.
  - ➢ Overestimation.
  - ➢ Hard to hire the right employees.
  - ➢ Poor marketing or processes; legal distractions.
  - ➢ Raised prices.
  - ➢ Closed two sites.

Appendix 6 (Section III)

How companies plan for worst case outcomes and actions taken should worst case occur

In Table A6.I CFOs provide written information about what actions their firms take in anticipation of the 'worst outcome' occurring (ex ante), and what additional steps they might take if the worst actually does occur (ex post). They also indicate how they plan in times of great uncertainty (Table A6.III).

In one part of the survey, companies were asked which of the following five scenarios their firms use in the planning process: extreme downside, downside, base case, upside, extreme upside. From this list, the worst of the five chosen scenarios is shown as "worst scenario" in Table A6.I. For some companies this was downside, for others it was extreme downside.

Table A6.I
How Do Companies Prepare For and Manage Worst Case Scenarios?

The left column shows the ex ante steps companies take in anticipation of a worst case scenario possibly occurring. The right column lists additional steps taken ex post when a worst case scenario occurs.

Key steps to prepare for possibility of worst scenario	Additional steps to take if worst scenario actually occurs
➢ Build up cash; reduce debt; strong balance sheet; maintain undrawn credit line.	➢ Issue equity; secure financing; obtain funding from key investors; obtain covenant waiver.
➢ Careful cash management.	➢ "Survival" cash management.
➢ Operate efficiently (expense management, cost control).	➢ Slash expenses; reduce discretionary spending; travel freeze.
➢ Hire slowly; wait until uncertainty clears; automate.	➢ Hiring freeze; fire employees; RIF; oversource.
➢ Produce only to firm orders; no overtime.	➢ Take 1-time charge; cut fixed operating expenses.
➢ Grow cautiously; slow expansion; manage inventory; tight rein on spending.	➢ Defer/cancel strategic investments; cut CapEx, R&D.
➢ Consolidate operations to cheaper locations.	➢ Close locations/offices.
➢ Diversify via acquisition.	➢ Asset sales.
➢ Invest in core operations.	
➢ Plan; prepare a list of cutbacks, etc.	➢ Implement the list of cutbacks.
➢ Hedge.	
➢ Try to increase demand via advertising; increase clients/customers.	➢ Price changes; cut marketing.
	➢ Bankruptcy; close business.

As indicated in the next table, in the June 2019 Duke CFO survey companies explained why they focus more on the downside, primarily because of critical risks to the firm that occur if the firm were to miss on the downside (see Table A6.II). Though not mentioned in the table, focusing more on the downside is consistent with managerial incentives if they are penalized severely in bad outcomes and not rewarded proportionally as much for base case or upside success. As one manager told me in an interview, "No one cares if you are a couple percentage points low on your debt ratio (relative to optimal) but the penalty is severe if you cannot cover your interest payments."

Table A6.II

Why Do Firms Focus on Downside Planning?

This table summarizes CFO responses to an open-ended question that asked why their firms focused more on downside than upside planning. Only the subset of CFOs who indicated on the March 2019 survey that they spent more time on downside than upside planning were asked this question.

- Cash flow/liquidity concerns if downside were to occur.
- 'Critical risks' more likely to occur in downside.
  - ➢ High leverage, need to be able to react appropriately on downside.
- Protect against large loss, general conservatism.
- More difficult decisions, and more decisions, required on downside.
  - ➢ Harder to 'scale down' than it is to 'scale up'.
- Pr(downside) > Pr(upside) in current environment.
  - ➢ Possible global recession.
- Regulatory requirements.

On the June 2019 Duke CFO survey, companies were asked how they change their actions in response to uncertainty. When they face above average uncertainty, 52% of companies indicate that they delay projects or proceed at a slower pace. Based on the March 2018 Duke CFO survey, Table A6.III details some of the actions they take when facing above average uncertainty. When uncertainty is below average, one-third of companies proceed at a normal pace and one-third proceed more aggressively.

Table A6.III

Best Practices When Uncertainty is High

This table summarizes CFO responses to an open-ended question that asked about the steps their firms take to operate when uncertainty is high. This question was asked on the March 2018 Duke CFO survey.

Best practices for running a company when uncertainty is high about economic conditions and/or governmental policies:

- **Stay the course** Continue to pursue core strategies built on the companies' strengths. For the most part, don't expand into new projects that stretch the firm in new directions. Focus on what you can control.

- **Be cautious** Many firms pull back and operate very cautiously, making changes slowly. Some cut existing projects or cancel new projects but this is the exception rather than the rule.

- **Focus on the short-term** Focus on getting through the short-term, remain flexible, but don't lose sight of long-run objectives.

- **Reduce costs**

- **Carefully study analyses and scenarios** Have a plan and contingencies for how to react if various scenarios occur. Hire consultants or other experts.

- **Engage in risk management** Be more active in risk management and hedging. Understand the economic outlook of various scenarios very well.

- **Accumulate liquid assets** Reduce financial risk by accumulating liquid assets, especially cash. Don't increase debt loads.

- **Take care of the customer** Communicate more with, and take extra care of, key customers.

