Managerial Beliefs and Corporate Financial Policies[*]

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Abstract

We measure the impact of individual managerial beliefs on corporate financing. First, managers who believe that their firm is undervalued view external financing as overpriced, especially equity. We show that such overconfident managers use less external finance and, conditional on accessing risky capital, issue less equity than their peers. Second, CEOs with Depression experience have less faith in capital markets and lean excessively on internal financing. Third, CEOs with military experience pursue more aggressive policies, including heightened leverage. CEOs' press portrayals confirm these differences in beliefs. Overall, measurable managerial characteristics have significant explanatory power beyond traditional capital-structure determinants.

What are the primary determinants of firms' financing decisions? Traditional theories emphasize firm-, industry-, and market-level explanations, such as the trade-off between tax deductibility of interest payments and bankruptcy costs, or asymmetric information between firms and the capital market (Miller (1977); Myers (1984); Myers and Majluf (1984)). These theories explain a significant portion of the observed variation in capital structure. Yet, recent research identifies a large degree of firm-specific stickiness in capital structure that is not a clear prediction of any traditional theory (Lemmon et al. (2008)). Moreover, even in their modern dynamic implementations, traditional theories do not easily explain why firms with similar fundamentals make different financing choices.

In this paper, we study the role of managers' beliefs and personal experiences in explaining the remaining variation. A growing literature on manager effects shows that individual top-level managers significantly affect corporate decisions and performance, above and beyond firm-, industry-, and market-specific determinants (Weisbach (1995); Chevalier and Ellison (1999); Bertrand and Schoar (2003)). However, we know less about the specific managerial characteristics that matter (and why), likely due to the difficulty of linking observable characteristics to specific individual beliefs. This challenge, in turn, makes it hard to establish a causal impact on corporate decisions. In this paper, we measure capital-structure relevant beliefs revealed by CEOs' personal portfolio choices (overconfidence) and related to personal experiences early in life (Great Depression, military), and we confirm their impact on capital structure choices.

First, we consider managers who overestimate the future cash flows of their firms and, hence, believe that their firms are undervalued by the market. We denote such managers as overconfident. We show that overconfident managers view external financing to be unduly costly and prefer to use cash or riskless debt. Thus, they choose low levels of risky debt relative to available interest tax deductions. And, conditional on having to raise risky capital, they prefer risky debt to equity, since equity prices are more sensitive to differences of opinions about future cash flows.

Second, we consider variation in managers' personal histories that is likely to generate differences in beliefs. Existing evidence suggests that individuals are the most affected by seismic events early in life (see, e.g., Elder (1998)). We identify the two biggest shocks that are likely to be formative experiences for our sample CEOs: growing up during the Great Depression and serving in the military. Depression CEOs tend to have less faith in external capital mar-

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kets (Graham and Narasimhan (2004); Schoar (2007); Malmendier and Nagel (2009)). They therefore lean excessively on internal financing. Military service during early adulthood and, particularly, combat exposure have a lasting impact on veterans' life-choices and decision making (Elder (1986); Elder and Clipp (1989); Elder, Gimbel, and Ivie (1991)) and likely lead to more aggressive beliefs (or lower risk aversion). These may later manifest in more aggressive capital structure choices.

We test these predictions on a panel data set of large U.S. companies. We classify CEOs as overconfident if they systematically maintain high personal exposure to company-specific risk. The CEOs in our data have a strong incentive to diversify their personal portfolios since they receive substantial equity-based compensation and since the value of their human capital depends on firm performance. Yet, some CEOs hold non-tradeable, in-the-money executive stock options until expiration rather than exercising them after the vesting period. This delay in exercise, captured by the "Longholder" measure from Malmendier and Tate (2008) and (2005), is not explained by insider knowledge, as it does not yield abnormal returns over a simple strategy of exercising and diversifying. A plausible interpretation is that these CEOs overestimate the means of their firms' future cash-flows.[1] We address several alternative interpretations, including signaling and risk tolerance, and we separate years before and after a CEO's first late exercise ("Pre-" and "Post-Longholder"). As an alternative measure, we identify CEOs who do not exercise options that are highly in the money (67%) five years prior to expiration ("Holder 67").[2] As a robustness check, we identify CEOs' beliefs based on their portrayal as "confident" or "optimistic" in the business press.

We relate these measures to corporate financial policies. Using SDC data on security issuance, we find that overconfident CEOs are significantly less likely to issue equity, conditional on accessing public markets. We find the same pattern using accounting data from Compustat, which includes private financing, and the methodology of Shyam-Sunder and Myers (1999):

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[1] Another behavioral bias sometimes referred to as 'overconfidence' is the underestimation of variance (see, e.g., Ben-David, Graham, and Harvey (2007)). The underestimation of the variance of cash flow, however, implies an underestimation rather than overestimation of option value, suggesting earlier rather than delayed option exercise. It also implies lower perceived benefits of diversification and, hence, does not make a clear prediction for the timing of option exercise. Delayed option exercise is unambiguously implied only by the overestimation of mean cash flows. Moreover, the capital-structure implications of underestimation of variance are reverse (Hackbarth, forthcoming), which allows us to empirically distinguish which bias dominates.

[2] The 67% threshold comes from the rational option exercise model of Hall and Liebman (2002) with constant relative risk aversion of 3 and 67% of wealth in company stock.

CEOs with optimistic beliefs raise roughly 33 cents more debt than their peers to meet an additional dollar of external financing needs. The aversion to equity is strong enough to have a cumulative effect on firm leverage: Firms have significantly higher leverage ratios in years in which they employ overconfident CEOs.

We also test whether overconfident CEOs are generally more reluctant to access external capital markets, preferring instead to rely on internal sources of finance. Using the 'kink' methodology from Graham (2000), we find that overconfident CEOs are significantly more likely to under-utilize debt relative to available tax benefits. While they do not abstain from issuing riskless debt (for which there is no disagreement about the appropriate interest rate), they are more conservative than their peers when they have intermediate debt ratings. Among overconfident CEOs, the most debt-conservative CEOs are also equity-conservative: they are least likely to issue equity.

We perform parallel analyses for CEOs born in the decade leading up to the Great Depression and for CEOs with a military background. We identify Depression CEOs by their birth year and CEOs with military experience using hand-collected information from *Dun and Bradstreet* and *Who's Who in Finance and Industry.* Consistent with the notion of Depression-induced mistrust of external capital markets, we find that Depression CEOs are more prone to under-utilize debt relative to its tax benefits than the average CEO. And they do not substitute equity issuance for debt, confirming their aversion to risky capital markets. CEOs with prior military service, particularly those who served in World War II, choose more aggressive capital structures. Under their leadership, market leverage ratios are significantly higher than under their predecessors or successors. This finding is consistent with military experience inducing a life-long heightened aggressiveness. The results on Word War II veterans are particularly important since, due to the draft, they alleviate concerns about self-selection into service. Moreover, the psychology literature emphasizes the importance of combat exposure in shaping individual personalities (see Elder (1986); Elder and Clipp (1989); Elder, Gimbel, and Ivie (1991)). As with overconfidence, the press coverage of Depression and military CEOs confirms our interpretation: Press coverage as "cautious," "conservative," or in similar terms is positively correlated with membership in the Depression cohort, but negatively with military experience.

Our findings demonstrate the importance of managerial beliefs for financing decisions, both

within and between firms. The predictability of those choices given observable differences in CEO histories is relevant for the way boards and shareholders contract with their CEOs. In particular, it suggests limitations in the ability of existing compensation contracts and governance mechanisms to perfectly align managerial preferences with those of diversified shareholders.

One limitation of our analysis is that we identify the beliefs of CEOs, but not of CFOs, for whom we do not have data on personal characteristics and portfolio choices.[3] As a result, our findings allow for two interpretations: (1) CEO beliefs directly determine financing, or (2) CFOs determine financing, but their decisions are positively correlated with CEO beliefs (assortative matching). For the decisions considered in our analysis, it is likely that CEOs make the ultimate financing decisions. While CFOs first design financing decisions, the CEO alone can withdraw (or approve of) a stock offering at the last moment (Hechinger (1998)) or overrule the CFO and treasurer (Whitford (1999)).[4]

Our results contribute to a growing literature linking managerial beliefs to financing choices. Jenter (2004) shows that CEOs are net sellers of stock when book-to-market ratios are low, suggesting a belief that their firms are overvalued. Baker and Wurgler (2002) find that CEOs time security issuance to market conditions, and that the impact on leverage accumulates over time. These studies emphasize the impact of rational CEO beliefs on financing choices in inefficient equity markets. This paper considers, instead, biased managerial beliefs in efficient markets, as in Roll (1986), Heaton (2002), and Hackbarth (*forthcoming*). Graham and Harvey's (2001) CFO Outlook Survey also suggests a direct role for biased managerial beliefs. For example, in the second quarter of 1999, prior to the end of the technology bubble, roughly 70% of the survey respondents state that their company stock is undervalued, and 67% say that misvaluation is an important factor in the decision to issue stock. Ben-David, Graham, and Harvey (2007) relate the mis-calibration bias of CFOs revealed in such surveys to a wide range of corporate decisions, including corporate financing. However, the theoretical treatment of overconfidence in these papers differs from our approach. Heaton (2002) models a bias in the probability of high cash flow states, which affects both the first and the second moments of the

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[3] The ExecuComp data on the top five executives in S&P 1500 firms is not as detailed, often missing for CFOs, and available for a shorter time frame.

[4] It is not unusual that a financing plan proposed by the CFO is disapproved by the CEO, especially when sales of assets are involved (Millman (2001)). Recent jury verdicts against CEOs of firms with financial scandals imply the same point of view.

perceived cash flow distribution. Similarly, Hackbarth (*forthcoming*) models distortions to both the mean and the variance. Malmendier and Tate (2005) also consider over-estimation of the mean and argue that the investment decisions of overconfident managers are more sensitive to cash-flow, particularly among firms with low debt capacity. However, the preference for internal over external financing, which drives the investment results, is not tested directly. This shortcoming leaves their results open to alternative interpretations and to concerns about the endogeneity of the investment regressions.

We extend the set of beliefs considered in the literature beyond optimism or overconfidence. We introduce a different identification strategy, exploiting variation in exposure to major shocks in early life that have long-lasting impacts on beliefs. Our results build on recent research exploring the effects of prior life experiences on economic decision-making. Donaldson (1990) argues that corporate leaders who were young adults in the 1930s were "profoundly affected by the collapse of the capital markets during the Great Depression," leading them to be "deeply skeptical of the public capital markets as a reliable source of personal or corporate funding," and "to have an instinctive affinity for a strategy of self-sufficiency" (p. 125). Consistent with this view, Graham and Narasimhan (2004) find that Depression-era CEOs chose lower leverage in the 1940s than other CEOs. More broadly, Schoar (2007) shows that CEOs who start their career in a recession make more conservative capital-structure choices, e.g., choose lower leverage and internal over external growth. Malmendier and Nagel (2008) find related evidence that past economic shocks have a long-lasting effect on individual risk aversion and deter risky financial investment decisions such as stock-market participation. Regarding military service, a large medical and psychology literature examines the impact of military exposure on post-war behavior. Berkowitz and Lepage (1967) find that weapons are "aggression-eliciting stimuli," and Killgore et al. (2008) show that combat exposure increases the propensity to engage in risky behavior upon returning from deployment. Wansink et al. (2008) provide evidence of higher risk-taking propensity among World War II veterans. Elder (1986); Elder and Clipp (1989); and Elder, Gimbel, and Ivie (1991) argue that the skills learned from combat make individuals more convinced that they can handle stressful and risky situations, resulting in less risk aversion and higher assertiveness.

Our findings also contribute to the broader empirical literature showing that managerial traits matter for financial policy (Bertrand and Schoar (2003), Frank and Goyal (2007b)). We go

beyond prior studies by identifying specific managerial beliefs that affect financing choices and a potential mechanism through which managerial beliefs form, experiences early in life, similar to Schoar (2007). Our effects can be formalized in a predictive economic model. To the extent that managerial beliefs are sticky they also help to explain the strong firm fixed-effects identified in the recent capital-structure literature (Lemmon et al. (2008)).

Our analysis also opens up a number of new and important questions in the context of the current financial crisis. If major macroeconomic shocks have a long-lasting impact on the financial choices of individual investors, to what extent do those same sorts of shocks affect the decision-making of corporate executives? What sort of long-term effects might the current financial crisis have on the way corporations make decisions? Will we see a move toward self-sufficiency that extends beyond firms' (and current managements') response to the short term shock to credit markets? Even though the specific shocks which are relevant in our sample may not extend to analysis of other (more recent) data samples, we believe that the methodology we develop is easily generalized to more recent events.

We also provide a new angle on the older literature testing pecking-order and trade-off theories. Shyam-Sunder and Myers (1999), for example, argue that the tendency of firms to fill financing deficits with new debt rather than equity issues supports the pecking-order theory over a static trade-off model. Frank and Goyal (2003) use the same empirical methodology on an extended sample of firms to argue in favor of the trade-off model. Fama and French (2002) find evidence that contradicts both theories. The analysis of managerial beliefs helps explain residual variation that is difficult to reconcile with either theory. For example, one important puzzle pointed out by Frank and Goyal (2003) is that "pecking-order behavior" best describes the capital-structure choices of large firms. However, standard pecking-order theory relates such behavior to information asymmetries, from which large firms should suffer the least. Hence, Frank and Goyal's finding raises the question about the true drivers of pecking-order behavior among large firms. Our analysis offers one explanation: biased beliefs of managers in large firms, whose past successes make them prone to overconfidence. Instead of attempting to reconcile the Frank and Goyal (2003) findings with actual informational asymmetry (as in Lemmon and Zender (*forthcoming*)), we de-couple observed pecking-order financing choices from positive inside information and argue that *perceived* asymmetry drives such behavior in the subset of firms in which we observe it.

