Corporate cash shortfalls and financing decisions

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Abstract

Immediate cash needs are the primary motive for net debt issuances and a highly important motive for net equity issuances. Net debt issuers immediately spend almost all of the proceeds, but net equity issuers save most of the proceeds. Conditional on issuing a security, corporate lifecycle, precautionary saving, market timing, and static tradeoff theories are important in explaining the debt versus equity choice, even for firms that are running out of cash.

Key Words: Cash Holdings, Security Issuance, SEO, Financing Decision, Capital Structure, Market Timing, Precautionary Saving, Corporate Lifecycle, Financial Flexibility, Static Tradeoff

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1. Introduction

In this paper, we address three questions. First, do firms that raise funds do so mainly when they are squeezed for cash, defined as running out of cash if they didn't do external financing? The answer is yes, with 81.1% of firms that are running out of cash conducting a significant issue of debt or equity, whereas only 12.7% of other firms do so.[1] Second, conditional on a cash squeeze, what is the mix of debt and equity financing? Using a sample of Compustat- and CRSP-listed U.S. firms from 1972-2010, we report that of firms that do significant external financing in the presence of a cash squeeze, 82.5% of firms issue debt and 29.5% issue equity, with 12.0% of these firms issuing both. We find that accounting and valuation information reliably predicts the choice of debt vs. equity financing. Third, how often do firms raise external capital and save the proceeds, rather than spending it in the fiscal year in which the financing occurs? We find that net debt issuers immediately spend 85.9 cents of each dollar raised, and save only 14.1 cents in cash. Simply put, firms rarely borrow unless they are going to immediately spend it. In comparison, net equity issuers immediately spend only 34.6 cents of each dollar raised, and save 65.4 cents in cash.

In an extensively cited paper, Welch (2004, p. 107) states that "corporate issuing motives themselves remain largely a mystery." Our evidence refutes this statement. Publicly available accounting information is able to strongly predict which corporations will do external financing, and accounting information in combination with valuation factors is able to reliably predict whether debt or equity will be issued. Using either simple univariate sorts or multinomial logit

[1] We examine net debt issue and net equity issue decisions rather than gross debt issue and gross equity issue decisions. Unless explicitly stated as otherwise, "equity issue" and "net equity issue" are used interchangeably, and "debt issue" and "net debt issue" are used interchangeably in this paper.

regressions, we show that a firm is more likely to issue next year if it is small (as measured by sales), young, and, most importantly, is squeezed for cash. An issuer is more likely to use equity rather than debt if it has low internal cash flow, is small, and has a high Tobin's Q.

Recently, the economic importance of explicit measures of near-term cash squeezes as a motivation for issuing securities has started to receive much-deserved attention. In an influential paper, DeAngelo, DeAngelo, and Stulz (2010), henceforth DDS, find that 62.6% of the firms conducting seasoned equity offerings (SEOs) would have run out of cash at the end of the year after the SEO if they did not raise capital. DDS also document that many mature firms conduct an SEO, and many firms with good equity market timing opportunities do not conduct an SEO. They thus conclude that neither corporate lifecycle nor timing is sufficient in explaining SEO decisions. DDS also find that the likelihood of an SEO is much higher for young firms than for old firms, suggesting that the lifecycle effect is more important than the timing effect. Taking their findings together, DDS conclude that "a near-term cash need is the primary SEO motive, with market-timing opportunities and lifecycle stage exerting only ancillary influences."

In another important paper, Denis and McKeon (2012) document that immediate cash needs are the primary motive in 2,314 instances where firms issue debt and the resulting market leverage is substantially above the estimated target, and that there is little attempt to subsequently reduce the debt ratio, inconsistent with the static tradeoff model.

If firms save much of the money that they raise, there is more support for precautionary savings and market timing theories than would otherwise be the case. Kim and Weisbach (2008) find that firms save 53.4 cents of an incremental dollar raised in an SEO (for every dollar raised, on average cash balances increase by 53.4 cents at the end of the fiscal year of the SEO), suggesting a timing-related stockpiling effect. McLean (2011, Table 6) shows that one additional dollar of proceeds from equity issuance results in 56.4 cents of cash savings. He concludes that precautionary saving motives are important for equity issuances. His Table 11 documents that the likelihood of cash depletion in a year is 17% for firms that report a positive equity issue amount on their cash flow statements, in sharp contrast with the cash depletion likelihood of 62.6% for SEOs that DDS report. The difference between their findings is largely because McLean's sample is dominated by many small equity issues attributable to the exercise of employee stock options for firms without large investment needs.

Notably, the finding that near-term cash needs are the primary motive for SEOs by DDS and the finding that firms save a large fraction of the proceeds from equity issuance by Kim and Weisbach (2008) and McLean (2011) are not necessarily contradictory. Although cash squeezes drive the decision to issue equity, firms that issue equity because of cash squeezes can raise more than they need immediately and save a large portion of the proceeds as cash. To illustrate this point, suppose that a firm raises $10 million in external equity capital in year t, and it has $4 million in cash at the end of t-1 and $9 million in cash at the end of t. The firm's cash balance grows by $5 million as the firm saves one-half of the equity capital as cash. However, the firm would have run out of cash without issuing equity.

Cash needs can be defined using either actual revenue and spending (an ex post measure) or projected revenue and spending (an ex ante measure). McLean and Palazzo (2016) use an ex ante measure of cash needs and document that many cash-squeezed firms cut spending. Importantly, they find that when equity market conditions are favorable, firms raise more equity capital and are less likely to cut spending, consistent with the importance of market timing and precautionary saving motives. Their paper examines gross debt and equity issues and disentangles motives for debt refinancing. In comparison, our paper studies net debt and equity issues, and is not limited to one ex ante measure of immediate cash depletion. Despite the differences, both papers find that cash squeezes are an important trigger for securities issuance, and both papers find that debt issues are not associated with large cash increases.

Several theories have been proposed in the literature to explain securities issuance decisions.[2] The corporate lifecycle theory posits that young firms rely more on external equity than old firms (DeAngelo, DeAngelo, and Stulz (2010)). The precautionary saving theory posits that firms facing more uncertainties are more likely to issue equity (Bates, Kahle, and Stulz (2009) and McLean (2011)). The static tradeoff theory emphasizes adjustment toward leverage targets. The market timing theory posits that firms issue equity when the relative cost of equity is low and issue debt when the relative cost of debt is low. Three versions of timing theories appear in the literature. Unconditional timing theories view relative costs as important and economic fundamentals (e.g., funding needs as well as lifecycle, precautionary saving, and tradeoff motives) as unimportant or negligible for securities issuance decisions. In contrast, conditional timing theories recognize the importance of both relative costs and fundamentals. Reverse-causality timing theories emphasize causality that runs from timing opportunities to real decisions (Baker, Stein, and Wurgler (2003)). Specifically, when the cost of capital is low, firms raise capital and quickly spend the proceeds on projects that they would not otherwise take.

Our paper makes several contributions to the literature on securities issuance. First, we evaluate the relative economic significance of funding- and non-funding-related factors in explaining debt and equity issue decisions.[3] Second, we explicitly distinguish among immediate

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[2] See Myers (1984), Loughran and Ritter (1995), Hovakimian, Opler, and Titman (2001), Baker and Wurgler (2002), Frank and Goyal (2003), Welch (2004), Fama and French (2005), Huang and Ritter (2009), DeAngelo, DeAngelo, and Stulz (2010), Billett, Flannery, and Garfinkel (2011), and DeAngelo and Roll (2015), among others.

[3] Hovakimian (2004) does not evaluate the economic effects of the determinants for the decision to issue a security and does not focus on the role of cash needs. Huang and Ritter (2009) do not emphasize the importance of cash needs. DDS do not include a cash shortfall measure as an independent variable in their logit regressions for SEOs. Denis and McKeon (2012) focus on debt issues but do not examine the decision to issue debt.

(year t), near-future (year t+1), and remote-future (year t+2) cash needs. Third, we relate cash changes associated with securities issues to funding- and non-funding-related proxies. Fourth, we do a horse-race evaluation of the importance of proxies for corporate lifecycle, precautionary saving, timing, and tradeoff motives in explaining the debt vs. equity choice, conditional on issuing a security *and* running out of cash. In contrast, Kim and Weisbach (2008), DDS, and McLean (2011) focus exclusively on equity issues, while Denis and McKeon (2012) focus exclusively on debt issues associated with large leverage increases. Lewis and Tan (2015) focus on the ability of the debt vs. equity choice to predict future stock returns, but do not address motives for financing decisions other than market timing. Finally, besides ex post measures of cash squeezes, we also examine several alternative measures to alleviate the reverse-causality concern that the explanatory power of an ex post cash need measure is largely due to the tendency to spend more money *because* more money has been raised.

In this paper, we define securities issues using information from cash flow statements. A firm is defined as a debt issuer or an equity issuer if net debt or net equity proceeds in a year are at least 5% of the book value of assets and 3% of the market value of equity at the beginning of the year. In our definition, equity issuers include firms receiving cash from SEOs (also known as follow-ons), private investment in public equity (PIPEs) transactions, large employee stock option exercises, and preferred stock issues.[4] Debt issuers in our sample include firms receiving cash from straight and convertible bond offerings and increases in bank loans.

We identify firms that are running out of cash by the end of year t using hypothetical cash balances. $\text{Cash}_{\text{ex post}}$, an ex post measure, denotes what the cash balance at the end of t would have been if actual revenue and spending occurred and there was no external financing. Cash $_{\text{ex}}$

[4] Since we require a one-year stock return prior to the current fiscal year, initial public offerings (IPOs) and SEOs shortly after the IPO are not included in our sample. Because cash flow statements are used, stock-financed acquisitions are not counted as equity issues.

$_{post}$ is equal to $Cash_{t-1}$ + NCF_t, where NCF_t denotes the net cash flow in t. Using Cash $_{ex\ post}$, 76.1% of debt issuers would have run out of cash and 90.3% of them would have had a subnormal cash ratio at the end of the year. If the equity issuers in our sample did not raise external capital, 54.4% of them would have run out of cash and 79.0% of them would have had a subnormal cash ratio at the end of the year. Our findings on the likelihood of cash depletion using Cash $_{ex\ post}$ for equity issuers are generally consistent with those of DDS.