The next table shows the economic variables that CFOs say most affect what type of outcome their firm ends up ex post (i.e., whether they end up in a downside, middling, or upside outcome).

Figure A6.1. Macro Variables that Determine Company Outcomes

This figure shows macro variables that firms consider most important in causing them to experience a given outcome (e.g., a downside, base case, or upside outcome). The CFOs were allowed to pick up to three answers. The precise wording of the question was *What economic indicators do you consider most important in causing your firm to actually experience a downside, base case, or upside outcome? (pick up to 3)*. The data come from the 2022 Duke CFO Survey (2019 wave).
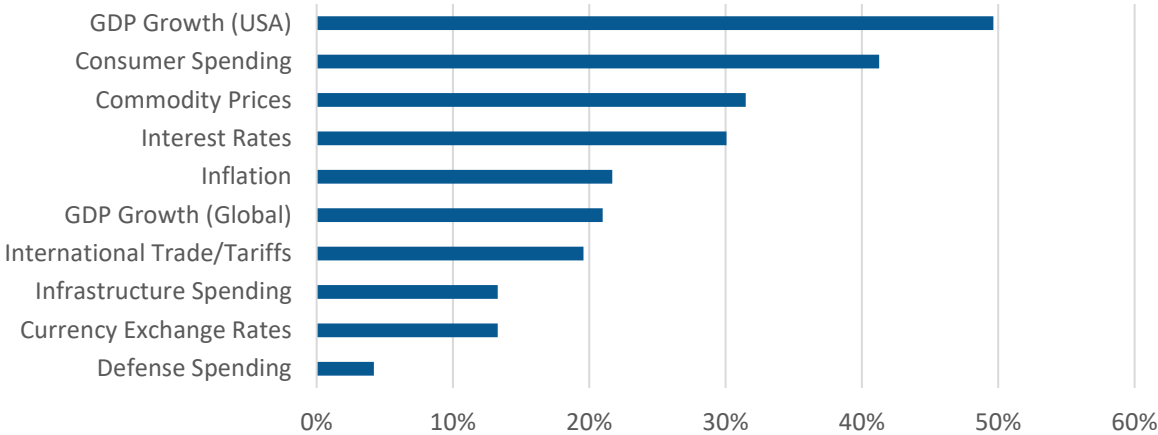
Capital Structure

This appendix contains additional information about corporate capital structure decision-making and complements the information in Section IV.

Target Debt Ratios: Figure A7.1 indicates that, among firms that rely on Debt/EBITDA to measure debt usage, about 60% of firms changed their debt target at most one time in the 2010-2019 decade. Table A7.I shows summary statistics for Debt/EBITDA, Debt/Assets, and Debt/Value, and correlations among the variables. Though not shown in the table, very similar results hold for specific industries, such as Chemical and Allied Products (SIC2=28), Electronics (SIC2=36), Business Services (SIC2=73), and Electric, Gas, and Sanitation (SIC2=49). Among firms that changed their debt target in the previous decade, Table A7.II describes the reasons given by CFOs for these changes.

Figure A7.1. How Often Do Companies Change Their Target Debt Ratio?

This figure provides information on how often firms change their target debt ratios, sorting the firms by their primary debt metrics. The results are based on the following question: *Over the past 10 years, about how many times has your firm made significant changes to your target / acceptable range for how much debt you use? {0, 1, 2, 3, 4, 5, 6+}.* Each bar displays the percentage of firms that changed their target debt ratio 0, 1, 2, 3, 4, 5, 6+ times over the past 10 years. For example, nearly 40% of firms that use Debt/EBITDA as their primary debt metric did not change their target debt ratio over the previous 10 years. This question was only asked of firms that have a strict, somewhat tight, or flexible target debt range in Figure 14 (firms that do not have a target debt range are excluded). Results are from the 2019 wave of the 2022 Duke CFO Survey.
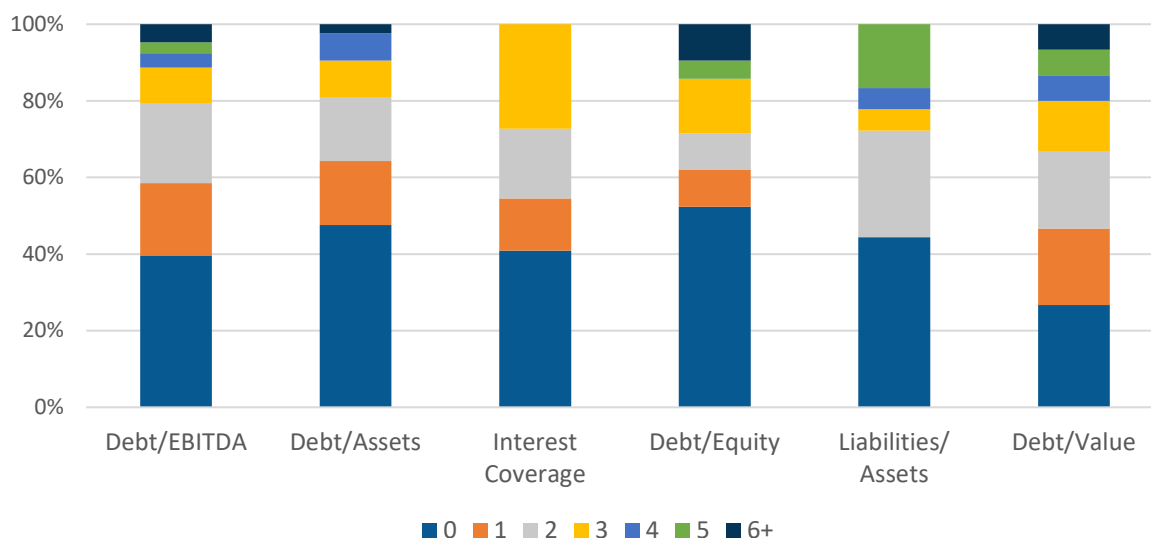
Table A7.I