Finally, our results fill a critical gap in the literature on managerial overconfidence, initiated by Roll (1986). Executives appear to be particularly prone to exhibit overconfidence.[5] One reason may be sorting of high-confidence individuals into top corporate positions (Goel and Thakor (*forthcoming*)). Another reason may be self-attribution bias, which enhances the confidence of individuals who achieve a string of successes, such as those necessary to attain a CEO position (Miller and Ross (1975)). A third reason is that CEOs face exactly the kind of environment that invites overconfidence: they are the most powerful executives in their firms, potentially inducing the "illusion of control," and they are highly committed to good outcomes.[6] Preferences among different financing instruments are an implicit prediction in much of the literature,[7] yet, to our knowledge, remain untested using field data from corporations. This paper links CEO overconfidence directly to financing in large U.S. firms.

The remainder of the paper is organized as follows. In Section I., we derive empirical predictions linking managerial beliefs and past experiences to capital structure choices. Section II. describes the data and the construction of our key variables. Section III. relates financing choices to overconfidence. Section IV. relates financing choices to early life experiences. Section V. concludes.

I.   Empirical Predictions

In this section, we develop capital-structure predictions for a specific set of empirically identifiable beliefs and formative past experiences, typified by overconfident CEOs, Depression CEOs, and CEOs with military experience. A formal model, which focuses on overconfidence, is presented in the Online Appendix. To simplify the analysis, we allow for only two market imperfections: tax-deductibility of interest payments and financial distress costs. In allowing for these two frictions, we do not take a stand on the relative merits of pecking-order versus trade-off theories, which are both complementary to the managerial effects studied here. The assumed frictions simply serve the purpose of fixing a single optimal capital structure for a ra-

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[5] Larwood and Whittaker (1977); Kidd (1970); Moore (1977).

[6] Weinstein (1980), Alicke et al. (1995), March and Shapira (1987), and Langer (1975) find that CEOs believe they can control firm outcomes and tend to underestimate the likelihood of failure.

[7] See the survey by Baker, Ruback, and Wurgler (2006). Recent work includes Hietala, Kaplan, and Robinson (2003); Landier and Thesmar (*forthcoming*); and Lowe and Ziedonis (2006) in addition to the literature mentioned above.

tional, value-maximizing CEO: the debt level which exactly trades off the marginal tax benefit of an additional dollar of debt against the marginal cost of financial distress (Miller (1977)). We then compare the decisions of CEOs with biased beliefs to this rational benchmark.

Though we abstract from other market frictions, like agency costs and asymmetric information, we consider how these imperfections change our predictions. Generally, our predictions are robust as long as the baseline financing model does not create boundary solutions such as full debt financing for a rational CEO. In our empirical work, we use a variety of controls and identification strategies to control for such imperfections and, hence, identify residual CEO-level variation which is unexplained by traditional theories.

We define overconfident CEOs as CEOs who overestimate mean future firm cash flow*s. O*verconfident CEOs choose to overinvest if they have sufficient internal funds or access to riskless debt to finance the investment. If, however, internal or riskless sources of financing are insufficient, the (mis-)perceived cost of external financing curbs an overconfident CEO's desire to invest: Rational shareholders demand higher compensation for providing equity financing than the CEO deems appropriate. Likewise, rational creditors demand higher interest rates than the CEO believes are warranted as long as the CEO overestimates the cash flows available to creditors in default states.

If the over-estimated investment returns are larger than the perceived financing costs, overconfident CEOs are willing to tap risky external capital if necessary to finance the investment. In that case, i.e., conditional on accessing external financing, an overconfident CEO will generally perceive equity financing to be more expensive than risky debt. The reason is that, by issuing equity, the CEO pledges a fraction of all future cash flows to new shareholders. Hence, the difference in opinions between shareholders and the CEO about future cash flows matters for all states of the world. In the case of risky debt, instead, the difference in opinions matters only for those states in which the CEO is not able to repay the debt obligations, i.e., for default states. The extent to which he overestimates cash flows in the good states is irrelevant to the interest rate.[8] Thus, the equilibrium financing plan of a overconfident CEO will contain more risky debt than the trade-off equilibrium of a rational CEO.

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[8]Note that the CEO may perceive debt to be more costly than equity if the probability of default is large and overconfidence is small, reversing the preference for risky debt over equity. (See the Online Appendix for more details.) Intuitively, creditors seize all of the overestimated cash flows in the event of default, but equity holders receive only a fraction. This case is unlikely to be empirically relevant for our sample of large US firms.

Prediction 1. Conditional on accessing external financing (and conditional on a given financing deficit), overconfident CEOs issue more debt than rational CEOs.

If, however, the perceived costs of external finance exceed the over-estimated investment returns, an overconfident CEO chooses to avoid external capital markets and invests only up to the limit of riskless debt finance. In a dynamic setting, an overconfident manager may even maintain spare riskless debt capacity in anticipation of future investments. Absent other frictions, a rational CEO, instead, always invests optimally. Moreover, a rational CEO does not retain cash inside the firm since external finance is fairly priced and cash holdings carry a tax disadvantage.[9] Thus, overconfidence predicts that debt levels may be too low relative to available tax benefits.

Prediction 2. Overconfident CEOs are more likely than other CEOs to issue debt conservatively relative to available tax benefits.

Note that, while the preference for debt over equity (Prediction 1) is a necessary implication of overconfidence under our baseline assumptions, debt conservatism (Prediction 2) is only a possible implication of overconfidence. Figure 1 provides an illustrative example of an overconfident CEO having higher leverage, but also lower debt levels. The figure illustrates that, even if overconfident CEOs are debt-conservative, their leverage, i.e., debt relative to total external capital, can be still higher than that of other CEOs since equity financing will be less frequent. Hence, overconfidence allows us to reconcile two seemingly contradictory empirical phenomena: the pecking order and debt conservatism.

We also consider predictable variation in CEOs' beliefs arising from formative past experiences. We limit our attention to two major shocks which affect a significant portion of our sample CEOs early in life: the Great Depression and military service, particularly during World War II.

Existing evidence suggests that Depression experience discourages individuals from participating in capital markets. Hence, we would expect to observe more debt conservatism among Depression CEOs than among their peers. Unlike overconfident CEOs, who are also predicted

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[9]Other frictions which cause capital rationing (asymmetric information, agency costs) may distort even a rational CEO towards retaining cash. However, overconfidence also pushes a CEO further toward self-sufficiency in those cases.

to display debt conservatism, Depression CEOs do not overestimate the returns arising from hand-picked investment projects; they simply have a preference for self-sufficiency. Thus, while both Depression CEOs and overconfident CEOs may display debt conservatism, the mechanism is different. Depression CEOs under-invest to avoid risky capital, but do not overinvest in bad projects when cash rich.

Prediction 3. CEOs who experienced the Great Depression in early adulthood access risky capital markets more conservatively than other CEOs.

Evidence from the psychology literature suggests that CEOs with a military background – and especially those with battlefield experience – are likely to have a preference for more aggressive policies, or less risk aversion. Service in the U.S. armed forces during World War II, in particular, is likely to reinforce the connection between aggressiveness and success. Unlike overconfident CEOs, military CEOs do not necessarily overestimate returns from investment. They may invest and access external capital markets optimally, but choose to lever up their companies more aggressively than other CEOs.

Prediction 4. CEOs with a military background maintain higher leverage than other CEOs.

II.   Data

To measure CEO beliefs about future stock performance, we use data on CEOs' personal investments from Hall and Liebman (1998) and Yermack (1995). The data details the stock ownership and set of option packages – including exercise price, remaining duration, and number of underlying shares – for the CEOs of 477 publicly-traded U.S. firms between 1980 and 1994, year by year. We also use collected data on CEO age to identify birth cohort and, in particular, CEOs born between 1920 and 1929 ("Depression Babies"). We supplement the data with hand-collected information on CEO military service from *Dun and Bradstreet* and *Who's Who in Finance and Industry*. We classify CEOs as World War II veterans if the *Who's Who* entry specifically references World War II or if the term of military service includes any years between 1941 and 1945.

The sample focuses on large companies: All firms appear at least four times on one of the Forbes magazine lists of largest US companies between 1984 and 1994. The sample selection

is important since Frank and Goyal (2003) find systematic differences between the financing choices of small and large companies.

As an alternative way to measure CEO beliefs, we use their portrayal in the business press. We hand-collect annual data on the press coverage of our sample CEOs in *The Wall Street Journal, The New York Times, Business Week, Financial Times,* and *The Economist.* We count the total number of articles referring to the CEOs using the words "confident" or "confidence;" "optimistic" or "optimism;" and "reliable," "cautious," "practical," "frugal," "conservative," or "steady." We hand-check each article to ensure that the adjectives are used to describe the CEO and to determine whether they are negated. We also collect detailed information on the context of each reference. For example, we record whether the article is about the CEO, the firm, or the market or industry as a whole and, if the article is about the firm, the specific policies it references (earnings, products, mergers, culture).

We merge this CEO-level data with Thomson's SDC Platinum data on U.S. new issues of common stock and convertible and non-convertible debt and preferred stock, including U.S. Rule 144A issues. Alternatively, we use COMPUSTAT cash-flow statement data to measure debt and equity issuance, including loans and other forms of private debt. Net debt issuance is the difference between long-term debt issuance (item 111) and long-term debt reduction (item 114). Net equity issuance is the difference between sales of common stock (item 108) and stock repurchases (item 115). Long-term debt reduction and stock repurchases are set to zero if they are missing or combined with other data items. We exclude financial firms and regulated utilities (SIC codes 6000 - 6999 and 4900 to 4999). To measure financing needs, we construct the net financing deficit, i.e., the amount the CEO has to raise through debt or equity issues in a given firm year to cover expenditures:

$$FD_t = DIV_t + I_t + \Delta W_t - C_t$$

DIV is cash dividends; I net investment (capital expenditures + increase in investments + acquisitions + other uses of funds - sale of PPE - sale of investment);[10] ΔW the change in working capital (change in operating working capital + change in cash and cash equivalents +

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[10]For firms reporting format codes 1 to 3, net investment is items 128 + 113 + 129 + 219 - 107 - 109; for firms reporting format code 7, it is items 128 + 113 + 129 - 107 - 109 - 309 - 310. When items are missing or combined with other items, we code them as 0.

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change in current debt);[11] and C cash flow after interest and taxes (income before extraordinary items + depreciation and amortization + extraordinary items and discontinued operations + deferred taxes + equity in net loss (earnings) + other funds from operations + gain (loss) from sales of PPE and other investments).[12] All definitions follow Frank and Goyal (2003). We use the value of book assets (item 6) taken at the beginning of the fiscal year to normalize debt and equity issuance and the financing deficit.

We also use COMPUSTAT to construct several firm-level control variables. We measure Q as the ratio of market value of assets to book value of assets. Market value of assets is defined as book value of total assets (item 6) plus market equity minus book equity. Market equity is defined as common shares outstanding (item 25) times fiscal year closing price (item 199). Book equity is calculated as stockholders' equity (item 216) [or the first available of common equity (item 60) plus preferred stock par value (item 130) or total assets (item 6) minus total liabilities (item 181)] minus preferred stock liquidating value (item 10) [or the first available of redemption value (item 56) or par value (item 130)] plus balance sheet deferred taxes and investment tax credit (item 35) when available minus post retirement assets (item 330) when available. Book value of assets is total assets (item 6).[13] We measure profitability using operating income before depreciation (item 13) and asset tangibility using property, plants and equipment (item 8). We normalize both variables using the book value of assets at the beginning of the fiscal year. We measure book leverage as the quantity debt in current liabilities (data 34) plus long term debt (item 9) divided by the quantity debt in current liabilities (data 34) plus long term debt (item 9) plus common equity (item 60). We measure market leverage by replacing common equity with market equity in the definition of book leverage.

Finally, we use the "kink" variable, provided by John Graham. The construction of this variable and the associated control variables are described in Graham (2000).[14] Kink is defined as the ratio of the hypothetical level of interest at which the expected marginal tax-shield

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[11]For format code 1, this is items $236 + 274 + 301$; for codes 2 and 3, $-236 + 274 - 301$; for code 7, $-302 - 303 - 304 - 305 - 307 + 274 - 312 - 301$. All items, excluding item 274, are replaced with 0 when missing or combined with other items.

[12]For codes 1 to 3, this is items $123 + 124 + 125 + 126 + 106 + 213 + 217 + 218$. For code 7, this is items $123 + 124 + 125 + 126 + 106 + 213 + 217 + 314$. Items are coded as 0 when missing or combined with other items.

[13]Definitions of Q and its components as in Fama and French (2002).