Ex post measures are subject to the endogeneity concern that a firm is likely to spend more if it raises external capital than if it didn't. To avoid this concern, we also use several alternative measures of cash depletion. These alternative measures are still the most important predictors of debt issues and important predictors of equity issues. Using Cash $_{ex\ ante}$, defined as $Cash_{t-1}$ + NCF_{t-1}, which assumes that the net cash flow in year t will be the same as in year t-1, 43.1% of debt issuers and 44.8% of equity issuers would have run out of cash at the end of year t if they had not issued.

Rather than looking at the likelihood of running out of cash for firms that issue, we can instead examine the security issuance of firms that are running out of cash. We estimate multinomial logit regressions to evaluate the economic significance of various determinants for the decision to issue debt, equity, both debt and equity, or no security. Using Cash $_{ex\ post}$, immediate cash squeezes are the primary trigger for both debt and equity issuances. Firms that are running out of cash at the end of t are 11 times more likely to issue debt in t than firms that are not (69.8% vs. 6.3%) after controlling for other variables. The likelihoods of equity issuance by firms that are running out of cash in t and firms that are not differ by a factor of four, at 24.5% and 6.1%, respectively. Using an ex post measure, near-future cash needs are also important but less important than immediate cash needs in predicting securities issuance. Firms that will run out of cash in t+1 are 11.2% more likely to issue debt in t than firms that will not, and are 10.6% more likely to issue equity in t than firms that will not.

Using Cash $_{\text{ex ante}}$ and controlling for other variables, the likelihoods of debt issuance for firms that are running out of cash and firms that are not differ by a factor of two (30.8% vs. 17.4%), respectively, and their likelihoods of equity issuance also differ by a factor of two, at 16.0% vs. 8.5%, respectively. Reverse-causality timing theories could explain the importance of our ex post measures of cash depletion, but they do not explain why our ex ante measures of cash depletion are important in predicting the decision to issue debt or equity.

When there is an immediate cash need, firms must choose between debt and equity if they seek external financing. Conditional on issuing a security, the most important predictors of the debt vs. equity choice are lagged measures of internal cash flow, firm size, the default spread, and Tobin's Q. A two standard deviation increase in the four variables is associated with a change in the likelihood of an equity issue of -12.5%, -9.3%, 8.6%, and 8.4%, respectively. Thus, both fundamentals and timing proxies are important, consistent with conditional market timing.

Does a cash squeeze limit a firm's ability to time the market? We further estimate a multinomial logit regression for the choice of securities, conditional on doing external financing *and* running out of cash. Even for firms that are running out of cash (using either an ex post measure or an ex ante measure), our market timing, precautionary savings, corporate lifecycle, and tradeoff proxies are economically important in explaining the debt vs. equity choice. Companies usually raise cash only when they need to, but if a firm is small, young, R&D intensive, highly levered, or if equity is cheap, the firm will frequently issue equity rather than debt. The results are consistent with conditional timing.

We also examine the effects of debt and equity issues on changes in cash, and how the effects are related to cash needs and non-funding-related motives. As mentioned in our first paragraph, on average, net debt issuers immediately spend 85.9 cents of an incremental dollar in their issuing proceeds, and save only 14.1 cents in cash, whereas net equity issuers immediately spend only 34.6 cents of an incremental dollar in their issuing proceeds, and save 65.4 cents in cash. The fact that equity issuers save a large fraction of the proceeds in cash has been interpreted as supportive of market timing theories (Kim and Weisbach (2008)). We caution that timing is not responsible for all of the 65.4 cents saving. As Fama and French (2005) and DDS also note, many equity issuers are small and unprofitable and experience substantial growth in non-cash assets, thus it is reasonable for them to increase cash balances and prepare for future cash needs. We find that our proxies for fundamentals and reverse-causality timing can justify saving 18.0 cents, and our other timing proxies can explain a saving of 9.1 cents. These findings are consistent with conditional market timing theories, which view both timing opportunities and fundamentals as important. A saving of 38.2 cents remains unexplained.

One plausible reason that can explain part of the difference in measured savings rates between debt and equity issues is that much borrowing occurs via bank lines of credit, and thus is largely continuous. A firm that is planning to spend money over the next six months could increase its borrowing every month as needed. On the other hand, equity offerings other than those associated with stock option exercise typically have a fixed cost component and occur at discrete points in time. If equity financing is used and the issue occurs near the end of fiscal year t, part of the money will appear to have been saved for spending in year t+1.

2. Data, variables, summary statistics, and univariate sorts

2.1. Data and variables

We use Compustat to obtain financial statement information and CRSP to obtain stock prices for each U.S. firm. We require the statement of cash flow information for fiscal years t and t-1. Since the cash flow information is only available from 1971, our final sample starts from 1972.[5] Since we also examine stock returns in the three years after each financing decision, our sample period ends at 2010. We also drop firm-year observations for which frequently used variables in our paper have a missing value, the net sales is not positive, the book value of assets at the end of fiscal year t-1 or t is less than $10 million (expressed in terms of purchasing power at the end of 2010), the book value of assets at the end of year t-2 is missing, the cash flow identity is violated in t and t-1, or there is a major merger in t.[6] To avoid the effect of regulations on financing choices, we remove financial and utility firms from our analysis. Our final sample includes 116,488 firm-year observations from 1972-2010.

As market timing proxies we use Tobin's Q, the stock return in year t-1, the stock return from t+1 to t+3, the term spread, and the default spread. As lifecycle proxies, while DDS use only firm age, we favor the corporate lifecycle theory by using both firm size (the logarithm of net sales) and age. As precautionary saving proxies, following McLean (2011), we use R&D expense, industry cash flow volatility, and a dividend payer dummy variable. For the tradeoff theory, we use lagged leverage as a proxy. Detailed definitions of the variables used in this paper are provided in Appendix I. We use statements of cash flow information, so equity issued for stock-financed acquisitions is not counted as an equity issue. To minimize the influence of

[5] We use the number of years that a firm has been listed on CRSP as a measure for the firm's age. CRSP first included NASDAQ stocks in December 1972. As DDS point out, the number of years on CRSP is not a reliable measure for firm age for these firms. Our major results are essentially the same if we add five years to the age of these firms or simply exclude these firms from our sample.

[6] A violation of the cash flow identity in year t is identified as where the absolute value of $(\Delta D_t + \Delta E_t + ICF_t - Investments_t - \Delta NWC_t - Cash\ Dividends_t) \div Assets_{t-1} > 0.005$ (see Appendix I for detailed variable definitions). A major merger is identified by the Compustat footnote for net sales being AB, FD, FE, or FF. Our data requirements result in the dropping of firms that solved their cash shortfall problems by being acquired during year t.

outliers, all non-categorical variables except for the stock returns are winsorized at the 0.5% level at each tail of our sample.

2.2. Summary statistics and univariate sorts

Figure 1A reports the likelihood of cash depletion on the basis of $Cash_{ex\ post}$, defined as $Cash_t - \Delta D_t - \Delta E_t$ or $Cash_{t-1} + NCF_t$. NCF_t equals $Cash_t - Cash_{t-1} - \Delta D_t - \Delta E_t$, where ΔD_t is the net debt issue in t, and ΔE_t is the net equity issue in t. If the cash flow identity is satisfied, NCF_t also equals ICF_t – $Investments_t$ – ΔNon-Cash NWC_t – Cash $Dividends_t$, where ICF_t is the internal cash flow, and ΔNon-Cash NWC_t is the change in non-cash net working capital (see Appendix I for details). Inspection of the figure shows that larger issue sizes are associated with a higher probability of running out of cash, with this relation being much stronger for debt issues than equity issues. The finding that firms that raise more capital often have larger cash needs undercuts the importance of precautionary saving and unconditional market timing motives.

Figure 1B shows the likelihood of cash depletion on the basis of $Cash_{ex\ ante}$, defined as $Cash_{t-1} + NCF_{t-1}$. $Cash_{ex\ ante}$ is fully ex ante because it only uses information prior to year t. It uses the realized NCF_{t-1} as the expected NCF_t. There is still a positive relation between issue size and the likelihood of cash depletion in Figure 1B, although the relation is weaker than in Figure 1A. For firms with an issue size greater than 5% of beginning-of-year assets, the cash depletion likelihoods on the basis of $Cash_{ex\ ante}$ are lower than those on the basis of $Cash_{ex\ post}$ for both debt and equity issuers.

Table 1 reports the sample distribution by security issue activities. If firms actively target a desired capital structure, firms with the largest cash shortfalls could issue both debt and equity to fund their cash needs and stay close to their target leverage (Hovakimian, Hovakimian, and

Tehranian (2004)). Therefore, we distinguish among pure debt issues, pure equity issues, and dual issues of both debt and equity.

Panel A of Table 1 reports the distribution by the issuance and choice of securities. Issuance years are defined as years in which either the net debt or net equity proceeds on the cash flow statement is at least 5% of book assets and 3% of market equity at the beginning of the year. Using this definition, in 70.7% of firm-years, there is no security issue. Debt issues occur more often than equity issues. A pure debt issue, a pure equity issue, and dual issues of debt and equity occur in 18.7%, 8.0%, and 2.7% of firm-years, respectively. One argument against the market timing theory is that many firms with good equity market timing opportunities do not issue equity. In our sample, an equity issue occurs in 10.7% of the firm-years.[7] In comparison, DDS document that the probability of an SEO in a given year is 3.4%.[8] Conditional on issuing, the likelihoods of a debt issue and an equity issue are 72.7% and 36.4%, respectively.

Panel B of Table 1 reports the distribution by cash depletion (using either $Cash_{ex\ post}$ or $Cash_{ex\ ante}$) and issuing a security or not. Firms are running out of cash at the end of t on the basis of $Cash_{ex\ post}$ in 24.3% of the years and on the basis of $Cash_{ex\ ante}$ in 28.5% of the years. For firms that do not issue a security, the likelihood of cash depletion is 6.5% on the basis of

[7] Fama and French (2005) document that although SEOs are not common, on average 54% of their sample firms make net equity issues each year from 1973-1982, and the proportion increases to 62% for 1983-1992 and 72% for 1993-2002. Our equity issue probabilities are lower than those reported in Fama and French (2005), who do not impose a minimum requirement of 5% of assets and 3% of market equity, and who include share issues that do not generate cash, such as stock-financed acquisitions and contributions to employee stock ownership plans (ESOPs). Although exercises of employee stock options generate cash for the company, they are passive, rather than active, actions by the issuing firm, and they occur following stock price increases, although not necessarily after an increase in t-1. McKeon (2015) reports that a 3% of market equity screen removes from the equity issuance category almost all firm-years with only stock option exercises.