Summary Statistics for Several Debt Ratios, Including Time-Series Correlations

This table presents summary statistics for three debt ratios, as well as their time-series correlations, using annual and quarterly Compustat data from 1961 to 2020. Panel A shows the mean, standard deviation, and standard deviation divided by the mean for Debt/EBITDA, Debt/Assets, and Debt/Value [Total Debt / (Total Debt + Market Equity)], where EBITDA is defined as the sum of sales minus cost of goods sold minus selling, general & administrative expense. The firm-level time-series mean and standard deviation are calculated first, then averaged across all firms. Panel B shows the time-series correlations between these debt ratios, with annual/quarterly correlations shown below/above the diagonal. After standardizing these debt ratios, the firm-level time-series correlations are calculated first, then averaged across all firms. Debt/EBITDA is winsorized at the 1st and the 99th percentiles, and observations are dropped if they have a negative Debt/EBITDA, or if Debt/Assets and Debt/Value are not in the [0,1] interval. To be included in the presented analysis, a firm has to exist 20 years or longer. Financial firms (SIC2 between 60 and 67) and firms with SIC2 > 90 are excluded. In unreported analysis that requires fewer than 20 years to remain in the sample, Debt/EBITDA volatility increases relatively more than the other variables and correlations between the variables decline.

Panel A: Means and Standard Deviations, Annual and Quarterly Data

	Annual			Quarterly		
	Mean	Std.Dev.	Std.Dev./Mean	Mean	Std.Dev.	Std.Dev./Mean
Debt/EBITDA	2.88	2.94	1.02	11.47	14.24	1.24
Debt/Assets	0.25	0.13	0.52	0.25	0.13	0.52
Debt/Value	0.31	0.18	0.56	0.29	0.17	0.60

Panel B: Correlations, Annual and Quarterly Data

	Debt/EBITDA	Debt/Assets	Debt/Value
Debt/EBITDA	1.00	0.53	0.45
Debt/Assets	0.67	1.00	0.63
Debt/Value	0.53	0.63	1.00

Table A7.II

What Factors Lead to Companies Changing Their Target Debt Ratios?

This table summarizes CFO responses to an open-ended question that asked why their firms changed their target debt ratio the most recent time. Only the subset of CFOs who indicated on the March 2019 wave that they had changed their debt ratio at least once in the past decade were asked this question.

▪ Firms often alter their capital structure for 'operational' reasons, adopting a new target/range for their debt ratio at the time of operational change. This type of temporary behavior would generally be considered a 'flexible' target by CFOs.

◆ Firms that do not have many 'special/operational' reasons to change debt are more likely claim to have a strict target debt ratio, and have optimal debt in traditional sense.

▪ Operational reasons include

◆ Acquisitions/investment. Often the associated debt increase is intended to be temporary, with debt naturally falling over several years as it matures or is paid down (perhaps to move towards the 'long run target' debt ratio).

• The investment story could be related to the DeAngelo, DeAngelo and Whited (2011; DDW) transitory debt model. CFO responses are generally consistent but phrase it somewhat differently: there is both a long-run traditional target and a short-run 'react to current conditions' target affected by temporary or extraordinary conditions. Two considerations:

➢ DDW transitory debt is tied to investment shocks. In their survey responses, CFO's say that investment is important to short-run targets but also that other 'special' circumstances (other than just corporate investment) can change debt usage and targets.

➢ A "long-run target" debt ratio of 0 is not common in the survey. The survey responses imply that a nonzero long-run target debt ratio may be relevant as in typical trade-off arguments.

◆ Changes in cash flows, most often when profitability is weak/negative, in which case firms increase their 'target' debt ratio to get through the situation. [In some of these CFO statements, it is hard to distinguish 'allow debt to deviate from target' from 'change the target debt ratio'.] In these responses, increasing debt is phrased as a form of liquidity management.

• In reverse, if profitability is strong, a firm may decrease its target debt ratio.

▪ Target debt ratios may change due to changes in ownership; the arrival or departure of PE investors; preferences of institutional investors, etc.

▪ Market conditions.

◆ When interest rates are low, debt is cheap, so increase target. Use cheap source of funding. Easier to service the interest when rates are low, so can use more debt.

▪ Re-optimize capital structure. Comprehensive recapitalization, with usual trade-off type of factors determine new target. These sorts of 'pure' capital structure changes are only mentioned occasionally.