[14]See Table 1 for more detail. Following Graham (2000), all continuous controls in the kink regressions are winsorized at the 1% level.

benefits of debt start to fall (numerator) to the actual amount of interest paid by the firm (denominator). It captures the amount of additional debt firms could issue before the marginal benefit of interest deductions begins to decline: When a firm is committed to low future interest payments, all of the interest payments are likely to be deducted from future profits, and the tax benefits are equal to the interest payment times the marginal corporate tax rate. As debt levels and future interest payments increase, it becomes increasingly likely that the company cannot generate enough profits to fully realize the interest tax shield. Consequently, the expected marginal tax benefit is decreasing when an additional dollar of interest payment is committed. Assuming the marginal cost of debt intersects the downward-sloping portion of the marginal benefit curve, a kink greater than 1 indicates that the firm has "left money on the table." The potential gain from adding debt increases with the kink. In this sense, high-kink firms use debt more conservatively. The kink provides a measure of the aggressiveness with which firms access debt markets which is comparable across firms and over time.

The left columns of Table I present the summary statistics for the Full Sample after excluding financial firms and utilities (263 firms). Panel A shows the COMPUSTAT data and the distribution across the 12 Fama and French industries.[15] Panel B summarizes the variable kink and the control variables used in the kink regressions. In the latter analysis, the sample is reduced to 189 firms due to missing values of the controls required in the kink analysis. Panel C summarizes CEO characteristics. CEOs' age, tenure and ownership of stock and options generally serve as control variables; Depression Baby and Military Experience are our proxies for past formative experiences. In the baseline sample, the Depression indicator is equal to one for 40% of the firm-year observations. The subsample we use for our analysis of Depression effects requires the kink controls and consists of 343 CEOs, 132 of whom are Depression Babies. In the baseline sample, CEOs are coded as having military experience in 22% of firm-years. Note that we limit the sample to CEOs for whom we were able to locate a *Who's Who* entry, resulting in a lower number of observations (1617). The subsample consists of 285 CEOs, 64 of whom have served in the armed forces. This restriction should minimize measurement error, though selective reporting remains a possible source of bias.

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[15]For definitions see http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

III. Overconfidence

III.A. Measures

We take two approaches to identify CEO overconfidence. First, we infer CEOs' beliefs from their decisions to hold non-tradeable company stock options. Our measures exploit CEOs' incentives to exercise options early due to their high exposure to the idiosyncratic risk of their companies. They receive large grants of company stock and options as compensation, and their human capital is invested in their firms, so that bad firm performance also reduces their outside options. The exact threshold for rational option exercise depends on individual wealth, risk-aversion and diversification (Hall and Murphy (2002)). CEOs who overestimate future returns of their firms, however, may hold in-the-money options beyond the rational threshold in order to personally benefit from expected stock price appreciation. Malmendier and Tate (2008) translate this logic into three measures of overconfidence. We use the same measures, which allows us to interpret our results within the context of previous findings.

Longholder. Longholder is a binary variable which takes the value 1 for all CEOs who, at any point during the sample period, hold an option until the year of expiration even though the option is at least 40 percent in the money entering its final year. The exercise threshold of 40 percent corresponds to constant relative risk aversion of 3 and 67 percent of wealth in company stock in the rational option exercise model of Hall and Murphy (2002).

Longholder is a managerial fixed effect. The remaining measures allow for within-CEO variation.

Pre- and Post-Longholder. Post-Longholder is an indicator equal to 1 only after the CEO for the first time holds an option until expiration, provided it exceeds the 40 percent threshold. It allows us to isolate financing decisions after the CEO has revealed his confidence level. Pre-Longholder is equal to 1 for the other years in which Longholder is equal to 1.

Holder 67. To construct Holder 67, we consider all option holdings with five years remaining duration. Maintaining the previous assumptions on constant relative risk aversion and diversification, the new exercise threshold in the Hall-Murphy framework is 67 percent in the money. Holder 67 is binary and becomes equal to 1 once a CEO fails to exercise options with 5 years

remaining duration despite an increase of at least 67 percent since the grant date. For this measure, we restrict the comparison group to CEOs who were faced with this exercise decision, but chose to exercise rather than hold. A CEO enters the sample once he has an option with 5 years remaining duration that is at least 67 percent in the money.

Our second approach to identifying overconfidence relies on CEO characterizations in the business press. Our press data, described in Section II., provides the year-by-year number of articles that refer to each sample CEO. We construct an indicator of CEO confidence that compares the number of past articles using the terms (a) "confident" or "confidence" or (b) "optimistic" or "optimism" to the number of *past* articles that portray the CEO as (c) not "confident," (d) not "optimistic," or (e) "reliable," "cautious," "conservative," "practical," "frugal," or "steady" (i denotes the CEO):

$$TOTALconfident_{it} = \begin{cases} 1 \text{ if } \sum_{s=1}^{t-1} a_{is} + b_{is} > \sum_{s=1}^{t-1} c_{is} + d_{is} + e_{is}; \\ 0 \text{ otherwise.} \end{cases}$$

We only use past media portrayal to ensure that financing policies do not affect the indicator directly. We also hand-check the context of the individual articles and find that few focus on financial policies: Among the 960 articles that are primarily about the firm, 53% focus on company earnings, 17% on mergers, and fewer than 5% on financial policy. We also address possible bias due to differential coverage. If, for example, there were a press bias towards positive news stories, CEOs who are often in the press would be more likely to have TOTAL-confident equal to 1. To address this possibility, we control for the total number of articles in the selected publications, aggregated over the same period as the TOTALconfident measure.

In the right half of Table I, we show firm and CEO summary statistics for the subsample of Longholder firm years. The firm characteristics are quite similar to those of the overall sample. The differences in means between firm-years with and without Longholder CEOs are typically statistically insignificant. (We adjust errors for firm-level clustering.) The lone exception is profitability, for which we control in our regressions. In the lower part of Panel A, we see that overconfident CEOs are distributed more or less proportionally across industries, though they are overrepresented in the Chemicals and Allied Products and the Business Equipment industries, and somewhat underrepresented in Energy and Telecommunication. Panel B reveals

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that overconfident CEOs have higher kinks and that they are also somewhat overrepresented in the Computer Industry. In Panel C, we see that overconfident CEOs have significantly longer tenures, with a mean of 11 years compared to 9 years in the full sample. They also hold significantly less company stock, but more options than other CEOs. The sample characteristics are similar using the other measures of overconfidence. Moreover, the overconfidence measures are all positively and significantly correlated with each other.

Alternative Interpretations We consider several alternative interpretations of our measures and their relation with capital structure decisions. We exclude explanations that have little or no bearing on the press measure. For example, personal taxes, board pressure and procrastination are potential explanations for late option exercise, but have no plausible effect on CEOs' portrayal in the business press. To rule out these interpretations, we rely on the robustness of our findings across the two measures.

Dilution. CEOs with extensive holdings of company stock and options may want to avoid diluting those holdings by issuing additional equity. Graham and Harvey (2001), for example, report that earnings-per-share dilution is a primary consideration in stock issuance decisions. Even though this interpretation is unlikely to affect our press measure, we address the concern by controlling directly for the level of CEO stock and option holdings in all of our estimations. These controls capture differences in CEO incentives to avoid dilutionary equity issuance based on differences in their own portfolio compositions. Hence, our measures capture the *timing* of option exercise and not the *level* of holdings. In addition, it is important to note that *perceived* dilution is exactly the mechanism that causes overconfident CEOs to avoid issuing equity. Real dilution occurs only when management has inside information about firm value.

Inside Information A CEO may choose not to exercise in-the-money options because of private information that the firm's future earnings will be strong. Then, holding company stock options is a profitable investment until outsiders learn the information and incorporate it into prices. Moreover, CEOs with such information may justifiably exude "confidence" and "optimism" to outsiders, including the business press. In this case, our results would support the traditional information-based explanation of pecking order financing. The key distinction between inside information and overconfidence is whether CEOs' beliefs are correct.

We check whether CEOs earn positive abnormal returns from holding options beyond the cal-

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ibrated thresholds. We find that Longholder CEOs would earn greater profits on average by exercising 1, 2, 3, or 4 years earlier and investing in the S&P 500 for the remainder of the options' durations.[16] We find similar evidence for the Holder 67 measure. This evidence suggests that the average CEO who holds company stock options beyond the calibrated thresholds for exercise does not have positive inside information.

Signalling. The apparent absence of inside information casts doubt on rational signalling as an interpretation of our measures. If late option exercise and bold statements to the press are meant to signal strong future stock price performance, those signals seem ineffective: CEOs who send them are the least likely to issue equity and their stock does not display positive abnormal performance. It is possible, though, that investors would expect even worse future performance in the absence of option-holding and strong statements in the press, leading to even less equity issuance. Our findings using the Post-Longholder measure cast doubt on this interpretation. If private information drives managerial financing preferences for debt over equity and delayed option exercise (and press coverage) signals that information to the market, we would expect a weaker impact of past 'signals.' Instead, we find little difference between the relation of past and contemporaneous late exercise to financing choices.

Risk Tolerance. CEOs may hold options longer due to a higher willingness to take risk. Risk-tolerant CEOs may also appear more "confident" and "optimistic" and less "cautious," "conservative," "practical," "reliable," or "steady" to business reporters. In addition, bankruptcy is less of a deterrent to debt issuance for risk-seeking CEOs. However, risk tolerance does not predict aversion to external financing. Thus, our debt conservatism results in Section III.C. are difficult to reconcile with this story.

Thus, each of these interpretations is difficult to reconcile with some of the evidence. Overestimation of future performance, instead, is consistent with all of our findings. For the remainder of this Section, we interpret Longholder, Holder 67, and TOTALconfident as overconfidence measures. The main insight of the paper, however, is independent of this interpretation: systematic and measurable differences in CEO beliefs predict systematic differences in financial policies.

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[16] See Malmendier and Tate (2004) for detailed tables.

III.B. Debt vs. Equity

Overconfident managers are reluctant to issue equity because they believe that it dilutes the claims of existing shareholders. They are also reluctant to issue risky debt because they believe that the interest rate creditors demand is too high given the distribution of future returns. Conditional on accessing external financing, however, they generally prefer debt to equity since debt allows current shareholders to remain the residual claimant on the firm's future cash flows. We test whether, conditional on accessing public securities markets, overconfident CEOs are less likely to issue equity (Prediction 1). The test of Prediction 1 requires us to condition on issuance, since overconfident and other CEOs may access public markets with different baseline frequencies.

Specification 1: Public Issues Panel A of Table II presents the frequencies of equity and debt issues, conditional on conducting a public issue. Years with both a debt and an equity issue count in both categories. We find that equity issues are less frequent for overconfident CEOs under all measures. For Longholder CEOs, 31% of firm years with public issues contain at least one equity issue. This percentage is virtually constant across Pre- and Post- Longholder years. When Longholder is 0, instead, 42% of issue years contain an equity issue. The difference is statistically significant at the 5% level, where standard errors are adjusted for clustering at the firm level. The results are stronger, both economically and statistically, using the Holder 67 and TOTALconfident measures. Holder 67 CEOs issue equity 23% of the time, but CEOs in the comparison group issue equity 39% of the time. TOTALconfident CEOs issue equity 25% of the time, but CEOs for whom TOTALconfident is 0 issue equity 48% of the time. For both measures, the differences are significant at the 1% level, again adjusted for clustering at the firm level. Overconfident CEOs also issue debt at a higher frequency than other CEOs under all measures. However, the difference is statistically significant only using the TOTALconfident measure. There are no significant differences for hybrid securities.

We test whether these cross-sectional patterns are robust to the inclusion of CEO- and firm-level controls. Panel B of Table II presents a logit model, which uses an indicator for 'at least one equity issue during the fiscal year' as the dependent variable. We first run a baseline logit with Longholder as the only explanatory variable (Column 1). We then add portfolio controls for the incentive effects of performance-based compensation: the percentage of company stock

and the number of vested options held by the CEO (Column 2). Options are scaled by shares outstanding and multiplied by 10 so that the mean is comparable to the mean of stock holdings. In Column 3, we add the standard firm controls from the capital structure literature – the natural logarithm of sales, profitability, tangibility, and Q – to capture the effects of known cross-sectional determinants of changes in leverage (Rajan and Zingales (1995)). In Column 4, we add book leverage to capture systematic differences in the ability to access debt markets.[17] We then add year effects to control for the possibility that overconfident CEO-years are disproportionately clustered in cold markets for equity issuance (Column 5). Finally, in Column 6, we include the full set of firm-level controls and industry dummies from Graham (2000) as an alternative way to capture traditional capital-structure determinants. These controls (described in Panel B of Table I) include binary indicators for No Dividend, Negative Owners' Equity, Net-Operating-Loss Carryforwards, and five industry groupings, as well as continuous measures of firm size, the expected cost of financial distress (ECOST), the cyclicality of operating earnings, return on assets, the z-score, the current and quick ratios, R&D and advertising expenditures, and Q. All controls are measured at the beginning of the fiscal year. All standard errors are adjusted for firm-level clustering.

Similar to the pattern in the raw data, we find that Longholder CEOs are $37 - 49\%$ less likely than their peers to issue equity across all specifications. The estimated effects are significant at the 5% or 10% levels. Among the CEO controls, vested option holdings increase the odds of issuing equity, though the large coefficient estimate is driven by 5 outlier observations in the upper tail of the distribution. Eliminating those observations substantially decreases the coefficient without affecting the Longholder coefficient. Among the standard firm controls, only sales are consistently significant. Smaller firms are more likely to issue equity. Surprisingly, Q does not seem to positively predict equity issues. As a robustness check, we verify that stock returns over the prior year predict a significantly higher probability of issuing equity without materially affecting the Longholder estimate. In the specification with kink controls, firms that do not pay dividends and have more cyclical earnings appear to issue more equity, while firms with higher R&D expenditures issue less.