[8] To understand why our frequency of equity issues is so much higher than the DDS frequency, we investigated 50 random equity issuers using the Thomson Reuters' SDC database, Sagient Research's Placement Tracker database, and annual reports on the S.E.C.'s EDGAR web site. We found that PIPEs were almost as frequent as SEOs, and that SDC missed some SEOs. PIPEs are more common among smaller issuers, so our sample of equity issuers is tilted towards smaller firms relative to the DDS issuers. Gustafson and Iliev (2016) document that PIPEs have become less common following a 2008 S.E.C. regulatory change allowing small reporting companies (those with a public float of less than $75 million) to conduct shelf registrations.

Cash $_{ex\ post}$ and is 22.8% on the basis of Cash $_{ex\ ante}$. Most of the 6.5% of non-issuers that would run out of cash actually did some external financing, but not enough to meet our 5% thresholds. For firms that issue a security, the likelihood of cash depletion is 67.1% on the basis of Cash $_{ex\ post}$ and is 42.4% on the basis of Cash $_{ex\ ante}$. These results suggest that security issuers are much more likely to run out of cash at the end of t than firms that do not issue a security, especially when Cash $_{ex\ post}$ is used.

Panel C of Table 1 reports the distribution by cash depletion and security choice. The likelihoods of cash depletion using Cash $_{ex\ post}$ are 74.4% and 43.1% for pure debt issuers and pure equity issuers, respectively. The likelihoods of cash depletion using Cash $_{ex\ ante}$ are 41.0% and 40.5% for pure debt issuers and pure equity issuers, respectively.

Panel D of Table 1 reports the probability of issuing securities, conditional on either running out of cash or not using Cash $_{ex\ post}$ and Cash $_{ex\ ante}$, respectively. As mentioned in the introduction, 81.1% of firms that are running out of cash on the basis of Cash $_{ex\ post}$ conduct a significant issue of debt or equity, but only 12.7% of other firms do so. When Cash $_{ex\ ante}$ is used instead, the probabilities are 43.6% and 23.7%, respectively. These results suggest that a cash squeeze is a very important motive for external financing.

Panel E of Table 1 reports the probability of issuing debt, equity, or both, conditional on running out of cash and issuing. Among firms that do significant external financing in the presence of a cash squeeze, 82.5% of firms issue debt and 29.5% issue equity, with 12.0% of these firms issuing both.

Figure 2 shows for each fiscal year of 1972-2010 the fraction of debt or equity issuers that have an equity issue in the year and the average Tobin's Q at the end of the year. The fraction varies substantially between the minimum of 5% in 1974 and the maximum of 65% in

2009. To understand whether time-varying growth opportunities and costs of equity help explain the variation in the debt vs. equity choice across time, we plot the average Tobin's Q of our sample firms at the end of each year in the same figure. The large variation over time in the choice of debt vs. equity combined with the strong positive correlation (ρ=0.74) between the fraction of issuers that issue equity and the average Tobin's Q suggests that market timing is quantitatively very important.

Table 2 reports the means and medians for the cash flow components sorted by security issues. On average, pure equity issuers and dual issuers have the lowest $ICF_t \div Assets_{t-1}$, suggesting that they are less able to rely on internally generated funds. Dual issuers have the largest $Investments_t \div Assets_{t-1}$, followed by pure debt issuers and pure equity issuers. The mean of Cash $Dividends_t \div Assets_{t-1}$ is no greater than 1.2% for all four categories of firms, suggesting that dividend cuts and omissions play a limited role in meeting large short-term cash needs. The overall mean of 1.1% is low because we are equally weighting firms, and most small firms pay no dividends. The mean $\Delta NWC_t \div Assets_{t-1}$ varies from 0.3% for firms that issue no security to 17.9% for dual issuers.[9]

Table 3 reports the summary statistics for cash, excess cash (i.e., adjusted for industry, Tobin's Q, and assets), and hypothetical likelihoods of cash depletion. Panel A reports the means and medians of cash and excess cash at the end of each year from t-1 to t+1, all expressed as a percent of assets. Pure equity issuers have much higher cash ratios in the year before, the year of, and the year after the issue than the other categories of firms, suggesting a stockpiling effect,

[9] Our Figure 1 finds that firms that have a larger issue are more likely to run out of cash if they did not issue. To further understand this finding, our Internet Appendix Table IA-1 reports the means and medians of the cash flow components for firms sorted by net equity issue size and net debt issue size, respectively, as a percent of beginning-of-year assets. Not surprisingly, firms with a larger $\Delta E_t \div Assets_{t-1}$ generally have larger investments. For firms with $\Delta E_t \div Assets_{t-1} \geq 0.05$, the mean $ICF_t \div Assets_{t-1}$ is only 1.2%. Thus, part of the issue proceeds for this group of firms is used to make up for the lower profitability. Interestingly, this group of firms not only has the largest cash need, but also has the largest increase in cash holdings in the same year.

consistent with the precautionary saving theory. A higher cash ratio can be optimal for small growth firms, as noted by DDS. For example, a money-losing biotech company will find it easier to attract and retain employees if it has cash on the balance sheet.

To control for the effects of industry, growth opportunities, and firm size, we compute the excess cash ratios as the difference between the cash ratio of the firm and the median cash ratio in the same year of firms in the same industry, the same tercile of Tobin's Q, and the same tercile of total assets. In Panel A of Table 3, pure equity issuers in year t have a positive mean excess cash ratio of 2.5% at the end of year t-1, but still choose to raise more equity capital. Pure equity issuers have mean excess cash ratios of 6.0% at the end of t and 5.2% at t+1, although the medians are much smaller.

To measure the likelihood of cash depletion of an SEO firm, DDS initially focus on an ex post measure of the issuer's *pro forma* cash balance at the end of the subsequent fiscal year (t+1) after the SEO year (t), assuming zero SEO proceeds in year t and that the firm's actual operating, investing, and other financing activities in t and t+1 would be the same whether or not the firm had the SEO in year t. To alleviate potential reverse-causality concerns, they do robustness tests by assuming no capital expenditure increases in t and t+1, no increases in debt in t and t+1, or no dividends in t and t+1, and still find that many SEO issuers would have run out of cash.

Following DDS, we present the likelihoods of cash depletion in Panel B, both unconditionally (the "All" column) and conditional on actual security issuance. In row (1), the probabilities of an ex post cash squeeze ($Cash_{ex\ post} = Cash_t - \Delta D_t - \Delta E_t < 0$) at the end of t are 76.1% for debt issuers and 54.4% for equity issuers, suggesting that debt issuers have much larger immediate cash needs than equity issuers.[10]

[10] Denis and McKeon (2012) document that for 2,314 firm years with large leverage increases between 1971-1999, the likelihood of cash depletion is between 70.8% and 93.4%.

In rows (2)-(4), we use three alternative assumptions for the expected NCF_t that do not use actual spending, to alleviate a reverse-causality concern associated with Cash $_{ex\ post}$. Using Cash $_{ex\ ante}$ ($Cash_{t-1}$ + NCF_{t-1}), the likelihoods of cash depletion at t if they didn't issue are much lower at 43.1% and 44.8%, respectively, for the firms that actually did issue debt or equity. NCF_{t-1} is not, however, an ideal measure of next year's net cash flow. Managers have more information about cash needs in t than NCF_{t-1}, and mean reversion in the net cash flow is also possible. To alleviate these concerns, our second alternative measure is $Cash_{t-1}$ + Median NCF_t, where Median NCF_t = $Assets_{t-1}$ of the firm × the median of $NCF_t \div Assets_{t-1}$ of firms in the same industry, the same tercile of Tobin's Q, and the same tercile of assets. Using this measure, the likelihoods of cash depletion at t for the firms that actually did issue debt or equity in row (3) are 35.5% and 29.2%, respectively, if they had not issued. We also estimate regressions, reported in Appendix II, using a list of ex ante variables to predict $NCF_t \div Assets_{t-1}$, and then use $Cash_{t-1}$ + $Assets_{t-1}$ × the fitted value of $NCF_t \div Assets_{t-1}$ to identify cash depletion in t. Using this third alternative measure, the likelihoods of cash depletion at t for debt and equity issuers in row (4) are 35.8% and 38.9%, respectively. The likelihoods of cash depletion are much lower using these three counterfactuals than using the actual NCF_t.

The next six rows [rows (5)-(10)] present the probabilities of having a cash squeeze if alternative financing policies were implemented in year t. For example, row (7) asks what the likelihoods are if a security issuer still issues the security but cuts the issue size by half. Using $Cash_t - 0.5\times(\Delta D_t + \Delta E_t)$, the likelihoods of cash depletion at t for a debt and an equity issuer are 58.4% and 34.7%, respectively.[11] These findings suggest that many issuers could have cut their net issue size by half without running out of cash in the immediate future.

[11] A careful reader might note that in row (7) the probability of running out of cash is 3.6% for firms that did not issue, which is not the same as the 6.5% probability in row (1). These numbers are not identical because not all of

Rows (8) and (9) address how important dividends and increases in interest payments are for the probability of a firm running into a cash squeeze. Inspection of the rows shows that the likelihoods are similar to those in row (1) using $Cash_t–\Delta D_t–\Delta E_t$, suggesting that dividends and interest expense changes have no material effects on the likelihoods of cash depletion.