▪ Regulatory changes; covenants changes.

Financial Flexibility: In both 2019 and 2020, I asked CFOs to rate their firms' current amount of financial flexibility. In 2019 (before March 15, 2020/on or after March 15), 49% (38%/25%) of firms said they had sufficient or a lot of flexibility. Of those who answered both surveys, 27% (73%) said their flexibility had increased (decreased) from 2019 into 2020. Of those with increased flexibility in 2020, 86% of CFOs indicated that the increase was due to company actions or performance (and 14% attributed it to the market); among firms with decreased flexibility in 2020, more than three times as many firms (46%) blamed market conditions. This is consistent with self-attribution bias. Table A7.III presents free text explanations grouped by market vs. own-firm causes.

Table A7.III

Are Changes in Financial Flexibility Caused by Market or Firm-Specific Forces?

This table summarizes CFO responses to an open-ended question that asked whether changes in their firm's degree of financial flexibility were due to market conditions of due to firm-specific actions. This question was asked on the March 2020 survey. Only the subset of CFOs for whom their firms' financial flexibility had changed in March 2020 from what it was in March 2019 were asked this question. A change in financial flexibility was determined by comparing the answer on a 5-point scale that they gave on the March 2019 to their answer to the same question in March 2020. Panel A (Panel B) shows the answers for the set of firms for which financial flexibility increased (decreased).

Panel A: Increased financial flexibility due to market or due to firm?

- **Market**
  - Interest rates fell.
  - Market profitability increased.
  - CARES Act.
- **Firm**
  - Raised strategic capital.
  - Conserving cash.
  - Pushed out debt maturity.
  - Issued equity.
  - PE injection, new capital commitment from partners.
  - Cost cuts.

Panel B: Decreased financial flexibility due to market or due to firm?

- **Market**
  - Coronavirus changed everything.
    - Sales fell.
    - Customers closed; our stores closed.
    - Prices fell.
    - Clinical trials stopped.
    - More work, less revenue.
  - Increased uncertainty.
- **Firm**
  - Used cash to pay down debt.
  - Made acquisition, JV.
  - Invested in new projects.
  - Continue paying employees.

Interest Rate Sensitivity of Capital Structure Decisions: Table A7.IV presents textual descriptions of the relation between interest rates and corporate capital structure decisions.

Table A7.IV

**How Does the Level of Interest Rates Affect Capital Structure Policy?**

This table summarizes CFO responses to an open-ended question that asked how interest rates affected their firm's capital structure decisions. Only the subset of CFOs who indicated on the March 2019 survey that that interest rates were an important or very important factor driving debt decisions were asked this question.

▪ Market conditions

➢ If interest rates are low, the cost of debt is cheap, we use cheap funding. When rates are high (by historic standards), we use less debt. These comments are 'absolute' (in that they do not discuss a relative cost of debt vs. equity issuance).

➢ "Timing the market" in terms of using more debt when interest rates are low and with firms leaning towards fixed rate debt when rates are historically low.

▪ Debt coverage

➢ Easier to cover interest payments when rates are low, so can use more debt.

▪ Fixed versus floating

➢ Level of interest rates affects the fixed vs. floating mix, as firms try to manage the weighted cost of the mix, and keep it 'balanced'.

➢ There is an element of timing the market in that you lean towards fixed when rates are low. In this sense, this is 'relative' to the expected future rates.

▪ Higher rates make investment less attractive (lower after-tax ROI), so invest less, and use less debt.

▪ Credit rating and ability to meet covenants are better when interest rates are low (so, firm can use more debt).

Agency Costs of Debt: To explore costs that increase with the amount of debt, such as debt overhang or asset substitution, I asked CFOs whether they had observed agency costs: 45% of CFOs indicated that they had observed highly-levered companies pass up value-creating projects due to debt load and 28% said debt-laden companies cut corners in operations. Only 14% observed high-debt firms shift towards risky projects. Figure A7.2 provides additional information.

Figure A7.2 Suboptimal Decisions of Highly Levered Firms

This figure displays CFO responses on their experiences with suboptimal decisions made by highly levered firms. Data are from the 2022 Duke CFO Survey (2020 wave), which asked CFOs: *Have you observed highly levered firms make suboptimal decisions due to their heavy debt loads? (Choose all that apply.)* Each bar displays the percentage of firms that chose each response. For example, 45% of CFOs have observed highly levered firms pass up value-creating projects.
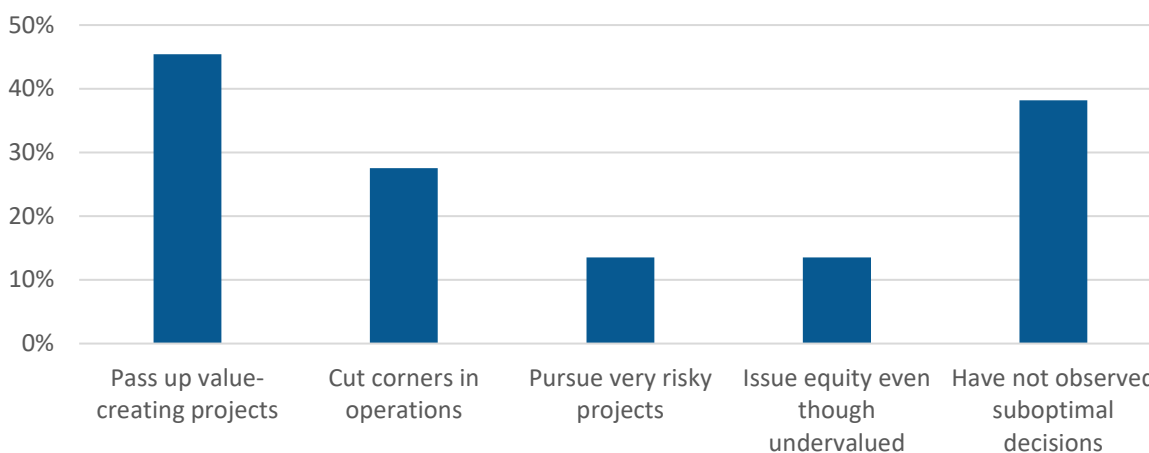