We also consider the robustness of the results to alternative sets of controls. For example,

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[17]When controlling for book leverage, we drop the few cases with book leverage greater than 1.

we re-estimate the regression using the available controls from Gomes and Phillips (2007).[18] Missing IBES data requires us to drop observations prior to 1984. However, even in the roughly 40% smaller sample, we find qualitatively similar, though statistically insignificant, results (Longholder coefficient = -0.395; p-value = 0.188). Likewise, including changes in sales, Q, profitability, or tangibility either in addition to or in lieu of the levels has little impact on the results. We also find similar results using the Holder 67 and TOTALconfident measures. The measured impact on equity issuance is statistically and economically stronger than the Longholder results in all cases but one. The one exception is the estimation including all controls and year effects with TOTALconfident as the overconfidence measure (odds ratio = 72%; p-value = 0.18). There are also no significant differences between the Pre- and Post-Longholder portions of the Longholder effect. Finally, as in Panel A, we do not find consistently significant results when we use either debt or hybrid issuance as the dependent variable.

Overall, CEOs we classify as overconfident are less likely to issue equity conditional on accessing public securities markets, controlling for standard determinants of issuance decisions.

Specification 2: Financing Deficit We repeat the test in the standard 'financing deficit framework' of Shyam-Sunder and Myers (1999), using data from cash flow statements. The 'financing deficit' measures the amount of expenditures requiring external finance. We test whether overconfident CEOs cover more of their financing deficits using debt than other CEOs. This approach is analogous to testing for fewer equity issues *conditional* on public security issuance in Specification 1 above, but adds bank loans and other private sources of financing to the analysis. Hence the financing-deficit approach allows us to use the full sample rather than only years with a public security issuance. One immediate advantage of the larger sample is that we can include firm fixed effects, i.e., identify the impact of overconfidence separately from time-invariant firm effects.

Note that overconfident CEOs may raise more funds than rational CEOs (since they overestimate the returns to investment) or fewer funds (since they perceive external financing to be overpriced). Thus, rather than asking whether overconfident CEOs raise more dollars of debt or fewer dollars of equity than their peers, the appropriate test is whether the mix of external

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[18]Since IRRC data is unavailable for our sample period, we use the natural log of board size as an alternative governance measure. We also do not have the marginal tax rate control.

finance depends on overconfidence. Whatever the determinants of the baseline relation between debt issuance and the financing deficit, our analysis tests whether overconfident CEOs demonstrate a heightened preference for debt. Thus, our findings are unaffected by controversy over trade-off versus pecking order explanations of financing deficit regressions.

We estimate the following regression specification:

$$\text{Debt}_{it} = \beta_1 + \beta_2 FD_{it} + X'_{it} B_3 + \beta_4 \Delta_{it} + FD_{it} \cdot X'_{it} B_5 + \beta_6 FD_{it} \cdot \Delta_{it} + \epsilon_{it} \tag{1}$$

Debt is long-term debt issues minus long-term debt reduction (Net Debt Issues), normalized by beginning-of-the-year assets. FD denotes the financing deficit, as defined in Section II., and Δ is the overconfidence proxy. X includes CEO- and firm-level controls. At the CEO level, we control for stock ownership and vested options, as before (Panel B of Table II). At the firm level, we use the controls from the financing-deficit regressions in Frank and Goyal (2003): book leverage and changes in profitability, tangibility, the natural logarithm of sales, and Q. All controls are included both as level effects and interacted with FD. We also include firm fixed effects and their interactions with FD. The fixed effects allow us to separate effects we attribute to the CEO from time-invariant firm effects. In the case of Holder 67 and TOTALconfident, we also exploit variation between a CEO's overconfident and non-overconfident years. Finally, we include year effects to control for the effects of hot equity issuance markets. All standard errors account for clustering at the firm level.

Table III presents the results of estimating model (1) using Longholder as the overconfidence proxy. Column 1 presents a baseline regression without fixed effects or controls for comparison to prior literature. The coefficient of 0.729 on the financing deficit is very close to the effect estimated in Shyam-Sunder and Myers (1999), reflecting that our sample of large firms is more similar to their sample than to the Frank and Goyal (2003) sample.[19] In Column 2, we add Longholder, its interaction with the financing deficit, firm fixed effects, and the interactions of firm fixed effects with the financing deficit. We drop the level effect of the financing deficit when including interactions of the financing deficit with firm fixed effects to avoid collinearity. Alternatively, we could exclude the fixed-effect dummy for one firm, but the coefficient of the

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[19]Shyam-Sunder and Myers (1999) analyze large firms, with mean assets of \$953m for the period 1971-1989. (Our firms are even larger, with mean assets of \$5477m for the period 1980-1994.) When Frank and Goyal (2003) analyze, separately, the quartile of largest firms, they find similar coefficients of 0.753 for the period 1971-1989 and of 0.675 for the period 1990-1998.

financing deficit would then depend on the (arbitrary) choice of which firm to exclude. Column 3 adds controls for CEO stock and option ownership, and Column 4 adds year fixed effects. In Column 5, we add changes in sales, in Q, in profitability, and in tangibility and, in Column 6, the lag of book leverage.[20]

Among the controls, deviations from (within-firm) average book leverage are negatively related to debt issues, consistent with leverage targeting. Above-average changes in Q predict less financing deficit covered with debt, consistent, for example, with market timing. More debt is used when CEOs have above average stock holdings, consistent with either incentive effects in the presence of positive information or overconfidence. Surprisingly, CEOs use significantly less debt when their option holdings are higher than average, though the economic magnitude is small, 1-2¢ less debt per \$1 of financing deficit for a 1 standard deviation increase in option holdings. In all specifications, Longholders use more debt than non-Longholder successors or predecessors in the same firm. The effect is significant at the 10% level and economically large, ranging from 32¢ to 35¢ more debt per \$1 of financing deficit.

The results using the TOTALconfident proxy are qualitatively similar, though weaker economically and statistically. We find no significant difference between the Pre- and Post- Longholder portions of the Longholder estimate and very little impact of Holder 67, perhaps due to reduced sample size. Overall, we confirm the findings from Specification 1 using the financing-deficit framework with firm fixed effects.

III.C.   Internal vs. External Finance

Overconfidence predicts not only a preference for debt over equity, but also for internal over external finance (Prediction 2). A possible consequence is debt conservatism: Even though overconfident CEOs choose debt over equity when they access external capital markets, their preference is to forgo external markets altogether. Thus, they may not access those markets frequently enough to take full advantage of the available tax benefits of debt, resulting in debt levels below the rational benchmark. In other words, even if overconfident CEOs maintain higher leverage than rational CEOs, the level of debt chosen may still be conservative.

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[20]The results are nearly identical using lagged levels of the sales, tangibility, profitability, and Q controls (as in Specification 1) rather than changes.

We use the "kink" variable of Graham (2000) to measure debt conservatism. It captures how much a firm could increase debt before the expected tax benefit begins to decline. Graham argues that firms, on average, leave money on the table by following excessively conservative debt policies. We test whether overconfidence explains a portion of the effect. We use the following regression specification:

$$\text{Kink}_{it} = \beta_1 + \beta_2 \Delta_{it} + X'_{it} B_3 + \epsilon_{it}, \tag{2}$$

where Δ is the overconfidence measure and X are firm- and CEO-level controls. We include the firm controls from Graham's original analysis, to ease comparison. We estimate tobit regressions because the kink is artificially bounded between 0 and 8. All standard errors are clustered at the firm level. The null hypothesis is that β_2 is zero; overconfidence predicts $\beta_2 > 0$. Though this hypothesis is one-tailed, we report the results of two-tailed tests, resulting in a higher threshold for rejecting the null of no effect. We also test whether overconfident CEOs with high "kinks" simultaneously raise equity as a substitute for debt (which would falsify the overconfidence interpretation) and whether they have sufficient cash on hand to cover investment needs.

In Table IV, Panel A, we present tobit estimates of model (2) using Longholder for Δ. Column 1 shows a baseline regression without controls, Column 2 adds CEO-level controls, and Column 3 adds the full set of firm-level controls and industry dummies from Graham (2000).[21] The large number of kink controls reduces the sample to only 189 firms. Among the controls, we find some evidence that more vested option holdings are associated with lower kinks. Of Graham's 19 firm-level and industry controls, 16 have qualitatively similar effects in his and our estimations. The exceptions are negative owners' equity, the natural log of sales and advertising expense over sales, which have opposite signs.[22] Most importantly, Longholder CEOs have higher kinks across all three specifications. The coefficient estimates are significant at the 10% level and range from 0.647 to 1.256, representing a 16% to 32% increase in kink from its mean and an increase of 0.24 to 0.46 standard deviations.

Overconfidence implies that the debt conservatism of Longholder CEOs reflects high reliance

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[21]Graham also includes squares of all continuous controls. Including the squares has little impact on the results: The estimated Longholder coefficient in Column 3 changes from 0.605 to 0.611 (p = 0.051).

[22]The (untabulated) control variables are statistically significant with the exception of Negative Owners' Equity, CYCLICAL, Quick Ratio, and PPE-to-Assets.

on internal resources and not low internal and high equity financing. As a first test of this prediction, we add an indicator for "Low Cash Status" and its interaction with Longholder (Column 4). Low Cash Status is equal to 1 if the firm's cash stock at the beginning of the year, divided by mean industry investment, is at or below the 40th percentile in our sample.[23] Mean industry investment is calculated separately for each year and each Fama-French industry shown in Panel A of Table I. We find no evidence of higher kinks among Longholder CEOs with low internal funds. Only Longholder CEOs with abundant cash have significantly higher kinks than rational CEOs. The statistical significance of the effect increases (p-value $= 0.025$). While the difference in kinks between Longholders with and without low cash is insignificant (p-value $= 0.214$), the result confirms that high kinks are not driven by CEOs who cannot use internal funds and need to raise equity to finance investment.

One shortcoming of the tobit analysis is that we cannot include firm fixed effects without biasing the coefficient estimates due to the incidental parameters problem. To address (uncontrolled) cross-sectional differences between firms with and without Longholder CEOs, we replicate our findings in a logit framework, with an indicator for kink > 1 as the dependent variable. We estimate a conditional logit model that identifies the Longholder effect using only differences in kink across Longholder and non-Longholder CEOs within the same firm. When including firm effects, all controls, Low Cash, and Low Cash interacted with Longholder, the results are qualitatively similar, though statistically weaker (Longholder p-value $= 0.116$). Using the four specifications from Panel A in the logit framework (i.e. without firm fixed effects), the Longholder coefficient is significant at the 5% or 10% level.

Overall, Longholders appear to use debt more conservatively than other CEOs, particularly when cash reserves are abundant.

In Panel B, we test directly whether debt-conservative Longholder CEOs are also equity-conservative, i. e., do fewer equity issues as their firms' kinks increase, consistent with aversion to external finance and the overconfidence hypothesis. We tabulate the distribution of net equity issues among Longholder CEOs, separately for four different levels of kink: (i) kink ≤ 1, (ii) $1 <$ kink ≤ 3, (iii) $3 <$ kink ≤ 7, and (iv) kink > 7. Comparing across groups, we find that higher levels of kink are associated with less equity issuance. As kink increases, both the

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[23]The results are robust to using other cutoffs, such as the 25th or the 30th percentile, or alternative proxies for "expected volume of investment," such as prior-year averages.

mean and median of net equity issuance decline monotonically. The differences in mean equity issues between groups (i) and (ii) and groups (i) and (iii) have p-values of 0.016 and 0.052, respectively, with errors clustered at the firm level. The remaining cross-group differences are not statistically significant. Thus, Longholder CEOs who display debt conservatism also issue equity more conservatively, implying that they rely more on internal finance. It is also possible that Longholder CEOs store debt capacity in anticipation of large investments or acquisitions (thereby inducing high kinks). This explanation would be consistent with the evidence in Malmendier and Tate (2008) that overconfident CEOs do more acquisitions and prefer to finance them with cash and debt.

Finally, we analyze the relation between the credit-worthiness of firms and their kinks in order to address two concerns: first, that the high degree of debt conservatism among Longholder CEOs simply reflects bad credit ratings; and second, that Longholder CEOs have good credit ratings, allowing them to issue additional, nearly riskless debt. The latter finding would go against the overconfidence interpretation: Overconfident CEOs should not be reluctant to issue riskless debt, since there is no disagreement about the appropriate price (interest rate). To test whether either extreme of credit-worthiness is driving our results, we use the S&P Long-Term Domestic Issuer Credit Rating to split the sample into thirds: firms years with A+ ratings or better are in the highest third and firms years with BBB ratings or worse are in the lowest third. We drop firms with missing credit ratings. Repeating the tobit analysis of Table IV, Panel A, on each subsample, we find that the effect is almost entirely concentrated in the middle third: the coefficients and p-values for Longholder in the Column 3 specification are .489 (0.32), 0.823 (0.018), and 0.412 (0.178) for low, middle, and high credit ratings. Thus, our findings neither reflect limited access to debt markets nor a failure to raise riskless debt.