McLean (2011) assumes zero equity issuance instead of zero *net* equity issuance in computing the likelihood of cash depletion. Following his approach of using $Cash_t$ – Gross Equity $Issue_t$, in row (10) the likelihood of cash depletion at the end of t is 59.9% for equity issuers in our sample and a much smaller 10.6% for all firms in our sample, suggesting that firms with a significant net equity issue have a larger immediate cash need. McLean's equity issue sample includes all firm years with a positive equity issue amount on the cash flow statements, including small amounts from employee stock option exercise. Our untabulated results show that the likelihood of cash depletion in a year for our subsample of firms with a positive (rather than 5%) equity issuance amount is 14.9%, which is close to the 17% that McLean reports and the 15.6% that McKeon (2015) reports.[12]

Even if a firm is not running out of cash, raising capital can be justified if its cash ratio is subnormal. DDS document that 81.1% of SEO firms would have had subnormal cash balances without the SEO proceeds. Following DDS, we compute the likelihoods of having a cash ratio below the median cash ratio of similar firms, defined as firms in the same year, the same industry, the same tercile of Tobin's Q, and the same tercile of assets. Using the ex post net cash flow, in row (11) the likelihoods of having a subnormal cash ratio at the end of t with zero net external capital are 90.3% and 79.0% for debt and equity issuers, respectively. Using the ex ante net cash

the nonissuing firms had $\Delta D_t = \Delta E_t = 0$. Many had an issue of less than 5%, and some had an issue of more than 5% of assets but less than 3% of the market value of equity at the beginning of the year.

[12] Note that the 14.9% likelihood is not directly comparable to the likelihoods in Figure 1A, which use *net* equity issuance. Firms frequently repurchase shares to reduce the dilutive effect of employee stock option exercises.

flow, in row (12) the likelihoods are 68.1% and 69.1%, respectively. If they cut the issue size by half, in row (13) the likelihoods are 84.1% and 66.5%, respectively.

We also compute the likelihood of cash depletion at the end of either t or t+1 (near-term) if a firm does not issue equity or debt in both t and t+1. The likelihoods of near-term cash depletion in row (14) are 84.2% and 72.3% for debt and equity issuers, respectively. Using an ex ante measure, in row (15) the likelihoods become 52.0% and 58.2%, respectively. The results using the ex ante measure are similar to those when the cash depletion measures are based on the median NCF ratio and the fitted-value NCF ratio.

DDS examine the likelihood of cash depletion at the end of t+1 for firms with an SEO in t, assuming zero SEO proceeds in t and holding other cash uses and sources at their actual values. To make our results more comparable to theirs, in row (18) we compute the likelihood of $Cash_{t+1} - \Delta E_t \leq 0$. For our sample of equity issuers, the likelihood of cash depletion at the end of t+1 is 60.0%, which is close to their 62.6%. However, it is possible that a firm is running out of cash at t but will not run out of cash at t+1. Consistent with this possibility, in row (19) the likelihood of cash depletion at t or t+1 ($Cash_t - \Delta E_t \leq 0$ or $Cash_{t+1} - \Delta E_t \leq 0$) is a higher 70.8%.

Table 3 also reports the likelihoods of near-future cash depletion (running out of cash at the end of t+1 but not at the end of t) in rows (20-23), and the likelihoods of remote-future cash depletion (running out of cash at the end of t+2 but not at the end of t or t+1) in rows (24-27). Generally, the likelihoods of near-future cash depletion are much lower than the likelihoods of immediate cash depletion and the likelihoods of remote-future cash depletion are even lower, regardless of whether ex post measures of cash needs or alternative measures are used.

Table 4 presents the means and medians for the control variables that are used in our regressions. Panel A presents the summary statistics for the full sample. Among the four subsets of firms, pure equity issuers have the highest Tobin's Q, consistent with earlier studies that show that firms with growth opportunities and high stock valuation are more likely to issue equity. Pure equity issuers and dual issuers have the highest average prior-year stock returns of 44.8% and 46.7%, respectively, and the lowest 3-year buy-and-hold stock returns of 14.9% and 10.5% from year t+1 to t+3, consistent with the market timing literature. The stock return from t+1 to t+3 is much higher for pure debt issuers than for equity issuers. Pure equity issuers and dual issuers are smaller and younger than other firms. Pure equity issuers also have lower lagged leverage than debt issuers. Pure equity issuers have the highest R&D, and are in industries with the highest cash flow volatility and are the least likely to be a dividend payer in the prior year.[13]

Cash needs are not incompatible with market timing motives because firms that are running out of cash can still choose between debt and equity. These firms could cite cash shortfalls to justify their equity issue decisions. Panel B of Table 4 reports the mean characteristics for firms that are running out of cash and issuing a security. Firms that are running out of cash and issuing only equity have an average 3-year buy-and-hold stock return from t+1 to t+3 of only 2.8%, suggesting that these firms are still able to time the market when choosing between debt and equity. It is difficult to justify this extremely low return with any risk adjustments, although the issuers that are running out of cash are tilted towards low profitability and heavy investment, characteristics associated with low returns in the asset pricing literature (Hou, Xue, and Zhang, 2015). These findings suggest that some firms successfully time the market to issue equity and quickly spend the proceeds. Whether the low subsequent stock returns

[13] Internet Appendix Table IA-2 reports the mean and median characteristics for young and old firms separately. Younger firms are generally smaller and have higher Tobin's Q than old firms. Young equity issuers have slightly lower future stock returns than old equity issuers.

are because assets in place were overvalued or because negative NPV investments were undertaken can be partly identified by the use of an ex ante measure for cash shortfalls.

Table 5 uses univariate sorts to evaluate the effects of our cash need measures and control variables on the propensities to issue securities. For each of the subgroups sorted by a variable, we compute the proportion of firm-years that fall into one of the four categories of security issue choices (or six categories when dual issuers are added to the pure debt and pure equity categories). Firms with more cash are less likely to issue debt, but are more likely to issue equity. For firms in, respectively, the lowest and highest quartiles of $Cash_{t-1} \div Assets_{t-1}$, the likelihoods of a debt issue are 27.4% and 12.1%, and the likelihoods of an equity issue are 9.2% and 14.2%.

Among the net cash flow measures for different years, $NCF_{t} \div Assets_{t-1}$ stands out in explaining the likelihood of a debt issue in year t. For firms in the variable's first and fourth quartiles, the likelihoods of debt issues are 55.6% and 2.9%, respectively, differing by 52.7%, with the low NCF firms almost 20 times more likely to issue debt. $NCF_{t-1} \div Assets_{t-1}$ is far less important, and future ratios $NCF_{t+1} \div Assets_{t-1}$ and $NCF_{t+2} \div Assets_{t-1}$ have little ability for explaining debt issues. The net cash flow measures from t-1 to t+2 are important in explaining an equity issue in t. For firms in the first and fourth $NCF_{t} \div Assets_{t-1}$ quartiles, the probabilities of equity issues are 27.3% and 4.8%, respectively, a difference of 22.5%, with the low net cash flow firms six times more likely to issue equity. For firms in the first and fourth quartiles of NCF_{t-1}, NCF_{t+1}, NCF_{t+2}, all scaled by $Assets_{t-1}$, the probabilities of equity issues differ by 16.2%, 16.8%, and 13.3%, respectively. These findings suggest that debt is issued almost exclusively for immediate cash needs, while equity issuers have large funding needs not only in the issuance year, but also before and after the issuance year.

$Cash_{ex\ post}$÷$Assets_{t-1}$ is the predominant predictor for debt issues, although the relation is partly mechanical since $Cash_{ex\ post} = Cash_t - \Delta D_t - \Delta E_t$. For firms in this variable's first and fourth quartiles, the likelihoods of a debt issue are 63.9% and 3.9%, respectively. $Cash_{ex\ post}$ ÷$Assets_{t-1}$ is also important for equity issues, but much less important than for debt issues. For firms in the variable's first and fourth quartiles, the likelihoods of equity issues are 23.6% and 7.3%, respectively. $Cash_{ex\ ante}$÷$Assets_{t-1}$ is less dominant than $Cash_{ex\ post}$ ÷$Assets_{t-1}$, but still highly important for debt and equity issues. Firms in the top quartile of $\Delta Cash_t$ ÷$Assets_{t-1}$ have the highest likelihood of an equity issue. Firms in the top quartile of ΔNon-$Cash_t$ ÷$Assets_{t-1}$ have the highest likelihoods of debt and equity issues.

Tobin's Q is also an important predictor for equity issues. For firms in the first and fourth quartiles of Tobin's Q, the likelihoods of an equity issue in a given year are 4.3% and 19.5%, respectively, differing by -15.2%, a pattern qualitatively similar to that reported in Table 2 of DDS. In contrast, Tobin's Q is not so strongly related to the likelihood of a pure debt issue. These results are consistent with Figure 2. The stock return in year t-1 is positively related to the likelihood of both debt and equity issues. Unlike most of the sorts, the relation between lagged equity returns and equity issuance is non-monotonic, with small, unprofitable firms with negative prior returns frequently resorting to PIPEs. The stock return from t+1 to t+3 is not as strongly related to the likelihood of a pure debt issue as it is to the likelihood of an equity issue. For a firm in the lowest quartile of future stock returns, the likelihood of an equity issue is 18.7%, suggesting that a significant proportion of firms with poor future stock performance are able to successfully time the market.

Table 5 shows that the term spread and the default spread are not important in predicting debt or equity issues, although we will show in Table 9's multinomial logit regressions that a higher default spread does discourage debt issuance. Larger and older firms are less likely to issue equity, consistent with the corporate lifecycle theory. Firms in the lowest leverage quartile are the least likely to issue debt, inconsistent with the tradeoff theory, supporting the findings of Strebulaev and Yang (2013). Consistent with the precautionary saving theory, higher R&D firms, firms in an industry with higher cash flow volatility, and firms that do not pay dividends are more likely to issue equity.

3. Regression results

3.1. The decision to issue a security and the choice between debt and equity

Our earlier results suggest that it is important to estimate the marginal effects of our immediate and future cash need measures and other variables on security issue decisions. Table 6 reports the multinomial logit results for the decision to issue a security in year t and the choice between debt and equity. The base category consists of firms that have no security issue. Panel A reports the coefficients and z-statistics, and Panel B reports the economic effects. Because the multinomial logit model is nonlinear, we focus our discussions on the economic effects.