Sources and uses of external funds: Figure A7.3 explores the use-of-funds companies plan when they borrow externally, conditional on the type of funding. The chart presents the percentage of firms that indicate that a source of external funding is expected to be one of their top three sources during 2019. For example, 25% of large firms expect to rely on credit lines, which would be used primarily for working capital and general funding needs. The most common sources of funding for small firms are credit lines (to fund working capital needs and general funding) and bank loans (to fund investment and for general needs). Among large firms, in addition to credit lines, primary sources of external funds include bonds, loans and common stock, which are often used to fund investment and for general funding needs. Looking across the graphic, it is notable how heterogeneous the sources and uses of funds are: Different types of funding are ex ante associated with different intended uses. This heterogeneity is often ignored in capital structure research.[67]

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[67] Korteweg et al. (2020; KSS) conduct similar analysis and find largely similar results (e.g., heterogeneous sources and uses of external funding). The experiments differ in that KSS use ex post corporate filings to categorize firms by past behavior in the frequency of leverage adjustments (adjustments in their analysis are required to be least 5% of asset value), and then summarize within a given category the typical firm characteristics and use of funds. In contrast, my analysis summarizes firms' forward-looking plans and does not require capital structure adjustments to be > 5% of asset value; moreover, my analysis conditions on firm size (rather than frequency of adjustment) and then summarizes the type and use of external funds by firm size. Despite these differences in experimental design, we draw many similar conclusions. Some differences include that KSS find that frequent adjusters use credit lines to fund investment and to cover operating losses while I find little evidence of this in ex ante corporate plans.

Figure A7.3. Type and Purpose of External Funding

This figure displays the intended purpose of external funding for a variety of different sources of external funding. Results are presented separately for small (sales revenue less than $1 billion) and large firms. For example, among small firms that issue common stock, 41% intend to use the funds provided to fund specific projects. The percentage in parentheses below each Small (Large) label display the percentage of small (large) firms that plan to use each external funding source (e.g., 7% of small firms stated they expect to use common stock as a source of external funding). Results are from the 2022 Duke CFO survey (March 2019 wave).
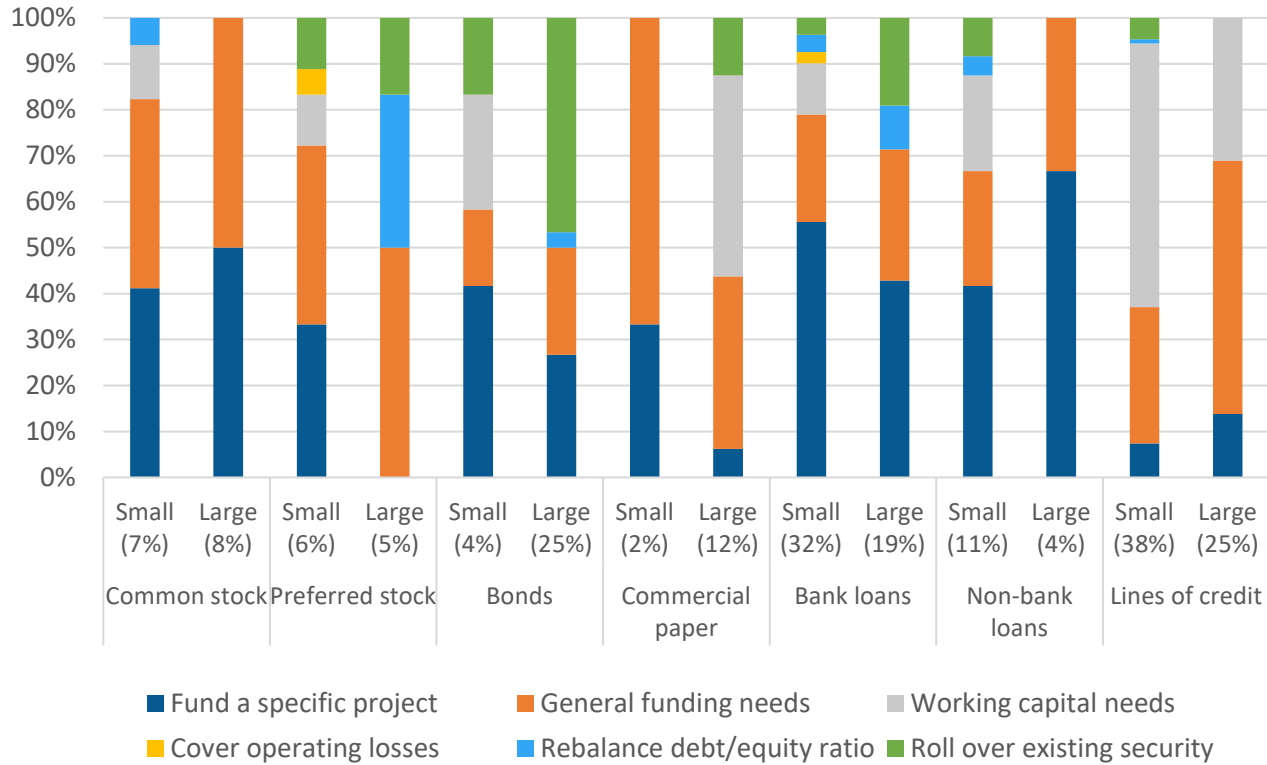
Following up in March 2020, nearly two-thirds of firms indicated that in 2019 they used the particular sources of external funding they had planned to use, with only 18% saying they moderately or significantly changed the external source. Fewer than 10% changed the maturity of borrowed funds from planned maturity.