We find similar results using Holder 67 as the proxy for Δ. We also find little consistent evidence of differences across the Pre- and Post-Longholder portions of the Longholder measure. TOTALconfident CEOs, however, have lower kinks than other CEOs, though the result is not robust to the fixed effects logit specification. Given our earlier finding in Table II that only TOTALconfident CEOs are associated with a significantly higher probability of public debt issuance, one possible interpretation for the difference in results is that, among overconfident CEOs, the press is most likely to identify the ones who demonstrate their beliefs by over-investing, thereby requiring higher external finance.

III.D. Leverage

The results thus far confirm Predictions 1 and 2: CEOs we classify as overconfident prefer debt to equity conditional on accessing external finance and prefer internal to external finance, resulting in debt conservatism. We now test whether these patterns in financing choices accumulate into significant differences in capital structures.

Recent research argues that there are large unexplained time-invariant effects in leverage (Lemmon et al. (2008)). One interesting question is whether stable managerial traits, like latent overconfidence, can help to explain these differences across firms: Do firms with long-serving overconfident CEOs have systematically higher leverage than other firms? Unfortunately, it is difficult to assess causality in such cases and, specifically, to determine whether the effect is due to the manager or to the firm. For example, firms which follow more aggressive policies – evidenced by a higher "target" leverage ratio – may also be attractive places for overconfident CEOs to work. Thus, in order to identify the effect of managerial overconfidence on firm leverage, we follow an approach similar to Bertrand and Schoar (2003) and compare leverage under overconfident and rational CEOs operating the same firm. We estimate the following regression:

$$\text{Leverage}_{it} = \beta_1 + X'_{it}B_2 + \beta_3\Delta_{it} + \epsilon_{it} \tag{3}$$

where Leverage is end-of-fiscal-year market leverage, X is a vector of firm and CEO control variables and Δ is the overconfidence measure.

We begin by estimating two baseline regressions for comparison with existing literature. In Column 1 of Table V, we estimate a pooled regression, including our standard set of firm-level controls: profitability, tangibility, size, Q, and the financing deficit. Standard errors are clustered at the firm level. The controls explain 34% of the variation in leverage and have the typical directional effects: size (+), profitability (-), tangibility (+), Q (-), and financing deficit (+).[24] In Column 2, we add firm fixed effects. Consistent with Lemmon et al. (2008), we find that adding firm effects more than doubles the R^2 of the regression. Among the controls, only tangibility loses explanatory power when estimated using within-firm variation.

Next, we ask whether differences in managerial confidence levels can explain remaining within-

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[24]We include financing deficit for consistency with our earlier specifications. It is indeed significant. However, the Longholder effect does not depend upon its inclusion.

firm variation in leverage. We find that Longholder CEOs maintain significantly higher leverage than their predecessors or successors (Column 3). The effect is robust to the inclusion of several important controls: In Column 4, we add five lags of stock returns to capture the impact of stock prices changes on leverage ratios (Welch (2004)).[25] As expected, stock returns have a significantly negative impact on leverage. The effect decays as we increase the lag length, with the fifth lag being insignificant. Including stock returns also eliminates the predictive power of Q for leverage, while improving the R^2 of the regression. In Column 5, we add our standard CEO controls for stock and option holdings. If CEOs have real private information then these controls will capture variation in CEOs' concern over diluting their personal equity stakes through new issues. In Column 6, we add CEO tenure and its interaction with Longholder to the regression. We find a negative coefficient on the interaction and an increase in the (positive) level effect of Longholder. There are two potential explanations for this effect. Longholder CEOs may exhaust their firms' debt capacities early in their tenures and subsequently finance desired (over-)investment using equity. Alternatively, Longholder CEOs may learn to issue risky capital more appropriately as their tenures increase. Finally, in Column 7, we add year effects to the regression, finding only a small decline in the Longholder coefficient.

Economically, the effect of Longholder on leverage is large. Using the Column 5 specification, for example, replacing a rational CEO with an overconfident one in a given firm increases leverage by 20% of a standard deviation or, alternatively, by 15% from its mean level. The true CEO effect may be even larger since we are conservative in separating out time-invariant firm effects: some of the effects we attribute to the firm may actually reflect the influence of past and current CEOs. In particular, our estimates of the overconfidence effect do not exploit any information from firms with only a single (overconfident) CEO during our sample period; however, such long-tenured CEOs may have the largest impacts on their firms' capital structures.

We perform a number of additional robustness checks, using alternative variable definitions, regression specifications, and methodology. First, we consider book rather than market leverage as the dependent variable. The results are qualitatively similar though statistically weaker. For example, the coefficient estimate on Longholder is 0.042 with a t-statistic of 1.51 in the Column 7 specification. One potential reason for the discrepancy is that book equity – as a

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[25]We do not include contemporaneous returns due to endogeneity concerns. However, the results are robust to this additional control.

historical accounting measure – has only a noisy relation to the economic quantity of interest, the value of shareholders' cash flow claims. We also find similar results using an alternative methodology inspired by Baker and Wurgler (2003), i .e., measuring the relation between the change in leverage and the number of overconfident sample CEO years (or, alternatively, "external finance weighted" overconfidence). Finally, we find similar results using the TOTALconfident proxy, with a few notable differences. First, the relation with the overconfidence proxy is stronger in the cross-section than within firms. Second, the relation is stronger when we remove within-CEO variation. Finally, the effect is typically strongest using book, rather than market, leverage as the dependent variable.

Overall, the results support the predictions of the overconfidence hypothesis: overconfident CEOs appear to view equity financing as a last resort, resulting in measurable differences in firm leverage ratios compared to their rational predecessors or successors.

The results also support our more general hypothesis that managerial beliefs help to explain variation in capital structure that cannot be explained by time-invariant firm differences or variation in traditional capital-structure determinants. Though we cannot identify the effect econometrically (due to joint determination), the evidence suggests that managerial factors account at least partially for the time-invariant, firm-specific component of leverage uncovered in recent empirical studies.

IV.   Past Experiences

Thus far, we have elicited beliefs from CEOs' personal portfolio decisions, and we have used CEOs' portrayal in the business press as supplementary evidence consistent with our interpretation. In this section, we take an alternative approach: We identify major early-life experiences which are likely to shape CEOs' beliefs and risk attitudes. In particular, we consider CEOs who grew up during the Great Depression and CEOs with military experience. We test whether Depression CEOs lean more on internal financing, consistent with less faith in external capital markets (Prediction 3). And we test whether military experience predicts more aggressive choices, such as higher leverage ratios (Prediction 4).

We start by analyzing the financing choices of Depression CEOs. The Depression hypothesis,

like overconfidence, predicts reluctance to access external financing. But, unlike overconfidence, Depression experience does not predict a misassessment of investment returns. Thus, we do not have a prediction for investment policy, for the choice between debt and equity, or, ultimately, for the firm's leverage ratio. Instead, we test for excessive use of internal over external financing using the empirical tests of debt (and equity) conservatism from Section III.C..

In the empirical model specified in equation (2), $Kink_{it} = \beta_1 + \beta_2 \Delta_{it} + X'_{it} B_3 + \epsilon_{it}$, we replace the overconfidence proxy Δ_{it} with an indicator for membership in the 1920s cohort, "Depression Baby." All other variables remain the same. We cluster the standard errors at the firm level. The null hypothesis is that β_2 is zero; the Depression hypothesis predicts $\beta_2 > 0$. We also test whether Depression CEOs with high kinks simultaneously raise equity as a substitute for debt, which would falsify the aversion to external capital markets implied by the Depression hypothesis.

In Table VI, Panel A, we present tobit estimates, which account for Kink being artificially bounded between 0 and 8. Column 1 shows a baseline regression without controls, Column 2 adds the full set of firm-level controls and industry dummies from Graham (2000) as well as controls for CEO age and tenure. The CEO age control is particularly important in identifying an effect of the Depression cohort separately from the effect of higher age.[26] We find that Depression Babies have significantly higher levels of the kink variable. Economically, the 0.5053 increase in kink in Column 2 represents a 13% increase from the overall sample mean. Hence, the Depression effect is similar in magnitude to the overconfidence effect, which was 16% in the corresponding specification.

In Panel B of Table VI, we verify that the higher kinks among Depression Babies do not come from substituting equity issuance for debt. We use the same methodology as in Panel B of Table IV, tabulating the distribution of net equity issues among Depression CEOs, separately for four different levels of kink. Comparing across groups, we find that higher levels of kink are associated with less equity issuance. As kink increases, both the mean and median of net equity issuance decline monotonically. In fact, Depression CEOs with the highest values of the kink variable are actually net repurchasers of company equity, on average. Overall, the results strongly support the hypothesis that Depression Babies prefer to minimize their exposure to

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[26]We also confirm the robustness of the result to adding a quadratic term in age as well as the Longholder overconfidence measure and portfolio controls.

capital markets.

Next, we test whether CEOs with a military background pursue more aggressive financial policies (Prediction 4). Higher risk tolerance, for example, implies heightened use of debt financing and, ultimately, higher leverage. We use the methodology of Section III.D. to test for differences in firm leverage ratios. We re-estimate regression model (3), $Leverage_{it} = \beta_1 + X'_{it}B_2 + \beta_3\Delta_{it} + \epsilon_{it}$, substituting an indicator for military service, "Military Experience," for Δ_{it}. As before, $Leverage$ is end-of-fiscal-year market leverage and X is a vector of firm and CEO controls.

In Column 1 of Table VII, we compare leverage chosen by CEOs with prior military experience to the leverage chosen by their predecessors and successors in their firms. That is, we identify the impact of military service on leverage controlling for time-invariant differences across firms in capital-structure policies (firm fixed effects). We find that military CEOs choose higher leverage than their predecessors or successors. Economically, the effect is smaller than the impact of overconfidence, increasing leverage 13% from its mean, or by roughly 17% of a standard deviation. Statistically, the baseline effect of military experience is significant at the 10% level after clustering at the firm level. In Column 2, we add our standard set of firm-level controls – profitability, tangibility, firm size, Q, and the financing deficit – and the relevant CEO-level controls, age and tenure. The coefficient of past military service is virtually unaffected. We also confirm the robustness of the effect to the inclusion of lags of stock returns, as in Table V.

In Column 3, we refine our measure of military experience by separating World War II veterans from other military CEOs. According to existing evidence from the psychology literature, combat exposure induces a higher willingness to take risk. To test this prediction, we compare the impact of service in World War II to other military experience and to non-service.[27] We find that, indeed, the impact of military service on leverage choices comes primarily from the World War II veterans. Among this group, the chosen leverage is 25% higher than the sample mean, and the difference to other military experience is significant at the 5% level. This result

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[27]Alternatively, we code a "combat exposure" dummy, which includes not only World War II but also the Korean and the Vietnam Wars. The results are the same: we find a positive and significant effect on leverage, controlling for Military Experience. However, the coefficient appears to be driven mostly by World War II veterans. If we include separate dummies for the 12 Korean War veterans and 8 Vietnam War veterans in our sample, we find insignificant coefficients.

is not only consistent with the importance of (victorious) combat exposure, but also helps to address the self-selection explanation, under which aggressive or risk-tolerant individuals choose to serve in the military (and then later take more aggressive decisions as CEOs), as involuntary service was common during World War II. Finally, in Column 4, we include both background proxies – Depression Baby and Military Experience – together with the Longholder overconfidence measure and portfolio controls. Both the Longholder and Military Experience variables remain positive and significant, suggesting that they capture the behavior of different subsets of CEOs or different types of beliefs. As predicted, the Depression Baby variable has no significant relation with leverage.

Overall, the results confirm the importance of managerial beliefs, measured using observable characteristics, in determining firm-level financial choices.

As a final step, we check whether our findings on Depression and military CEOs are consistent with outsiders' perceptions of these CEOs. Mirroring our analysis of overconfidence, we use CEOs' portrayal in the business press and the press data described in Section II.. Individuals who experienced the Great Depression early in life have a preference for self-sufficiency and conservative financing choices. These preferences are likely to manifest themselves more generally in a conservative leadership style. Consistent with this story, we find a positive and significant correlation between coverage in the business press as "cautious," "practical," "reliable," "conservative," "frugal," or "steady" (variable PRESS "Cautious") and membership in the Depression cohort (Table VIII).

Military exposure, instead, has been found to induce aggressiveness and risk-tolerance. And, indeed, we find that, military service has a significant negative correlation with PRESS "Cautious." We also test these correlations in a regression framework, controlling for differential press coverage and CEO age. Despite the imprecision of the measures, the direction of the effects remains the same, though only the negative correlation between PRESS "Cautious" and military service remains statistically significant.

Table VIII also displays the correlation of the background proxies with several CEO- and firm-level variables considered throughout our analysis. Partly, these correlations confirm the regression analysis in the raw data: Depression CEOs have significantly higher levels of Graham's "kink," indicating that they access debt markets conservatively. They are also sig-

nificantly less likely than other CEOs to issue equity, conditional on accessing public securities markets, and appear to have lower market leverage ratios. Military CEOs, on the other hand, do not show any particular aversion to debt markets. They are also significantly more likely to issue equity, conditional on accessing public markets. And, they appear to have higher leverage, though the correlation is not statistically significant, suggesting an overall aggressiveness in their financial policy. The strong raw correlations suggest that the effects are economically important explanations of observed cross-sectional differences. We also find additional evidence which strengthens the link between Depression and military experience and the beliefs for which they proxy. First, military CEOs have significantly worse operating performance and shorter tenures than other CEOs, while Depression CEOs have higher ROA and longer tenures. Second, military CEOs are significantly more likely to make acquisitions.[28] However, there is no correlation between the Depression cohort and merger frequency. Overall, we find significant differences between Depression CEOs, CEOs with military service, and other CEOs. The directions of the effects are consistent with military experience as a proxy for (overly-) aggressive beliefs and early life experience during the Great Depression as a proxy for conservatism.