In regression (1), Current Depletion Dummy, our ex post measure for immediate cash depletion, equals one if $Cash_{t-1} + NCF_t \leq 0$ and zero otherwise. Near Depletion Dummy, a near-future cash depletion measure, equals one if $Cash_{t-1} + NCF_t > 0$ and $Cash_{t-1} + NCF_t + NCF_{t+1} \leq 0$, and equals zero otherwise. Remote Depletion Dummy, a remote-future cash depletion measure, equals one if $Cash_{t-1} + NCF_t > 0$, $Cash_{t-1} + NCF_t + NCF_{t+1} > 0$, and $Cash_{t-1} + NCF_t + NCF_{t+1} + NCF_{t+2} \leq 0$, and equals zero otherwise.[14] Panel B of Table 6 shows that Current Depletion Dummy is a prominent predictor for debt and equity issues. Firms that are running out of cash at the end of t

[14] Note that by definition, $Cash_{t-1} + NCF_t = Cash_{t+1} - \Delta D_t - \Delta E_t$, $Cash_{t-1} + NCF_t + NCF_{t+1} = Cash_{t+1} - \Delta D_t - \Delta E_t - \Delta D_{t+1} - \Delta E_{t+1}$, and $Cash_{t-1} + NCF_t + NCF_{t+1} + NCF_{t+2} = Cash_{t+2} - \Delta D_t - \Delta E_t - \Delta D_{t+1} - \Delta E_{t+1} - \Delta D_{t+2} - \Delta E_{t+2}$.

are 63.5% more likely to issue debt in the same year than firms that are not running out of cash (69.8% vs. 6.3%).[15] Near Depletion Dummy is also highly important but much less important than Current Depletion Dummy. Firms that will run out of cash at t+1 are 11.2% more likely to issue debt than firms that will not run out of cash at t+1 (31.2% vs. 20.0%). For equity issues, both Current Depletion Dummy and Near Depletion Dummy are highly important predictors. Firms that are running out of cash in a fiscal year are 18.4% more likely to issue equity in the same year than firms that are not running out of cash (24.5% vs. 6.1%). Firms that will run out of cash at t+1 are 10.6% more likely to issue equity than firms that will not (19.9% vs. 9.3%). Remote Depletion Dummy also has some predictive power for both debt and equity issuances.

A two standard deviation increase in Tobin's Q_{t-1} decreases the likelihood of a debt issue by 2.7% and increases the likelihood of an equity issue by 2.1%.[16] A two standard deviation increase in the stock return in year t-1 increases the likelihood of a debt issue and the likelihood of an equity issue by 1.0% and 1.9%, respectively. A two standard deviation increase in the stock return from t+1 to t+3 increases the likelihood of a debt issue by 0.4% and decreases the likelihood of an equity issue by 3.0%, consistent with the market timing literature. Firms are less likely to issue debt and more likely to issue equity when the default spread is high, consistent with debt market timing.

Larger and older firms are less likely to issue equity, consistent with the lifecycle theory. A two standard deviation increase in firm size and age decreases the likelihood of equity issues by 5.6% and 2.9%, respectively. High leverage firms are more likely to issue equity, consistent

[15] The standard deviation of Current Depletion Dummy for the sample is 0.43. A two standard deviation increase in this variable increases the likelihood of a debt issue by 31.4% and the likelihood of an equity issue by 11.5%.
[16] As discussed earlier, we require net issue size to be at least 5% of assets and 3% of market equity when defining a security issue. Consequently, the economic effects of Tobin's Q_{t-1} here are smaller than those in the literature (e.g., Huang and Ritter (2009)) that only require net issue size to be at least 5% of assets. For better comparison, we report the results that only require net issue size to be at least 5% of assets in Tables IA-3and IA-4 in the Internet Appendix.

with the tradeoff theory. The economic effect of lagged leverage on equity issues is 3.2%. Inconsistent with the tradeoff theory, however, the effect of lagged leverage on debt issues is negligible. This finding, together with our earlier finding of the primary importance of immediate cash needs for debt issues, are consistent with Denis and McKeon (2012), who conclude that most debt issues are motivated by an immediate need for cash rather than a desire to rebalance capital structure. R&D intensive firms, firms in industries with high cash flow volatility, and non-dividend payers are more likely to issue equity, consistent with the precautionary saving theory.

Reverse-causality timing theories could also explain the importance of our ex post net cash flow measures (Baker, Stein, and Wurgler (2003)). That is, companies that raise external capital have lower NCF_t because they spend more and are less aggressive at controlling costs, compared to if they had not raised external capital. To alleviate the reverse-causality concern, we replace NCF_t, NCF_{t+1}, and NCF_{t+2} with NCF_{t-1} to define three dummy variables of cash depletion. In regression (2), Current Depletion Dummy $_{ex\ ante}$ equals one if $Cash_{t-1} + NCF_{t-1} \leq 0$ and equals zero otherwise, Near Depletion Dummy $_{ex\ ante}$ equals one if $Cash_{t-1} + NCF_{t-1} > 0$ and $Cash_{t-1} + 2 \times NCF_{t-1} \leq 0$ and equals zero otherwise, and Remote Depletion Dummy $_{ex\ ante}$ equals one if $Cash_{t-1} + NCF_{t-1} > 0$, $Cash_{t-1} + 2 \times NCF_{t-1} > 0$, and $Cash_{t-1} + 3 \times NCF_{t-1} \leq 0$ and equals zero otherwise. The ex ante measures of cash depletion in regression (2) are much less predictive than the ex post measures in regression (1), so we cannot rule out the effect of reverse causality on our ex post cash need measures. However, it is also likely that NCF_{t-1} is not as good as NCF_t in capturing expected cash needs.[17] Reassuringly, the regression (2) results suggest that Current

[17] Firms could raise capital later in a year to fund cash needs that become apparent earlier in the year. Our focus on Compustat annual data does not allow us to capture such effects. We thus check Compustat quarterly data to see if cash needs measured in the early quarters of a year increase the likelihood of issuing debt or equity in the later quarters of the year. We find that it is true, although the lagged quarter cash needs are less important than the current

Depletion Dummy $_{ex\ ante}$ and Near Depletion Dummy $_{ex\ ante}$ are the primary predictors for debt issues and are important predictors for equity issues. The economic effects of Current Depletion Dummy $_{ex\ ante}$ on debt and equity issues are 13.4% and 7.5%, respectively. The economic effects of Near Depletion Dummy $_{ex\ ante}$ on debt and equity issues are 7.2% and 6.6%, respectively. These results suggest that the economic significance of our ex post measures of cash depletion is not simply due to reverse causality. Reverse-causality timing theories cannot explain the importance of the ex ante measures of cash depletion for debt and equity issues.

The economic effects of our control variables are sometimes quite different in regressions (1) and (2). For example, the economic effect of the year t-1 stock return on a debt issue is 1.0% in regression (1), and 5.5% in regression (2). Such changes are partly because the correlations between our ex post cash depletion measures and the controls are different from the correlations between our ex ante measures of cash depletion and the controls. The year t, t+1, and t+2 values of the net cash flow could be a response to the year t-1 stock return and other control variables measured at the end of t-1.[18]

NCF_{t-1} is not an ideal measure for the expected net cash flow in t. Firms are likely to use additional information to forecast NCF_t, and mean reversion in the net cash flow is also possible. Therefore, we use two alternative measures of the expected NCF_t to define cash depletion, as we did in rows (3) and (4) of Panel B of Table 3, in the absence of external financing. First, we use $Cash_{t-1}$ +$Assets_{t-1}$ of the firm ×the median of NCF_t÷$Assets_{t-1}$ of firms in the same industry, the same tercile of Tobin's Q, and the same tercile of assets, assuming that the NCF_t÷$Assets_{t-1}$ ratio

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quarter cash needs in predicting debt and equity issues. The results using the quarterly data are otherwise qualitatively similar to the results using the annual data, and are reported in Tables IA-5 and IA-6 in the Internet Appendix.

[18] Internet Appendix Table IA-7 examines whether the components of net cash flow have different impacts on financing decisions. We find that $Cash_{t-1}$, ICF_t, $Investments_t$, and ΔNon-Cash NWC_t, all scaled by $Assets_{t-1}$, are the dominant predictors for the decision to issue debt, consistent with our findings in Table 6. ICF_t, $Investments_t$, and ΔNon-Cash NWC_t, all scaled by $Assets_{t-1}$, are also the most important predictors for the decision to issue equity.

of a firm is the same as the median $NCF_t \div Assets_{t-1}$ of similar firms. Second, we estimate regressions using a list of ex ante variables to predict $NCF_t \div Assets_{t-1}$ and use $Cash_{t-1} + Assets_{t-1}$ ×the fitted value of $NCF_t \div Assets_{t-1}$ to identify cash depletion in t. Like the ex ante measures, the additional measures are less subject to a reverse-causality concern than the ex post measures. Table 7 shows that these additional measures are still the most important determinants of debt issues. The median-based dummy variable for immediate cash depletion is more predictive for debt issues than Current Depletion $Dummy_{ex\ ante}$, but other results are generally similar to those in regression (2) of Table 6.

3.2. Securities issuances and cash changes

Kim and Weisbach (2008) find that firms save 49.0 cents and 53.4 cents in cash for every dollar raised in the IPO and the SEO, respectively. They conclude that market timing plays an important role in IPO and SEO decisions. McLean (2011) finds in his Table 6 that one dollar of equity raised results in a saving of 56.4 cents, suggesting that precautionary savings are an important motive. In this subsection, we decompose the cash change into three components on the basis of fundamentals, timing opportunities, and other factors. We then relate the cash change and its components to securities issue proceeds. The results are reported in Table 8.

Panel A of Table 8 reports the regression results using the cash change in year t $\div Assets_{t-1}$ as the dependent variable, with fundamentals as the independent variables. We use $Cash_{t-1}$, ΔNon-Cash Assets, NCF_{t+1}, and NCF_{t+2}, all scaled by $Assets_{t-1}$, as proxies for current and future cash self-sufficiency. We include ΔNon-Cash Assets $\div Assets_{t-1}$ instead of $NCF_t \div Assets_{t-1}$ to reduce the temporary effects of concurrent internal cash flow and cash uses on the optimal cash change. $Ln(Assets)_{t-1}$, $Ln(Sales)_{t-1}$, and $Ln(Age)_t$ are lifecycle proxies. $Leverage_{t-1}$ is a tradeoff proxy. $R\&D_{t-1}$, industry cash flow $volatility_{t-1}$, and Dividend $Payer_{t-1}$ are precautionary saving proxies. We also include firm fixed effects and year dummy variables to capture other effects of fundamentals. The regressions are estimated for the full sample, equity issue sample, and debt issue sample, respectively.