Finally, Figure A7.4 displays summary information on whether the interest rates on external funding for responding firms are fixed or floating; and, Figure A7.5 reports the maturity of various sources of external funding.

Figure A7.4. Floating or Fixed Interest Rate by Source of External Funding

This figure displays whether the interest rate is floating or fixed for different sources of external funding. Results are presented separately for small (sales revenue less than $1 billion) and large firms. For example, averaged across all bond issuances for large firms, 71% have fixed interest rates. The percentage in parentheses below each Small (Large) label display the percentage of small (large) firms that plan to use each external funding source (e.g., 4% of small firms stated they expect to use bonds as a source of external funding). Results are from the 2022 Duke CFO survey (March 2019 wave).
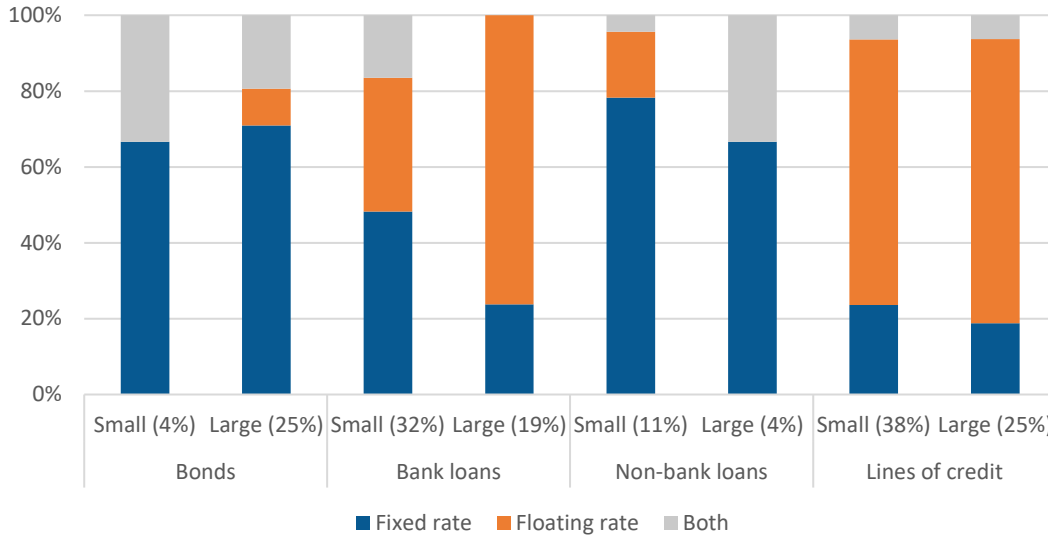

Figure A7.5. Maturity of External Funding

This figure displays the maturity of external funding for different sources of external funding. Results are presented separately for small (sales revenue less than $1 billion) and large firms. For example, averaged across all bond issuances for large firms, 53% mature in 6-10 years. The percentages in parentheses below each Small (Large) label display the percentage of small (large) firms that plan to use each external funding source (e.g., 4% of small firms stated they expect to use bonds as a source of external funding). Results are from the 2022 Duke CFO survey (March 2019 wave).