V. Conclusion

We provide evidence that managers' beliefs and early-life experiences significantly affect financial policies, above and beyond traditional market-, industry-, and firm-level determinants of capital structure. We begin by using personal portfolio choices of CEOs to measure their beliefs about the future performance of their own companies. We focus on CEOs who persistently exercise their executive stock options late relative to a rational diversification benchmark. We consider several interpretations of such behavior – including positive inside information – and show that it is most consistent with CEO overconfidence. We also verify our measure of revealed beliefs by confirming that such CEOs are disproportionately characterized by the business press as "confident" or "optimistic," rather than "reliable," "cautious," "practical," "conservative," "frugal," or "steady."

This form of belief makes specific capital structure predictions: Overconfident CEOs overes-

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[28] This effect is robust to controlling for standard merger determinants like Q and cash flow in a logit regression.

timate future cash flows and, therefore, perceive external financing – and particularly equity – to be unduly costly. Thus, they prefer internal financing over external capital markets and, conditional on raising risky capital, debt over equity. We find strong evidence that, conditional on accessing public securities markets, overconfident CEOs are less likely to issue equity than other CEOs. We also find that, to cover an additional dollar of external financing deficit, over-confident CEOs issue about 33 cents more debt than their peers. Managerial overconfidence is also positively related to debt conservatism, measured using the "kink" variable from Graham (2000). This debt conservatism is not driven by an increased propensity to issue equity. Instead, overconfident CEOs who are debt-conservative are also equity conservative and rely excessively on internal funds. Finally, overconfident managers choose higher leverage ratios than predecessors or successors in their firms.

Second, we consider early-life experiences which are likely to shape beliefs and choices later in life. Guided by prior psychology and management literature, we focus on two major formative experiences which affect our sample CEOs: growing up during the Great Depression and serving in the military. We find that CEOs who experience the Great Depression early in life display a heightened reluctance to access external capital markets. Military CEOs, on the other hand, choose more aggressive corporate policies, including higher leverage ratios. The effects are distinct from the impact of overconfidence on financial decisions. Though the specific shocks which guide belief formation may differ in other samples of CEOs, our methodology for identifying those shocks is easily generalized.

Our results have several implications. First, our findings help to explain the strong time-invariant component of firm capital structure identified in recent studies. Though our iden-tification strategy requires us to establish the impact of managerial beliefs using within-firm variation, the significance of our measures suggests that variation in managerial beliefs may account for a significant portion of the co-determined between-firm variation. Managerial be-liefs may be particularly important in firms with long-serving managers, family ownership, or a preference for hiring managers with a particular "style."

Second, our results have distinct implications for contracting practices and organizational design. Standard incentives, such as stock- and option-based compensation, are unlikely to mitigate the effects of managerial overconfidence on investment and financing decisions. As a result, the board of directors may need to use different tools, such as cash dividend payment

and debt overhang, to constrain overconfident CEOs. Similarly, financial incentives will be miscalibrated if they do not account for financial conservatism or financial aggressiveness arising from the CEO's background.

Third, our findings on the financial decision-making of Depression CEOs and military CEOs provide evidence that, more broadly, major, personal life events can have a life-long impact on risk attitudes and risky choices. Macroeconomic shocks, like the current financial crisis, are likely to have not only an immediate impact on corporate financial policies (e.g. through deleveraging and a shift toward self-sufficiency), but also an impact on future corporate policies as today's young investors, who are being introduced to financial markets during a time of major crisis, become the next generation of corporate leaders. Thus, the Depression Baby results not only document a pattern of historical interest, but also suggest how financial choices may play out over the coming decades.

Finally, exposure to a military environment may affect corporate decision-making more broadly than just financial policy. For example, it has been suggested that military CEOs tend to implement a more command-based corporate culture. An interesting test for future research is whether CEOs with military experience create a more hierarchical structure in their firms.

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Figure 1. Model Predictions (Stylized Example)

The hypothetical example illustrates the theoretical predictions of how overconfident CEOs deviate from the rational benchmark in their average financing of investment projects. Relative to the (hypothetical) rational benchmark of 1/3 cash, 1/3 debt, and 1/3 equity financing, overconfident CEOs choose a lower absolute amount of debt financing (2/9 <1/3) but a higher leverage (2/3 > 1/2).
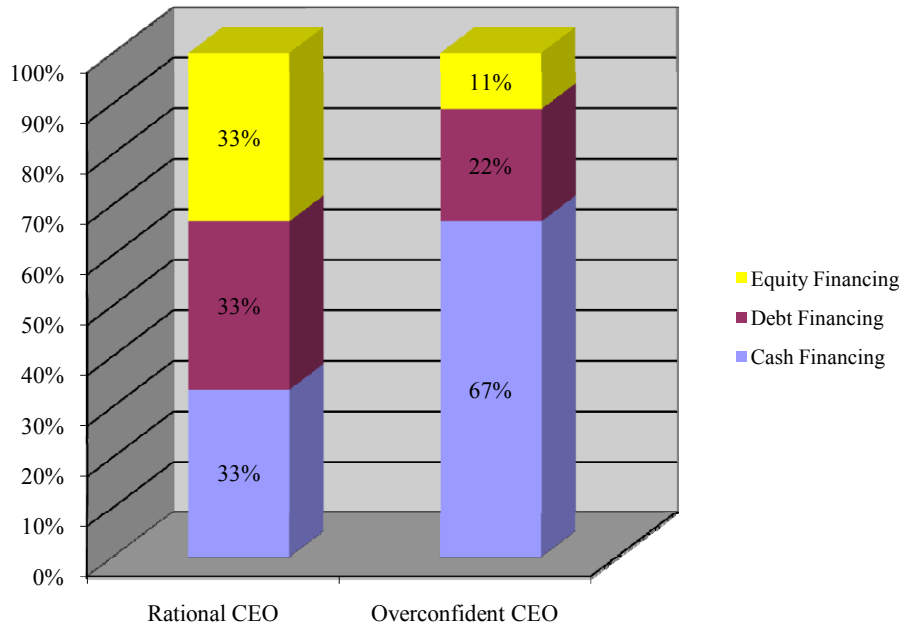
Table I. Summary Statistics

Panel A. Financing Deficit Variables

Net financing deficit is cash dividends plus net investment plus change in working capital minus cash flow after interest and taxes. Net investment is capital expenditures plus increase in investments plus acquisitions plus other uses of funds minus sale of property, plants, and equipment minus sale of investment. Change in working capital is change in operating working capital plus change in cash and cash equivalents plus change in current debt. Cash flow after interest and taxes is income before extraordinary items plus depreciation and amortization plus extraordinary items and discontinued operations plus deferred taxes plus equity in net loss (earnings) plus other funds from operations plus gain (loss) from sales of property, plants, and equipment and other investments. Net debt issues are long term debt issuance minus long term debt reduction. Net equity issues are sales of common stock minus stock repurchases. Profitability is operating income before depreciation, normalized by assets at the beginning of the year. Tangibility is property, plants, and equipment, normalized by assets at the beginning of the year. Q is the market value of assets over the book value of assets, where market value of assets is the book value of assets plus market equity minus book equity. Δ denotes one-year changes. Longholder is a binary variable where 1 signifies that the CEO at some point during his tenure held an option package until the last year before expiration, provided that the package was at least 40% in the money entering its last year.

| | Full Sample | | | | | | Longholder Sample | | | | | |
| | Number of Firms = 263 | | | | | | Number of Firms = 56 | | | | | |
Variable	Obs.	Mean	Median	SD	Min.	Max.	Obs.	Mean	Median	SD	Min.	Max.
Assets ($m)	2385	5476.92	2111.96	13389.44	39.64	198598.70	463	4820.30	2111.78	8763.07	48.79	79262.00
Net Financing Deficit ($m)	2385	42.67	0.75	538.56	-6800.30	8845.50	463	10.41	-1.05	287.07	-845.00	1698.00
Cash Dividends ($m)	2385	109.47	35.58	239.77	0.00	2487.00	463	126.59	40.69	252.09	0.00	1870.00
Net Investment ($m)	2385	502.28	172.70	1311.81	-2930.00	26523.00	463	498.57	207.37	1070.84	-577.00	9755.00
Change in Working Capital ($m)	2385	26.73	16.02	790.77	-21767.00	16224.00	463	35.54	17.95	347.04	-2920.50	2675.00
Cash Flow after Interest and Taxes ($m)	2385	595.80	228.56	1276.57	-1678.44	20278.00	463	650.29	254.62	1243.20	-1678.44	11273.00
Net Financing Deficit/Assets$_{t-1}$	2385	0.03	0.00	0.16	-0.63	2.56	463	0.02	0.00	0.14	-0.24	1.60
Net Debt Issues/Assets$_{t-1}$	2385	0.01	0.00	0.08	-0.62	0.92	463	0.01	0.00	0.06	-0.15	0.36
Net Equity Issues/Assets$_{t-1}$	2155	0.00	0.00	0.08	-0.77	1.85	413	0.01	0.00	0.09	-0.30	1.18
Profitability	2385	0.18	0.17	0.11	-0.24	0.99	463	0.21	0.19	0.12	-0.03	0.88
Δ Profitability	2385	0.00	0.00	0.06	-0.76	0.98	463	0.00	0.00	0.08	-0.51	0.98
Tangibility	2385	0.44	0.42	0.22	0.00	2.08	463	0.46	0.43	0.21	0.06	2.08
Δ Tangibility	2385	-0.05	-0.03	0.11	-1.47	0.54	463	-0.05	-0.03	0.12	-1.47	0.16
Q	2385	1.61	1.30	1.01	0.59	12.26	463	1.70	1.44	1.02	0.77	10.71
Δ Q	2385	0.01	0.01	0.50	-7.18	5.04	463	0.03	0.02	0.42	-1.81	4.32
ln(Sales)	2385	7.90	7.82	1.12	3.18	11.93	463	7.89	7.87	1.18	3.18	11.23
Δ ln(Sales)	2385	0.08	0.07	0.19	-2.04	1.67	463	0.09	0.08	0.17	-0.55	1.67

Distribution across Fama French 12 Industry Groups

	(2381 observations)					*(463 observations)*			
Consumer Nondurables	0.13	Telecommunication	0.06		Consumer ND	0.11	Telecommunication	0.02
Consumer Durables	0.05	Utilities	n/a		Consumer Durables	0.03	Utilities	n/a
Manufacturing	0.18	Shops	0.14		Manufacturing	0.16	Shops	0.14
Energy	0.04	Health	0.06		Energy	0.00	Health	0.09
Chemicals and Allied Products	0.08	Money	n/a		Chemicals	0.16	Money	n/a
Business Equipment	0.09	Other	0.18		Business Equipment	0.13	Other	0.17

The Fama-French Industry Groups are defined on French's website (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html).

Table I (cont.)

Panel B. Kink Variables

Kink is the amount of interest at the point where the marginal benefit function becomes downward sloping, as a proportion of actual interest expense. ECOST is the standard deviation of the first difference in taxable earnings divided by assets, the quoteient times the sum of advertising, research, and development expenses divided by sales. CYCLICAL is the standard deviation of operating earnings divided by mean assets first calculated for each firm, then averaged across firms within two-digit SIC codes. Return on assets is income before extraordinary items plus interest expense plus depreciation, divided by assets. Z-score is 3.3 times the difference of operating income before depreciation and depreciation plus sales plus 1.4 times retained earnings plus 1.2 times working capital (balance sheet), the quantity divided by assets. Quick ratio is the sum of cash and short-term investments and total receivables divided by total current liabilities. Current ratio is total current assets divided by total current liabilities. Q-ratio is preferred stock plus market value of common equity plus net short-term liabilities, the quantity divided by assets. R&D to sales and Advertising to sales are set to 0 when the numerator is missing. Computer Industry are all firms with SIC code 357, Semiconductor Industry all firms with SIC code 367, Chemicals and Allied Products comprises SIC codes 280-289, Aircraft and Guided Space Vehicles SIC codes 372 and 376, and Other Sensitive Industries SIC codes 340-400, excluding 357, 367, 372, and 376. Vested options (as a % of shares outstanding) are multiplied by 10 so that the means of vested options and stock ownership are the same order of magnitude. Longholder is a binary variable where 1 signifies that the CEO at some point during his tenure held an option package until the last year before expiration, provided that the package was at least 40% in the money entering its last year.