Our results in Panel A are consistent with the literature on optimal cash holdings (Opler, Pinkowitz, Stulz, and Williamson (1999)). In all three regressions, firms with a higher $Cash_{t-1}$ $\div Assets_{t-1}$ and a smaller increase in non-cash assets are associated with a smaller cash increase. These results suggest that firms that need more cash increase cash by more, although reverse-causality timing could also explain the results. Our proxies for future cash self-sufficiency, $NCF_{t+1} \div Assets_{t-1}$ and $NCF_{t+2} \div Assets_{t-1}$, are negatively related to the cash increase.

In all three regressions, $Ln(Assets)_{t-1}$ is negatively associated with cash changes, consistent with the lifecycle theory. The coefficients on $R\&D_{t-1}$ are positive and statistically significant in all regressions. In regression (3), the debt issuing sample, the coefficient on industry cash flow volatility is positive and statistically significant at the ten percent level. The findings are generally consistent with the precautionary saving theory.

The regressions in Panel B of Table 8 use the residuals from the regressions in Panel A as the dependent variable, and timing proxies as the independent variables. Even after purging the effects of the proxies for fundamentals and reverse-causality timing, the timing proxies are important predictors for cash changes. Firms are more likely to increase cash when investors are optimistic about their future prospects. In all three regressions, the coefficients on Tobin's Q_{t-1} are positive and statistically significant. Not surprisingly, the coefficient on Tobin's Q_{t-1} is the largest for the equity issue sample. The coefficient on the stock return in year t-1 is positive and statistically significant in regression (1). The coefficients on the stock return from t+1 to t+3 are negative and statistically significant in all three regressions. The coefficient is the largest for the equity issue sample, consistent with the literature on equity market timing. The coefficients on the default spread are positive and statistically significant in all regressions, suggesting that firms increase cash by more when the default spread is higher.

In Panel C of Table 8, we present the results of 12 regressions, expressed as rows rather than columns. Following Kim and Weisbach (2008) and McLean (2011), we first relate debt and equity issue proceeds to the cash change in regressions (1), (5), and (9). We then go one step further by linking debt and equity issue proceeds to three components of the cash change. The dependent variables in regressions (2), (6), and (10) are the fitted values from the Panel A regressions, capturing the effects of fundamentals and reverse-causality timing. The dependent variables in regressions (3), (7), and (11) are the fitted values from Panel B, capturing other market timing effects. The dependent variables in regressions (4), (8), and (12) are the residuals from Panel B, capturing other effects.

Regression (1) of Panel C for our full sample suggests that firms save 59.8 cents out of an extra dollar in the net equity issue proceeds. Regression (5) for the equity issue sample suggests that firms save 65.4 cents of an incremental dollar in the proceeds, and immediately spend 34.6 cents. The savings rates for our equity issue sample and our full sample as well as the savings rate of 56.4 cents for McLean's (2011) sample are similar, suggesting that the savings rate is not very sensitive to equity issue size. Firms that raise more equity capital not only spend more but also save more.

Regression (6) suggests that a saving of 18.0 cents of an incremental dollar raise from equity is associated with the proxies for fundamentals and reverse-causality timing. So 52.6 cents (34.6 cents + 18.0 cents) can be justified by immediate spending, the optimization of cash holdings, future cash needs, and lifecycle and precautionary motives, as well as reverse-causality timing. Regression (7) suggests that our other timing proxies explain a saving of 9.1 cents of an incremental dollar. Reverse-causality timing does not explain the 9.1 cents because the effects of current and near-future cash needs have been purged. These findings are consistent with conditional market timing theories, which view both relative costs of capital and fundamentals as important. The unexplained saving of 38.2 cents in regression (8) could reflect market timing and fundamentals that we are unable to capture, or it could be the outcome of value-neutral forces.

As we discussed in the introduction, the finding that equity issuers save a large fraction of the issue proceeds is not necessarily inconsistent with the finding that near-term cash needs are a highly important trigger for equity issues. Although cash squeezes drive the decision to issue equity, by raising more than is immediately needed, equity issuers can save a large portion of the proceeds as cash, motivated partly by the fixed-cost component of underwriting expenses. Consistent with our results, McLean and Palazzo (2016) report that equity issuers raise, and save, more when market conditions are favorable.

Firms save a much smaller amount of a dollar in net debt issue proceeds. According to regressions (9)-(12) for the debt issue sample, firms save 14.1 cents of an extra dollar in net debt issue proceeds, with the proxies for fundamentals and reverse-causality timing explaining only 0.8 cents and our other timing proxies explaining only 2.3 cents of savings, respectively. These findings suggest that firms issue debt primarily for immediate spending rather than increasing cash balances, confirming our multinomial logit findings.

3.3. The choice between debt and equity

Firms that need cash can choose between issuing debt and equity. The market timing theory predicts that firms issue equity if the relative cost of equity is low, and issue debt if the relative cost of debt is low. The literature suggests that the cost of equity is low when Tobin's Q is high, the stock return in year t-1 is high, and the stock return from t+1 to t+3 is low; and the cost of debt is low when term spreads and default spreads are low (see Baker and Wurgler (2002), Huang and Ritter (2009), and DDS). In particular, the post-issue stock long-run performance is extensively studied in the literature.[19] The lifecycle theory predicts that younger firms are more likely to issue equity rather than debt. We use both firm size and age as lifecycle proxies.[20] The precautionary saving theory predicts that firms that face more uncertainties about future cash needs are more likely to issue equity rather than debt (Bates, Kahle, and Stulz (2009) and McLean (2011). Following the literature, we use R&D expense, industry cash flow volatility, and a dividend payer dummy variable as precautionary saving proxies. The tradeoff theory focuses on adjustments towards target leverage, and predicts that high leverage firms prefer equity issues over debt issues, other things being held equal.

Table 9 reports multinomial logit regression results for the choice between a pure debt issue, a pure equity issue, and dual issues of debt and equity. Regression (1) uses the subsample of firms that issue a security. In regression (1), ICF_{t-1}, $Ln(Sales)_{t-1}$, Default $Spread_{t-1}$, and Tobin's Q_{t-1} are the most important predictors for the choice between debt and equity.[21] As shown in Panel B of Table 9, a two standard deviation increase in the four variables is associated with a change in the likelihood of an equity issue of -12.5%, -9.3%, 8.6%, and 8.4%, respectively. Consistent with the lifecycle theory, smaller and younger firms are more likely to issue equity instead of debt. Consistent with equity market timing, firms with a higher Tobin's Q, a higher

[19] Daniel and Titman (2006) and Lewis and Tan (2015) document that long-run stock performance is poor following composite equity issues, including SEOs, equity issues to employees, and equity issues in stock-financed acquisitions. Brophy, Ouimet, and Sialm (2009) document poor long-run stock performance following PIPEs. Although employees and private investors are likely more informed than the public and should not be willing to accept overvalued shares, their willingness depends on their ability to flip their shares to the public.

[20] Note that Tobin's Q could also reflect lifecycle effects because young growth firms tend to have high valuations and substantial funding needs.

[21] Firms with a low ICF in t-1 could also have a low ICF in t, t+1, and t+2, so ICF_{t-1} could capture not only year t cash needs, but also future cash needs and precautionary saving effects. ICF_{t-1} could also capture the effect of the tradeoff theory, which predicts that high profitability firms prefer debt issues over equity issues for tax benefits. However, inconsistent with the tax benefit of debt, we find that higher ICF_{t-1} firms are less likely to issue debt in a model for the joint decision of whether to issue and what security to issue (see Internet Appendix Table IA-7).

stock return in t-1, and a lower stock return from t+1 to t+3 are more likely to issue equity rather than debt. Firms are less likely to issue debt when the default spread is high, consistent with debt market timing. But we should not overstate the importance of timing based on Tobin's Q, which could also capture other effects. The default spread result is at odds with the univariate sort results in Table 5, where there is no pattern. The economic effect of the stock return from t+1 to t+3, arguably the cleanest proxy for market timing, is only -3.9%. Consistent with the precautionary saving theory, firms with higher R&D, firms in industries with higher cash flow volatility, and firms that do not pay dividends are more likely to issue equity rather than debt. Highly levered firms are more likely to issue equity rather than debt, consistent with the tradeoff theory. These findings are consistent with conditional timing theories that recognize the importance of both timing and fundamentals in the debt vs. equity choice.

To examine whether a cash squeeze limits a firm's ability to time the market, regression (2) is conditional on immediate cash depletion and issuing a security, where immediate cash depletion is identified using $Cash_{ex\ post}$. $Ln(Sales)_{t-1}$, Tobin's Q_{t-1}, and $R\&D_{t-1}$ are the top three predictors in regression (2). The findings suggest that timing, lifecycle, precautionary saving, and tradeoff theories are important in explaining the debt vs. equity choice even for firms that are running out of cash. Reverse-causality timing may be partially responsible for the findings.

To alleviate the reverse-causality concern that firms spend more only because they have successfully raised capital, regression (3) relies on $Cash_{ex\ ante}$ to identify cash depletion.[22] Reverse-causality timing theories predict that some firms are running out of cash on the basis of ex post spending but are not running out of cash on the basis of expected spending. This

[22] Regression (1) includes $Cash_{t-1}$, ICF_{t-1}, and $Investments_{t-1}$ to control for immediate and near-future cash needs. Since regressions (2) and (3) use only firms that are running out of cash, the three control variables are not included. Our major results from regressions (2) and (3), however, are not qualitatively sensitive to whether they are included or not.

regression excludes such firms and uses only firms that are expected to run out of cash at t on the basis of ex ante information. $Ln(Sales)_{t-1}$, Tobin's Q_{t-1}, and $R\&D_{t-1}$ are still the top three predictors for the debt vs. equity choice. The findings in regression (3) are consistent with conditional timing theories, but cannot be easily attributed to reverse-causality timing.[23] A comparison of the results of regressions (2) and (3) suggest that reverse-causality timing does not have a material influence on the economic effects of the independent variables.