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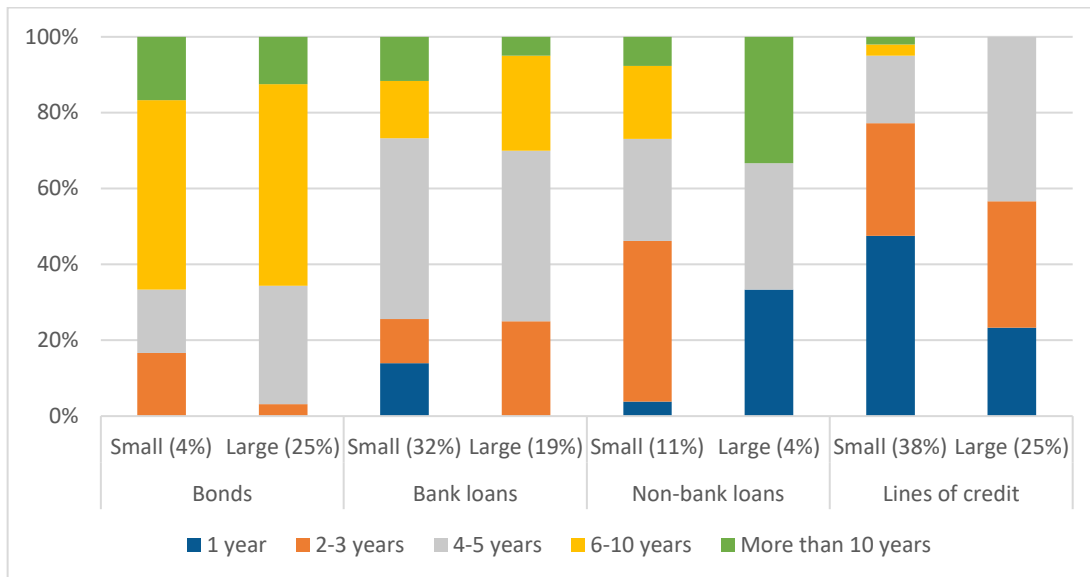
Payout

The following figures summarize results from the payout-related survey questions. The table presents results from Lintner-style (1956) regressions. In general, the findings are consistent with (stickiness) those in Brav et al. (2005) and Lintner.

Figure A8.1. Statements Explaining Payout Decisions

This figure displays CFO statements explaining their payout decisions. Data are from the 2022 survey (March 2020 wave), which asked CFOs: *Do these statements agree with your company's views? {-2 = Strongly Disagree, -1, 0, 1, 2 = Strongly Agree}* CFOs provide one answer for dividends and a separate answer for repurchases. The graph displays the percentage of CFOs that answered one or two, and the samples are conditional on the firm paying dividends (top, blue bars) and/or repurchasing shares (bottom, orange). For example, nearly 60% of dividend payers agree or strongly agree that there are negative consequences to reducing dividends. Some firms are included as both dividend payers and repurchase firms.
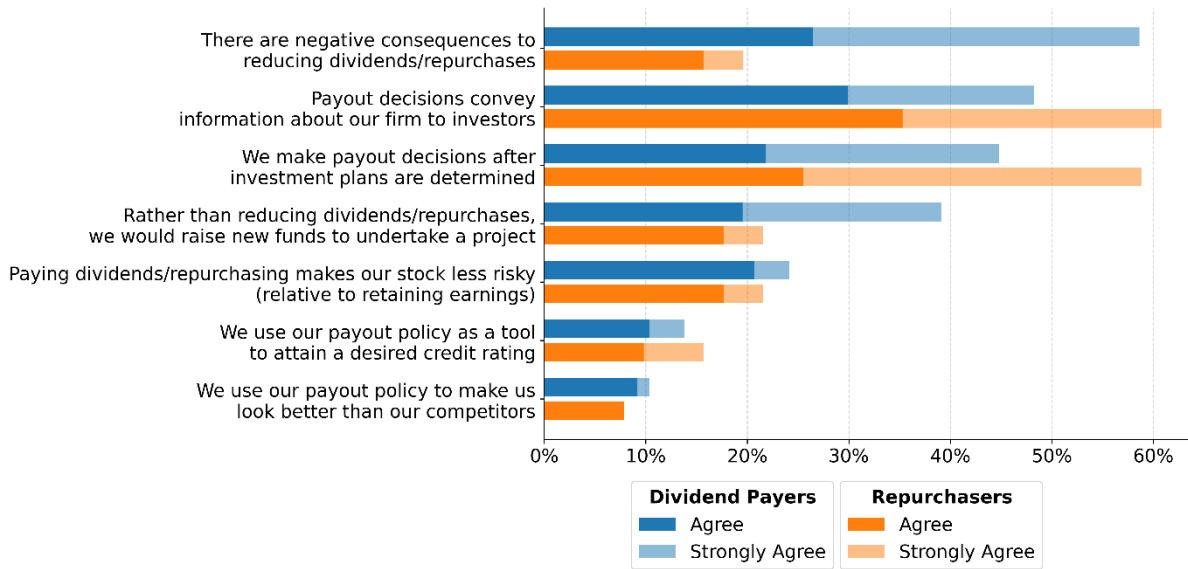
Figure A8.2. Factors Driving Payout Decisions