| Variable | | Full Sample | | | | | | Longholder Sample | | | | |
| | | Number of Firms = 189 | | | | | | Number of Firms = 44 | | | | |
	Obs.	Mean	Median	SD	Min.	Max.	Obs.	Mean	Median	SD	Min.	Max.
Kink	1726	3.93	3	2.74	0	8	377	4.59	4	2.75	0	8
I(No dividend)	1726	0.12	0	0.33	0	1	377	0.17	0	0.38	0	1
I(Negative owners' equity)	1726	0.01	0	0.12	0	1	377	0	0	0	0	0
I(NOL carryforward)	1726	0.15	0	0.36	0	1	377	0.14	0	0.35	0	1
ECOST	1726	1.74	0.65	3.21	0	18.92	377	2.36	0.79	3.92	0	18.92
CYCLICAL	1726	0.07	0.07	0.03	0.02	0.18	377	0.08	0.07	0.02	0.04	0.18
Return on assets	1726	0.13	0.14	0.05	-0.06	0.27	377	0.14	0.14	0.05	-0.06	0.27
ln(sales)	1726	7.88	7.82	1.01	5.49	10.32	377	7.93	7.87	1.07	5.49	10.32
Z-score	1726	2.51	2.34	1.17	0.38	7.07	377	2.74	2.51	1.24	0.79	7.07
Quick ratio	1726	1.08	0.89	0.74	0.16	4.92	377	1.12	0.94	0.71	0.16	4.92
Current ratio	1726	1.88	1.63	0.96	0.57	6.02	377	1.97	1.71	0.94	0.58	6.02
PPE-to-assets	1726	0.42	0.40	0.18	0.06	0.81	377	0.41	0.39	0.16	0.06	0.81
Q-ratio	1726	1.12	0.88	0.78	0.15	4.58	377	1.22	0.99	0.83	0.15	4.58
R&D-to-sales	1726	0.02	0.01	0.03	0	0.16	377	0.03	0.02	0.04	0	0.16
Advertising-to-sales	1726	0.02	0	0.03	0	0.16	377	0.02	0.01	0.03	0	0.16
Computer Industry	1726	0.04	0	0.19	0	1	377	0.07	0	0.25	0	1
Semiconductor Industry	1726	0.02	0	0.14	0	1	377	0.03	0	0.16	0	1
Chemicals and Allied Products Industry	1726	0.14	0	0.35	0	1	377	0.21	0	0.41	0	1
Aircraft and Guided Space Vehicles Industry	1726	0.02	0	0.13	0	1	377	0.02	0	0.14	0	1
Other Sensitive Industries	1726	0.19	0	0.39	0	1	377	0.15	0	0.35	0	1

Panel C. CEO Variables

CEO Vested Options are the CEO's holdings of options that are exercisable within 6 months of the beginning of the year, as a percentage of common shares outstanding and multiplied by 10 (so that the mean is roughly comparable to CEO Stock Ownership). Depression Baby is an indicator variable for CEOs born in the 1920s. Military Experience indicates CEOs with prior military service.

| Variable | | Full Sample | | | | | | Longholder Sample | | | | |
| | | Number of CEOs = 498 | | | | | | Number of CEOs = 58 | | | | |
	Obs.	Mean	Median	SD	Min.	Max.	Obs.	Mean	Median	SD	Min.	Max.
Age	2384	57.77	58	7.16	32	84	463	58.46	59	6.30	41	82
Tenure	2364	8.83	6	7.69	1	45	442	10.78	9	6.78	1	36
CEO Stock Ownership	2385	0.03	0.00	0.08	0	0.95	463	0.02	0.00	0.04	0	0.49
CEO Vested Options	2385	0.03	0.01	0.14	0	4.63	463	0.07	0.02	0.29	0	4.63
Depression Baby	2384	0.40	0	0.49	0	1	463	0.49	0	0.50	0	1
Military Experience	1617	0.22	0	0.41	0	1	352	0.28	0	0.45	0	1

Table II. Debt vs. Equity (I): Public Issues

Panel A. Frequencies

Longholder is a binary variable, equal to 1 if the CEO, at some point during his tenure, held an option package until the last year before expiration, provided that the package was at least 40% in the money entering its last year. Post-Longholder is equal to 1 for all CEO-years after the CEO for the first time holds options to expiration. Pre-Longholder is Longholder minus Post-Longholder. Holder 67 is a binary variable, equal to 1 for all CEO years after the CEO for the first time fails to exercise a 67% in-the-money option with 5 years remaining duration. For Holder 67, the sample is limited to CEO years after the CEO for the first time had a 67% in-the-money option with 5 years remaining duration. TOTALconfident is binary and equal to 1 when the number of "confident" and "optimistic" mentions for a CEO in the LexisNexis and Wall Street Journal searches exceeds the number of "not confident," "not optimistic," and "reliable, cautious, practical, conservative, steady, frugal" mentions. TOTALmentions is the total number of articles mentioning the CEO in those searches. Both TOTAL-dummies include all articles over the sample period up to the previous year. Data on public issues is from SDC. There are 330 firms. Equity issues are issues of common stock or non-convertible preferred stock. Debt issues are issues of non-convertible debt. Hybrid issues are issues of convertible debt or convertible preferred stock. US Rule 144A issues are included. Standard errors are adjusted for clustering at the firm level.

| | | % of Issue Years with | | |
	Number of Years with Any Security Issues	Equity Issues	Debt Issues	Hybrid Issues
Longholder = 0	621	42%	57%	16%
Longholder = 1	141	31%	63%	19%
Pre-Longholder = 1	91	31%	63%	23%
Post-Longholder = 1	50	32%	64%	12%
Difference t (Longholder = 0 - Longholder = 1)		*2.03***	*0.85*	*0.85*
Holder 67 = 0	95	39%	65%	21%
Holder 67 = 1	182	23%	73%	16%
Difference t		*3.12****	*1.18*	*1.04*
TOTALconfident = 0	452	48%	47%	18%
TOTALconfident = 1	214	25%	79%	14%
Difference t		*5.37****	*6.77****	*1.43*

* significant at 10%; ** significant at 5%; *** significant at 1%

Panel B. Logit Regressions

Coefficients are reported as log odds ratios. The sample consists of all firm years in which the firm did at least one public security issue. The dependent variable is binary and equals 1 if the firm issued equity during the fiscal year. CEO Vested Options are CEO's holdings of options that are exercisable within 6 months of the beginning of the year, as a percentage of common shares outstanding and multiplied by 10 (so that the mean is roughly comparable to CEO Stock Ownership). The Standard firm controls are ln(Sales), Q (market value of assets over the book value of assets, where market value of assets is the book value of total assets plus market equity minus book equity), Profitability (operating income before depreciation normalized by beginning-of-year assets), Tangibility (property, plants, and equipment, normalized by beginning-of-year assets). Book leverage is the sum of debt in current liabilities and long term debt, divided by the sum of the numerator and common equity. We exclude observations in which book leverage is negative or greater than 1. CEO Stock, CEO Vested Options, ln(Sales), Q, Profitability, Tangibility, and Book Leverage are measured at the beginning of the fiscal year. Kink controls are defined as in Graham (2002) and listed in Table 1, Panel B. Industry Fixed Effects are the kink-regression industry dummies of Graham (2000). Standard errors are adjusted for clustering at the firm level.

	(1)	(2)	(3)	(4)	(5)	(6)
Longholder	-0.469	-0.592	-0.534	-0.46	-0.457	-0.6695
	(1.94)*	(2.34)**	(2.10)**	(1.80)*	(1.66)*	(2.22)**
CEO Stock Ownership		-0.266	-0.996	-1.279	-0.655	-7.6403
		(0.16)	(0.59)	(0.72)	(0.34)	(2.35)**
CEO Vested Options		6.766	4.669	4.234	7.328	10.6238
		(3.43)***	(2.21)**	(2.14)**	(3.05)***	(2.81)***
Standard firm controls			X	X	X	
Book leverage				X	X	
Kink controls						X
Industry fixed effects						X
Year fixed effects					X	X
Observations	762	644	627	617	617	442
Number of Firms	330	174	171	171	171	135

* significant at 10%; ** significant at 5%; *** significant at 1%

Table III. Debt vs. Equity (II): Financing Deficit

OLS regressions with Net Debt Issues normalized by beginning-of-the-year assets as the dependent variable, where Net Debt Issues are long-term debt issues minus long term debt reduction. Net Financing Deficit is cash dividends plus net investment plus change in working capital minus cash flow after interest and taxes, normalized by beginning-of-the-year assets. Net investment is capital expenditures plus increase in investments plus acquisitions plus other uses of funds minus sale of PPE minus sale of investment. Change in working capital is change in operating working capital plus change in cash and cash equivalents plus change in current debt. Cash flow after interest and taxes is income before extraordinary items plus depreciation and amortization plus extraordinary items and discontinued operations plus deferred taxes plus equity in net loss (earnings) plus other funds from operations plus gain (loss) from sales of PPE and other investments. Longholder is a binary variable where 1 signifies that the CEO at some point during his tenure held an option package until the last year before expiration, provided that the package was at least 40% in the money entering its last year. CEO Vested Options are the CEO's holdings of options that are exercisable within 6 months of the beginning of the year, as a percentage of common shares outstanding and multiplied by 10 (making the mean roughly comparable to CEO Stock Ownership). The FD Control Variables are identical to those in Frank and Goyal (2003): changes in profitability (operating income before depreciation normalized by beginning of the year assets), in tangibility (property, plants, and equipment, normalized by beginning of the year assets), in the logarithm of sales and in Q (market value of assets over the book value of assets, where market value of assets is the book value of total assets plus market equity minus book equity). Book Leverage is debt in current liabilities plus long-term debt divided by the debt in current liabilities plus long-term debt plus common equity, measured at the beginning of the year. All standard errors are adjusted for clustering at the firm level.

	(1)	(2)	(3)	(4)	(5)	(6)
Net Financing Deficit (FD)	0.729					
	(9.90)***					
Longholder		-0.006	-0.005	-0.008	-0.008	-0.005
		(1.43)	(1.37)	(1.95)*	(2.03)**	(1.43)
Longholder * FD		0.350	0.348	0.332	0.322	0.334
		(1.78)*	(1.77)*	(1.77)*	(1.69)*	(1.90)*
CEO Stock Ownership			0.015	0.015	0.014	0.010
			(0.87)	(0.90)	(0.85)	(0.76)
CEO Stock * FD			0.373	0.431	0.370	0.348
			(2.30)**	(2.63)***	(2.14)**	(2.17)**
CEO Vested Options			-0.025	-0.021	0.000	0.011
			(1.49)	(1.15)	(0.00)	(0.52)
CEO Vested Options * FD			-0.088	-0.098	-0.135	-0.156
			(3.21)***	(3.59)***	(3.06)***	(3.76)***
Book Leverage						-0.096
						(5.98)***
Book Leverage * FD						-0.129
						(0.54)
FD Control Variables					X	X
FD Control Variables * FD					X	X
Year Fixed Effects				X	X	X
Firm Fixed Effects		X	X	X	X	X
Firm Fixed Effects * FD		X	X	X	X	X
Observations	2385	2385	2385	2385	2385	2346
Number of Firms	263	263	263	263	263	262
R-squared	0.75	0.93	0.93	0.94	0.94	0.94

* significant at 10%; ** significant at 5%; *** significant at 1%

Table IV. Internal vs. External Financing

Panel A. Debt Conservatism: Kink Tobits

The dependent variable is the kink variable of Graham (2000), i. e., the amount of hypothetical interest at which the marginal tax benefit function starts to slope down, as a proportion of actual interest expense. The tobit regressions account for two-sided censoring of the kink variable at 0 and 8. Longholder is a binary variable, equal to 1 if the CEO, at some point during his tenure, held an option package until the last year before expiration, provided that the package was at least 40% in the money entering its last year. CEO Stock Ownership is the percentage of company stock owned by the CEO and his immediate family at the beginning of the year. CEO Vested Options are the CEO's holdings of options that are exercisable within 6 months of the beginning of the year, as a percentage of common shares outstanding and multiplied by 10 (so that the mean is roughly comparable to CEO Stock Ownership). Kink Controls and Industry Fixed Effects are defined as in Graham (2002) and listed in Panel B of Table 1. Low Cash Status is an indicator, equal to 1 if the firm's cash stock at the beginning of the year, divided by mean industry investment, is at or below the 40th percentile in our sample. Mean industry investment is calculated separately for each year and each of 12 Fama-French industry groups. (See Table 1, Panel A.) All standard errors are adjusted for clustering at the firm level.

	(1)	(2)	(3)	(4)
Longholder	1.122	1.256	0.647	0.919
	(1.75)*	(1.94)*	(1.71)*	(2.26)**
CEO Stock Ownership		3.369	-1.145	-1.040
		(1.01)	(0.48)	(0.43)
CEO Vested Options		-3.025	-3.193	-2.976
		(0.70)	(2.02)**	(1.83)*
Low Cash Status				-0.141
				(0.64)
Longholder * (Low Cash Status)				-0.720
				(1.24)
Kink Controls			X	X
Industry Fixed Effects			X	X
Observations	1726	1726	1726	1725
Number of Firms	189	189	189	189

* significant at 10%; ** significant at 5%; *** significant at 1%

Panel B. Equity Conservatism: Distribution of Longholder Net Equity Issues by Kink

The sample consists of all firm years in which Longholder equals 1. Net equity issues are sales of common stock minus stock repurchases and are normalized by beginning of the year assets.