To further understand the relative importance of various determinants of the debt vs. equity choice, we also estimate regressions by removing either year dummy variables, industry dummy variables, timing proxies, lifecycle proxies, precautionary saving proxies, or the tradeoff proxy from the set of all independent variables. The pseudo R^2's of the regressions are reported at the bottom of Panel A of Table 9. The pseudo R^2 is higher for a model with greater explanatory power.[24] In each column, the specification without the timing proxies has a slightly lower pseudo R^2 than the specification without the lifecycle proxies, suggesting that after controlling for funding needs, the market timing theory is slightly more important than the lifecycle theory in explaining the debt vs. equity choice. The pseudo R^2's also suggest that the precautionary saving proxies are less predictive than either the timing proxies or the lifecycle proxies, and the tradeoff proxy has the lowest predictive power.

3.4. Time-varying liquidity, precautionary savings, and net equity issue size

McLean (2011) proposes and provides support for a narrow version of the precautionary theory, which predicts that firms facing more uncertainties issue more equity when their stocks

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[23] To further alleviate the reverse-causality concern, we also estimate a regression using 12,174 debt or equity issuers with both $Cash_{ex\ post} \leq 0$ and $Cash_{ex\ ante} \leq 0$, and the results are similar to the results in regression (3).

[24] We report McFadden's pseudo R^2. This statistic for a multinomial logit model does not mean what R^2 means for an OLS model (the proportion of variance of the dependent variable that is explained by the independent variables). Although a R^2 of 0.2 may indicate a poor fit of an OLS model, a McFadden's pseudo R^2 ranging from 0.2 to 0.4 indicates a very good model fit. McFadden's pseudo R^2 is best used to compare different specifications of the same model.

are more liquid. Following McLean, we estimate firm fixed effects regressions using $\Delta E_t \div Assets_{t-1}$ as the dependent variable. Table 10 reports the results. In regressions (1) and (3), $Amihud_t$ is an illiquidity measure for year t. It is possible that an equity issuance enhances the liquidity of the stock, as analysts affiliated with investment banks provide research coverage shortly after the issuance. To alleviate the reverse-causality concern, we use $Amihud_{t-1}$ in regressions (2) and (4).

The Table 10 results provide mixed support for the narrow version of the precautionary saving theory. In regression (1), the coefficients on $R\&D_{t-1} \times Amihud_t$ and $Dividend\ Payer_{t-1} \times Amihud_t$ are negative and positive, respectively, and statistically significant, suggesting that firms facing more uncertainties on future cash needs issue more equity when their stock is more liquid. The results using $Amihud_t$ and its interactions in regressions (1) and (3) are generally consistent with McLean's (2011) results and the narrow version of the precautionary saving theory. However, when using $Amihud_{t-1}$, the coefficients on $R\&D_{t-1} \times Amihud_{t-1}$ become positive and statistically significant in regressions (2) and (4) and the coefficient on $Industry\ Volatility_{t-1} \times Amihud_{t-1}$ is positive and statistically significant in regression (2), inconsistent with the narrow version of the precautionary saving theory.

The coefficients on the other independent variables are generally consistent with our Table 6 results. Lagged cash and the ex post net cash flow measures are negatively related to the net equity issue size, suggesting that firms with greater current and future cash needs raise more equity capital. Timing, lifecycle, precautionary saving, and tradeoff theories also receive support. For example, in regression (3) for the equity issue sample, an increase of one in Tobin's Q is associated with a 6.1% increase (e.g., from 33.2% to 39.3%) in $\Delta E_t \div Assets_{t-1}$.

4. Conclusions

Welch (2004, p. 107) states that "corporate issuing motives themselves remain largely a mystery." In this paper, we show that, during 1972-2010, a cash squeeze is the primary reason that U.S. firms raise cash externally, and that lifecycle, precautionary savings, and market timing proxies explain a large portion of the choice between debt and equity financing.

DeAngelo, DeAngelo, and Stulz (2010) (DDS in this paper) report that 62.6% of SEO firms would have run out of cash at the end of year t+1 without the SEO proceeds in year t. If the net equity issuers in our sample, which includes firms raising equity capital using private placements, did not issue debt or equity, 54.4% of them would have run out of cash and 79.0% of them would have had a subnormal cash ratio at the end of the year. If they cut the net equity and net debt issue size by half, rather than raising nothing, 34.7% would have run out of cash at the end of the year. These findings support the importance of immediate cash needs for equity issuance. Our findings and those of DDS suggest that the importance of the precautionary saving motives for equity issuance is overstated in McLean (2011). His conclusion is partly based on his finding that only 17% of the equity issuers in his sample would have run out of cash without issuing equity. His sample of equity issuers, however, is dominated by firms that raise a small amount of equity capital through employee stock option exercises.

Net debt issuers are even more likely to run out of cash than net equity issuers. If the net debt issuers in our sample did not issue a security, 76.1% of them would have run out of cash at the end of the year, and 90.3% of them would have had a subnormal cash ratio. If they cut the net issue size by half, rather than raising nothing, 58.4% of them would have run out of cash at the end of the year.

The above numbers are based on ex post actual internal cash flows and capital expenditures. The likelihoods of cash depletion are lower when using ex ante rather than ex post measures of cash needs. If the net cash flow in t is the same as that in t-1, 44.8% of equity issuers and 43.1% of debt issuers would have otherwise run out of cash at the end of year t.

Even after controlling for other variables, immediate cash needs are the dominant predictor for debt issuances. Using an ex post measure, firms that are running out of cash in a fiscal year are 11 times more likely to issue debt in the same year than firms that are not (69.8% vs. 6.3%). To avoid a reverse-causality concern, we also use several alternative measures of immediate cash depletion instead and find that they are still the most important determinants of debt issues.

Consistent with DDS (2010), we also find that immediate cash needs are highly important for equity issues, even after controlling for other variables. Using an ex post measure, the likelihoods of equity issuance by firms that are running out of cash and firms that are not differ by a factor of four, at 24.5% and 6.1%, respectively. Using an ex ante measure instead, the likelihoods are 16.0% and 8.5%, respectively. A predicted cash squeeze in year t+1 also partly explains whether a firm will issue equity in year t.

Net debt issuers immediately spend 85.9 cents of an incremental dollar in their net issuing proceeds. A desire to increase the firm's cash balances is simply not an important motive for debt issues. In comparison, net equity issuers immediately spend 34.6 cents of an incremental dollar in their net issuing proceeds. Reverse-causality timing (firms spend more money because they have successfully raised money when the cost of capital is low) may be partly responsible for the spending. Our proxies for fundamentals and reverse-causality timing can explain saving 18.0 cents of an extra dollar, and our other market timing proxies can explain a saving of 9.1 cents, with the remaining 38.2 cents unexplained. These findings are consistent with conditional market timing theories, which view both market timing and fundamentals as important.

Firms that are running out of cash and seeking external funding still choose between debt and equity. Conditional on issuing a security, small firms, R&D intensive firms, and firms with a low cost of equity are the most likely to issue equity rather than debt, even for firms that are running out of cash or for firms that are expected to run out of cash using ex ante information. In predicting the choice of debt vs. equity financing conditional on running out of cash, our proxies for market timing and lifecycle motives have comparable explanatory power, with our proxies for precautionary saving motives being less predictive and our proxy for static tradeoff motives being the least predictive. A caveat is in order, however, since some of our proxies for the various theories overlap or have multiple interpretations. For example, we use Tobin's Q as a proxy for market timing, but it also has been argued that in a static tradeoff framework, firms with a high Tobin's Q should use more equity to be able to exercise growth options.

Thus, firms almost never borrow unless they will spend the money immediately. Equity issues are less frequent than debt issues, but when firms do issue equity they frequently raise enough to fund both immediate needs and near-future needs. In explaining the choice between debt and equity financing, both economic fundamentals and market timing proxies are important, even for firms that are running out of cash.

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Appendix I. Variable definitions

Following Frank and Goyal (2003), we set some Compustat items to zero when they are missing or their Compustat data codes indicate that they are a combined figure or an insignificant figure.