This figure displays details on the factors that drive payout decisions. Data are from the 2022 survey (March 2020 wave), which asked CFOs: *Do these statements (about dividends and repurchases) agree with your company's views? {-2 = Strongly disagree, -1 = Disagree, 0, 1 = Agree, 2 = Strongly agree}* The graph displays the percentage of CFOs that answered one or two, and the sample is conditional on the firm paying dividends and/or repurchasing shares. Panel A displays details on the drivers of dividend decisions. Panel B displays details on the motivations firms face to repurchase share. For example, in Panel A, 70% of dividend paying firms say they agree or strongly agree with the statement that avoiding reducing dividends per share explains their dividend decisions.
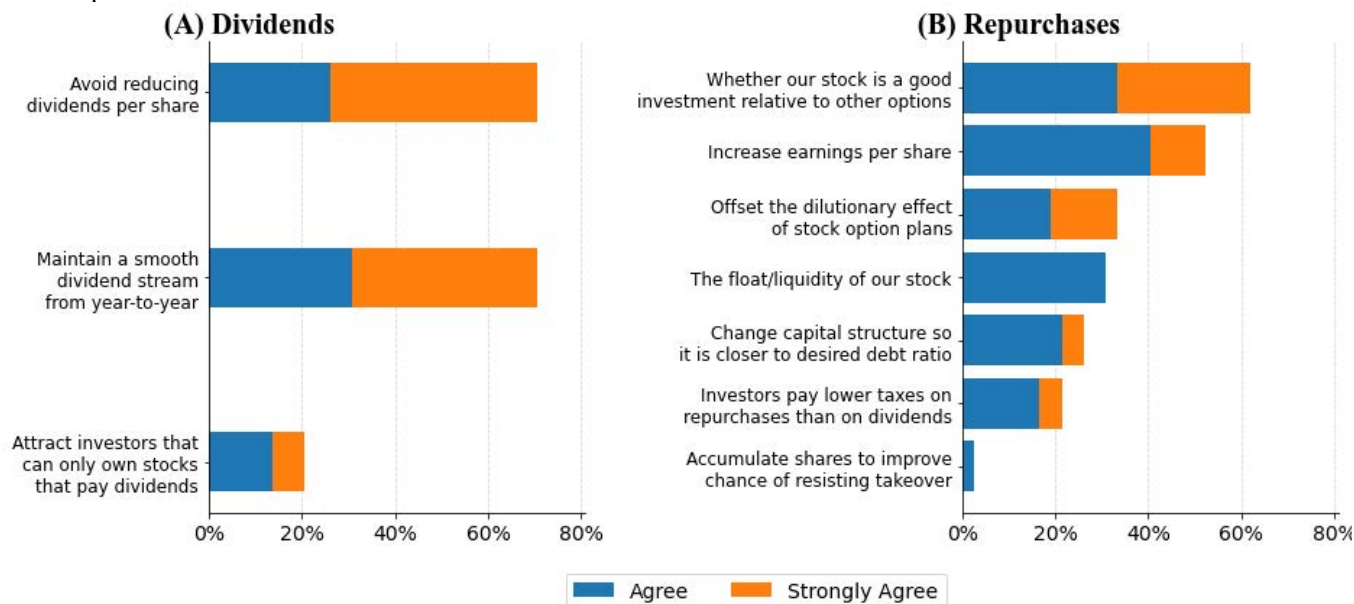

Table A8.I. Regression-Based Evidence Using Lintner's Partial Adjustment Model of Dividends

The table provides summary statistics for speed-of-adjustment coefficients and target payout ratios. Following Fama and Babiak (1968), I estimate the following regression specification for annual dividend changes at the firm level, $\Delta D_{i,t} = a + b_1 D_{i,t-1} + b_2 E_{i,t} + u_{i,t}$, where $D_{i,t}$ is firm i's annual dividend obtained as Compustat data item 26 (dividends per share – ex-date), and $E_{i,t}$ is firm i's earnings using Compustat data item 58 [Earnings per share (basic) – exclude extraordinary items]. Each regression yields an estimate of b_1 and b_2: $\hat{b}_1$ and $\hat{b}_2$. The speed of adjustment (SOA) is obtained as $-\hat{b}_1$ and the target payout ratio (TP) by $-\hat{b}_2/\hat{b}_1$. The table report various statistics of the cross-sectional distribution for both SOA and TP. To be included, a firm must have complete dividends and earnings data over the entire sub-period. The sub-periods are 1950–1964, 1965–1983, 1984–2002, and 2003-2020.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	1950-1964 (N = 539)					**1965-1983 (N = 1674)**				
	Mean	Std Dev	25%	50%	75%	Mean	Std Dev	25%	50%	75%
Speed of Adjustment	0.39	0.27	0.19	0.37	0.54	0.18	0.22	0.01	0.13	0.27
Target Payout	0.40	0.49	0.19	0.40	0.60	0.37	1.27	0.07	0.30	0.59
Adjusted R-Squared	0.40	0.28	0.17	0.41	0.61	0.36	0.24	0.17	0.35	0.55
	1984-2002 (N = 1837)					**2003-2020 (N = 2145)**				
Speed of Adjustment	0.17	0.30	0.00	0.02	0.22	0.22	0.34	0.00	0.05	0.31
Target Payout	0.15	0.86	0.00	0.09	0.41	0.24	0.79	0.00	0.13	0.48
Adjusted R-Squared	0.32	0.27	0.09	0.30	0.50	0.31	0.26	0.08	0.29	0.49