	Kink ≤ 1	$1 <$ Kink ≤ 3	$3 <$ Kink ≤ 7	Kink > 7
10th percentile	-0.00834	-0.02923	-0.02668	-0.05162
25th percentile	0.00000	-0.00003	-0.01055	-0.01286
50th percentile	0.00544	0.00180	0.00000	0.00000
75th percentile	0.04148	0.00629	0.00348	0.00794
90th percentile	0.09536	0.01733	0.02928	0.01685
Observations	37	110	111	96
Mean	0.02869	0.00600	0.00497	0.00352
Standard Deviation	0.06086	0.05291	0.08199	0.09174

Table V. Leverage

OLS regressions with end-of-fiscal-year market leverage as dependent variable, measured as debt in current liabilities plus long-term debt divided by the sum of the numerator and market equity. Longholder is binary and equals 1 if the CEO at some point during his tenure held an option package until the last year before expiration, provided that the package was at least 40% in the money entering its last year. Profitability is operating income before depreciation normalized by beginning-of-the-year assets; Tangibility is property, plants, and equipment, normalized by beginning-of-the-year assets. Q is the market value of assets over the book value of assets, where market value of assets is the book value of total assets plus market equity minus book equity. Net Financing Deficit is cash dividends plus net investment plus change in working capital minus cash flow after interest and taxes, normalized by beginning-of-the-year assets. Net investment is capital expenditures plus increase in investments plus acquisitions plus other uses of funds minus sale of PPE minus sale of investment. Change in working capital is change in operating working capital plus change in cash and cash equivalents plus change in current debt. Cash flow after interest and taxes is income before extraordinary items plus depreciation and amortization plus extraordinary items and discontinued operations plus deferred taxes plus equity in net loss (earnings) plus other funds from operations plus gain (loss) from sales of PPE and other investments. Returnsx are the natural logarithm of 1 plus stock returns (excluding dividends) from year x-1 to x. CEO Vested Options are the CEO's holdings of options that are exercisable within 6 months of the beginning of the year, as a percentage of common shares outstanding and multiplied by 10 (making the mean roughly comparable to CEO Stock Ownership). Profitability, Tangibility, ln(Sales), Q, Net Financing Deficit, and CEO Stock Ownership are measured at the beginning of the fiscal year. All standard errors are adjusted for clustering at the firm level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Longholder			0.0361	0.041	0.0407	0.0637	0.0517
			(1.98)**	(2.44)**	(2.40)**	(2.78)***	(2.28)**
Profitability	-0.7074	-0.46	-0.4634	-0.2774	-0.2733	-0.2755	-0.3586
	(-5.18)***	(-6.79)***	(-6.88)***	(-3.78)***	(-3.73)***	(-3.81)***	(-4.64)***
Tangibility	0.1155	0.0248	0.0238	0.0265	0.0282	0.0289	0.0286
	(2.66)***	(0.58)	(0.56)	(0.63)	(0.67)	(0.70)	(0.70)
ln(Sales)	0.036	0.0476	0.0491	0.0338	0.0342	0.0356	0.0513
	(4.03)***	(4.76)***	(4.92)***	(3.32)***	(3.35)***	(3.44)***	(4.11)***
Q	-0.0424	-0.0126	-0.0119	0.0028	0.0024	0.0031	0.0089
	(-2.68)***	(-1.86)*	(-1.76)*	(0.40)	(0.34)	(0.45)	(1.31)
Net Financing Deficit	0.2438	0.1228	0.1227	0.1189	0.1202	0.1189	0.1238
	(4.14)***	(4.96)***	(4.95)***	(4.75)***	(4.85)***	(4.79)***	(5.20)***
Returns$_{t-1}$				-0.0692	-0.0702	-0.0698	-0.0718
				(-4.21)***	(-4.22)***	(-4.15)***	(-4.05)***
Returns$_{t-2}$				-0.056	-0.0563	-0.0551	-0.0526
				(-2.72)***	(-2.72)***	(-2.66)***	(-2.38)**
Returns$_{t-3}$				-0.0416	-0.0418	-0.0404	-0.0469
				(-3.54)***	(-3.53)***	(-3.44)***	(-3.88)***
Returns$_{t-4}$				-0.0307	-0.0312	-0.0299	-0.0396
				(-3.48)***	(-3.51)***	(-3.37)***	(-4.21)***
Returns$_{t-5}$				-0.0105	-0.0102	-0.0093	-0.0176
				(-1.30)	(-1.23)	(-1.12)	(-2.11)**
CEO Stock Ownership					0.1097	0.1152	0.1085
					(1.74)*	(1.64)	(1.60)
CEO Vested Options					0.1073	0.1008	0.1119
					(2.54)**	(2.44)**	(2.48)**
Tenure						-0.0009	-0.0007
						(-1.06)	(-0.81)
(Tenure)*(Longholder)						-0.0019	-0.0021
						(-1.36)	(-1.45)
Firm Effects		X	X	X	X	X	X
Year Effects							X
Observations	2,184	2,184	2,184	2,184	2,184	2,184	2,184
Number of Firms	241	241	241	241	241	241	241
Adjusted R-squared (Within)		0.11	0.12	0.16	0.17	0.17	0.22
Adjusted R-squared	0.35	0.77	0.77	0.78	0.79	0.79	0.80

* significant at 10%; ** significant at 5%; *** significant at 1%

Table VI. Depression Experience

Panel A. Debt Conservatism: Kink Tobits

The dependent variable is the kink variable of Graham (2000), i. e., the amount of hypothetical interest at which the marginal tax benefit function starts to slope down, as a proportion of actual interest expense. The tobit regressions account for two-sided censoring of the kink variable at 0 and 8. Depression Baby indicates CEOs born between 1920 and 1929. Kink Controls and Industry Fixed Effects are defined as in Graham (2002) and listed in Panel B of Table 1. All standard errors are adjusted for clustering at the firm level.

	(1)	(2)
Depression Baby	0.8984	0.5053
	(2.27)**	(2.07)**
Age		-0.0260
		(-1.38)
Tenure		-0.0159
		(-0.88)
Kink Controls		X
Industry Fixed Effects		X
Observations	1,717	1,717

* significant at 10%; ** significant at 5%; *** significant at 1%

Panel B. Equity Conservatism: Distribution of Longholder Net Equity Issues by Kink

The sample consists of all firm years in which Depression Baby is equal to 1. Net equity issues are sales of common stock minus stock repurchases and are normalized by beginning of the year assets.

	Kink ≤ 1	1 < Kink ≤ 3	3 < Kink ≤ 7	Kink > 7
10th percentile	-0.00846	-0.03568	-0.04293	-0.06254
25th percentile	0	-0.00855	-0.01158	-0.02315
50th percentile	0.00104	0.00047	0.00001	0
75th percentile	0.00800	0.00570	0.00575	0.00523
90th percentile	0.05131	0.04080	0.01893	0.01646
Observations	74	270	240	175
Mean	0.00950	0.00277	-0.00088	-0.01053
Standard Deviation	0.03470	0.05085	0.07096	0.06885

Table VII. Military Experience

OLS regressions with end-of-fiscal-year market leverage as dependent variable, measured as debt in current liabilities plus long-term debt divided by the sum of the numerator and market equity. Military Experience is an indicator variable for CEOs with prior military service; World War II Veteran indicates service during World War II. Profitability is operating income before depreciation normalized by beginning-of-the-year assets; Tangibility is property, plants, and equipment, normalized by beginning-of-the-year assets. Q is the market value of assets over the book value of assets, where market value of assets is the book value of total assets plus market equity minus book equity. Net Financing Deficit is cash dividends plus net investment plus change in working capital minus cash flow after interest and taxes, normalized by beginning-of-the-year assets. Net investment is capital expenditures plus increase in investments plus acquisitions plus other uses of funds minus sale of PPE minus sale of investment. Change in working capital is change in operating working capital plus change in cash and cash equivalents plus change in current debt. Cash flow after interest and taxes is income before extraordinary items plus depreciation and amortization plus extraordinary items and discontinued operations plus deferred taxes plus equity in net loss (earnings) plus other funds from operations plus gain (loss) from sales of PPE and other investments. Depression Baby indicates CEOs born between 1920 and 1929. CEO Vested Options are the CEO's holdings of options that are exercisable within 6 months of the beginning of the year, as a percentage of common shares outstanding and multiplied by 10 (making the mean roughly comparable to CEO Stock Ownership). Profitability, Tangibility, ln(Sales), Q, Net Financing Deficit, and CEO Stock Ownership are measured at the beginning of the fiscal year. Longholder is binary and equals 1 if the CEO at some point during his tenure held an option package until the last year before expiration, provided that the package was at least 40% in the money entering its last year. All standard errors are adjusted for clustering at the firm level.

	(1)	(2)	(3)	(4)
Military Experience	0.0353	0.0326	-0.0015	0.0299
	(1.69)*	(1.92)*	(-0.08)	(1.89)*
World War II Veteran			0.0695	
			(2.21)**	
Profitability		-0.3364	-0.3281	-0.4866
		(-3.52)***	(-3.56)***	(-5.79)***
Tangibility		-0.0062	-0.0035	0.0264
		(-0.16)	(-0.09)	(0.73)
ln(Sales)		0.0418	0.0411	0.0507
		(3.07)***	(3.09)***	(3.45)***
Q		-0.013	-0.0132	-0.011
		(-1.92)*	(-1.94)*	(-1.56)
Net Financing Deficit		0.1427	0.1406	0.1294
		(4.48)***	(4.49)***	(4.66)***
Age		0.0036	0.0025	0.0032
		(2.90)***	(2.08)**	(2.24)**
Tenure		-0.0054	-0.0051	-0.0056
		(-4.60)***	(-4.75)***	(-4.73)***
Depression Baby				0.0048
				(0.24)
CEO Stock Ownership				0.0291
				(0.73)
CEO Vested Options				-0.0261
				(-1.60)
Longholder				0.0535
				(1.71)*
Year Effects	X	X	X	X
Firm Effects	X	X	X	X
Observations	1,626	1,626	1,626	1,614
Number of Firms	210	210	210	208
Adjusted R-squared (within)	0.08	0.19	0.19	0.21

* significant at 10%; ** significant at 5%; *** significant at 1%

Table VIII. Correlations of Depression Baby and Military Experience with Firm and CEO Characteristics

Military Experience is an indicator variable for CEOs who served in the military. Depression Baby indicates CEOs born between 1920 and 1929. Return on Assets is income before extraordinary items plus interest expense plus depreciation, divided by assets. Market Leverage is debt in current liabilities plus long-term debt, divided by the sum of the numerator and market equity. Merger Activity is an indicator for at least one merger in a given firm year. Kink is the amount of interest at which the marginal benefit function starts to slope down, as a proportion of actual interest expense. Equity Issuance indicates at least one stock issue, conditional on accessing public securities markets. PRESS "Cautious" is the number of articles from LexisNexis and Wall Street Journal searches which describe the CEO as "reliable," "cautious," "practical," "conservative," "steady," or "frugal." TOTALmentions is the total number of articles mentioning the CEO in both sets of searches. Standard errors in Panel B are adjusted for clustering at the CEO level.

	Depression Baby	Military Experience	PRESS "Cautious"	Age	Tenure	Return on Assets	CEO Stock Ownership	Leverage	Merger Activity	Kink	Equity Issuance
Depression Baby	1										
	(- ; 3617)										
Military Experience	0.1472	1									
	(0.00; 2320)	(- ; 3617)									
PRESS "Cautious"	0.036	-0.08	1								
	(0.03; 3580)	(0.00; 2378)	(- ; 3803)								
Age	0.3766	0.1332	0.0194	1							
	(0.00; 3617)	(0.00; 2320)	(0.25; 3580)	(- ; 3617)							
Tenure	0.1009	-0.056	0.154	0.3668	1						
	(0.00; 3500)	(0.01; 2250)	(0.00; 3471)	(0.00; 3500)	(- ; 3501)						
Return on Assets	0.0680	-0.0808	-0.0162	0.0012	0.0289	1					
	(0.00; 3454)	(0.00; 2267)	(0.33; 3560)	(0.95; 3454)	(0.09; 3362)	(- ; 4393)					
CEO Stock Ownership	-0.1061	-0.0941	0.1003	-0.0332	0.3084	0.0164	1				
	(0.00; 3496)	(0.00; 2258)	(0.00; 3465)	(0.05; 3496)	(0.00; 3454)	(0.34; 3360)	(- ; 3497)				
Leverage	-0.0586	0.0227	-0.0272	-0.0337	-0.0911	-0.3792	-0.0579	1			
	(0.00; 3504)	(0.28; 2263)	(0.10; 3558)	(0.05; 3504)	(0.00; 3425)	(0.00; 4281)	(0.00; 3425)	(- ; 4528)			
Merger Acitivity	0.0085	0.0674	-0.0199	-0.0278	-0.0300	-0.0513	-0.0105	0.0045	1		
	(0.61; 3617)	(0.00; 2378)	(0.22; 3803)	(0.09; 3617)	(0.08; 3501)	(0.00; 4393)	(0.53: 3497)	(0.76; 4528)	(- ; 5131)		
Kink	0.1129	-0.022	-0.0347	0.0305	0.0598	0.4318	0.0977	-0.6468	-0.0300	1	
	(0.00; 2846)	(0.34; 1868)	(0.06; 2917)	(0.10: 2846)	(0.00; 2764)	(0.00; 2912)	(0.00; 2770)	(0.00; 2900)	(0.10; 2978)	(- ; 2978)	
Equity Issuance	-0.0829	0.1105	-0.0098	-0.1534	-0.0314	-0.0477	0.0458	-0.0955	0.0392	-0.0953	1
	(0.02; 739)	(0.01; 524)	(0.79; 756)	(0.00; 739)	(0.40; 727)	(0.19; 748)	(0.22; 718)	(0.01; 752)	(0.28; 769)	(0.01; 654)	(- ; 769)

p-values and number of observations in parentheses