Variable name	Detailed definition
ΔD	The change in interest-bearing debt. For firms reporting format codes 1 to 3, ΔD = Long-Term Debt Issuance (Compustat item DLTIS) – Long-Term Debt Reduction (DLTR) – Current Debt Changes (DLCCH). For firms reporting format code 7, ΔD = DLTIS – DLTR + DLCCH.
ΔE	The change in equity from the statements of cash flow. ΔE = Sale of Common and Preferred Stock (SSTK) – Purchase of Common and Preferred Stock (PRSTKC).
ICF	Internal Cash Flow. For firms reporting format codes 1 to 3, ICF = Income Before Extraordinary Items (IBC) + Extraordinary Items and Discontinued Operations (XIDOC) + Depreciation and Amortization (DPC) + Deferred Taxes (Changes) (TXDC) + Equity in Net Loss (Earnings) (ESUBC) + Sale of Property Plant and Equipment and Investments Gain (Loss) (SPPIV) + Funds from Operations Other (FOPO) + Sources of Funds Other (FSRCO). For firms reporting format code 7, ICF = IBC + XIDOC + DPC + TXDC + ESUBC + SPPIV + FOPO + Accounts Payable and Accrued Liabilities Increase (Decrease) (APALCH).
Investments	For firms reporting format codes 1-3, Investments = Capital Expenditures (CAPX) + Increase in Investments (IVCH) + Acquisitions (AQC) + Uses of Funds Other (FUSEO) – Sale of Property (SPPE) – Sale of Investments (SIV). For firms reporting format code 7, investments = CAPX + IVCH + AQC – SPPE – SIV – Investing Activities Other (IVACO).
Cash Dividends	Cash Dividends (Cash Flow Statement) (DV).
ΔNWC	Change in Net Working Capital. For firms reporting format codes 1-3, ΔNWC = Working Capital Change Other (WCAPC) + Cash and Cash Equivalents Increase (Decrease) (CHECH). For firms reporting format code 7, ΔNWC = – Accounts Receivable Decrease (Increase) (RECCH) – Inventory Decrease (Increase) (INVCH) – Accounts Payable and Accrued Liabilities Increase (Decrease) (APALCH) – Income Taxes Accrued Increase (Decrease) (TXACH) – Assets and Liabilities Other Net Change (AOLOCH) + Cash and Cash Equivalents Increase (Decrease) (CHECH) – Change in Short-Term Investments (IVSTCH) – Financing Activities Other (FIAO).
$Assets_{t-1}$	The book value of assets (item AT) at the end of fiscal year t-1.
$Cash_{t-1}$	Cash and Short-Term Investments (CHE) at the end of year t-1.
$\Delta Cash_t$	$Cash_t - Cash_{t-1}$.
ΔNon-Cash NWC_t	$\Delta NWC_t - \Delta Cash_t$.
$\Delta Assets_t$	$Assets_t - Assets_{t-1}$.
ΔNon-Cash $Assets_t$	$\Delta Assets_t - \Delta Cash_t$.
NCF_t	$\Delta Cash_t - \Delta D_t - \Delta E_t$, or equivalently, ICF_t – $Investments_t$ – ΔNon-Cash NWC_t – Cash $Dividends_t$ when the cash flow identity is satisfied.
$Cash_{ex\ post}$	$Cash_{t-1} + NCF_t$ or $Cash_t - \Delta D_t - \Delta E_t$.
$Cash_{ex\ ante}$	$Cash_{t-1} + NCF_{t-1}$ or $2\times Cash_{t-1} - Cash_{t-2} - \Delta D_{t-1} - \Delta E_{t-1}$.
Tobin's Q_{t-1}	The sum of the market value of equity and the book value of debt (Common Shares Outstanding (CSHO) × Price Close Fiscal Year (PRCC_F) + Total liabilities (LT) + Liquidating Value of Preferred Stock (PSTKL) – Deferred Taxes and Investment Tax Credit (TXDITC)) at the end of fiscal year t-1÷ $Assets_{t-1}$. When PSTKL is missing, the redemption value (PSTKRV) is used. When PSTKRV is also missing, the carrying value (PSTK) is used.
$Return_{t-1}$	The total return on the firm's stock in fiscal year t-1.
$Return_{t+1,\ t+3}$	The total return on the firm's stock from fiscal year t+1 to fiscal year t+3. If the stock gets delisted before 3 years, the return until delisting is used.
Term $Spread_{t-1}$ (%)	The percentage yield difference between ten- and one-year constant fixed maturity treasuries on the day immediately prior to the beginning of fiscal year t.
Default $Spread_{t-1}$ (%)	The percentage yield difference between Moody's Baa and Aaa rated corporate bonds on the day immediately prior to the beginning of fiscal year t.

Appendix I continued:

Variable name	Detailed definition
$Ln(Sales)_{t-1}$	The natural logarithm of net sales (SALE) at the end of fiscal year t-1. Net sales is in $millions and is expressed in purchasing power at the end of 2010.
$Ln(Age)_t$	The natural logarithm of the number of years the firm has been listed on CRSP.
$Leverage_{t-1}$	The book value of debt (Total Liabilities (LT) + Minority Interest (MTB) – Deferred Taxes and Investment Tax Credit (TXDITC) + Liquidating Value of Preferred Stock (PSTKL) – Convertible Debt (DCVT)) ÷ the book value of total assets (AT) at the end of fiscal year t-1. Note that DCVT is set to zero if it is missing in Compustat.
$R\&D_{t-1}$	Research and Development expenses (XRD) in year t-1 scaled by beginning-of-year assets (AT).
Industry $Volatility_{t-1}$	The average standard deviation of cash flow to assets of the firms with the same two-digit SIC code. Cash flow is defined as (Operating Income Before Depreciation (OIBDP) – Interest and Related Expense (XINT) – Income Taxes (TXT) – Common Dividends (DVC)) ÷ beginning-of-year assets. For each firm, the standard deviation of cash flow is computed for the ten years until the end of year t-1, requiring at least three years of non-missing data. This definition follows Bates, Kahle, and Stulz (Journal of Finance, 2009).
Dividend $Payer_{t-1}$	A dummy variable that equals one if the firm pays a common dividend (DVC) in year t-1, and zero otherwise.
$Amihud_t$	An illiquidity measure for a firm's stock in year t, defined as the natural logarithm of (1+ the annual average of daily values of 1000000 ×|ret| ÷(|prc|×vol)). See Amihud (2002), Hasbrouck (2004), and McLean (2011) for details.
Industry Dummies	Dummy variables using Ken French's 17 industry classification at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/. The historical SIC code from Compustat is used from 1987 and the CRSP historical SIC code is used prior to 1987. If both are missing, we use the header SIC code from Compustat.

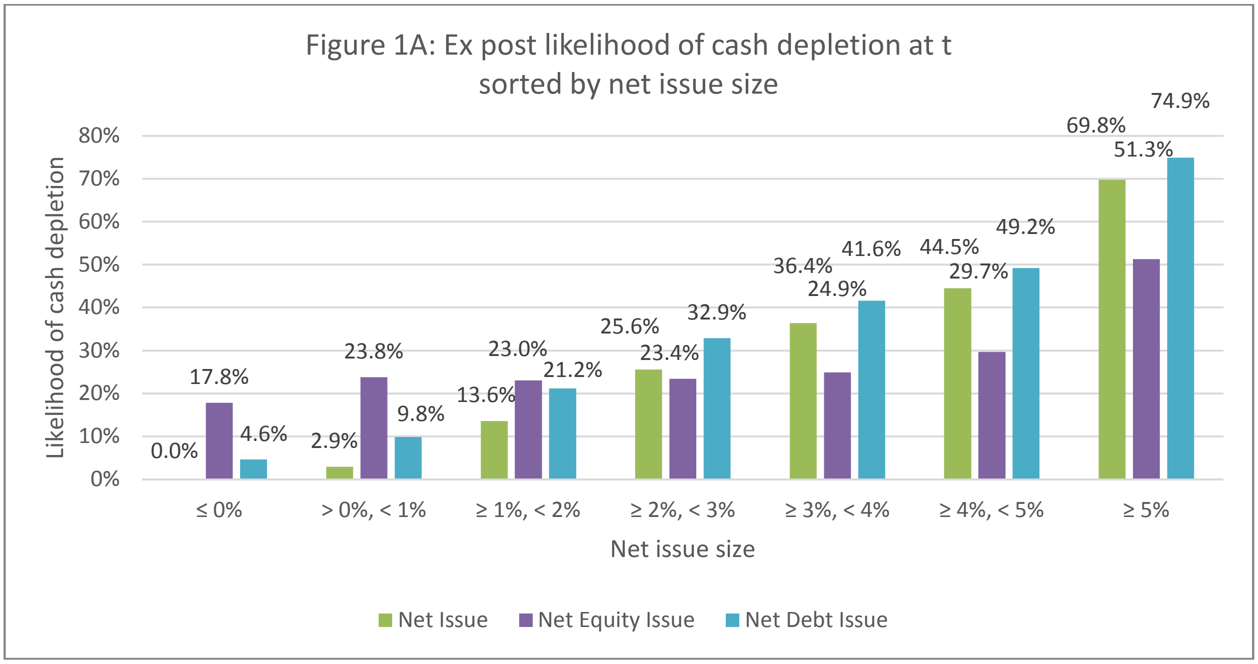
Appendix II. Predicting net cash flow

This appendix reports the regression results using the net cash flow (NCF) in t, t+1, and t+2 scaled by $Assets_{t-1}$ as the dependent variables. $NCF_t = \Delta Cash_t - \Delta D_t - \Delta E_t$ (or equivalently, ICF_t – $Investments_t$ –ΔNon-Cash NWC_t –Cash $Dividends_t$ when the cash flow identity is satisfied). NCF_{t+1} and NCF_{t+2} are similarly defined. The fitted values of the dependent variables are used in Tables 3 and 7. Returns are measured as decimals (e.g., a 20% return is measured as 0.20) and spreads are measured as annual percentages. See Appendix I for detailed variable definitions.

	(1)	(2)	(3)
VARIABLES	NCF_t÷$Assets_{t-1}$(%)	NCF_{t+1}÷$Assets_{t-1}$(%)	NCF_{t+2}÷$Assets_{t-1}$(%)
$Cash_{t-1}$÷$Assets_{t-1}$	-10.79***	-4.01***	-2.27**
	(-17.15)	(-5.18)	(-2.34)
ICF_{t-1}÷$Assets_{t-1}$	47.26***	39.88***	37.79***
	(44.46)	(30.91)	(22.14)
$Investments_{t-1}$÷$Assets_{t-1}$	-29.66***	-20.85***	-17.81***
	(-35.95)	(-19.83)	(-13.28)
ΔNon-Cash NWC_{t-1}÷$Assets_{t-1}$	-19.46***	-16.35***	-14.92***
	(-19.80)	(-13.94)	(-10.03)
Cash $Dividends_{t-1}$÷$Assets_{t-1}$	-11.08**	-12.10**	-20.08***
	(-2.18)	(-2.03)	(-2.64)
Tobin's Q_{t-1}	-1.19***	-1.22***	-1.05***
	(-7.95)	(-7.87)	(-5.45)
$Return_{t-1}$	-1.16**	-1.70***	-1.19**
	(-2.37)	(-5.28)	(-2.48)
$Return_{t+1, t+3}$	0.39***	0.62***	0.30***
	(3.07)	(2.59)	(2.60)
Term $Spread_{t-1}$(%)	0.12	-0.66***	-0.34*
	(1.09)	(-4.64)	(-1.91)
Default $Spread_{t-1}$ (%)	0.70***	-0.49**	-0.81***
	(3.01)	(-2.18)	(-2.69)
$Ln(Sales)_{t-1}$	0.82***	1.24***	1.59***
	(17.92)	(20.58)	(20.45)
$Ln(Age)_t$	0.89***	0.79***	0.68***
	(11.18)	(7.54)	(5.22)
$Leverage_{t-1}$	-0.74*	-1.60***	-3.79***
	(-1.96)	(-3.12)	(-5.58)
$R\&D_{t-1}$	-6.60***	-15.60***	-21.09***
	(-4.87)	(-8.12)	(-8.31)
Industry $Volatility_{t-1}$	7.84***	7.84***	7.33***
	(12.16)	(9.26)	(6.75)
Dividend $Payer_{t-1}$	-1.32***	-1.08***	-0.64**
	(-8.33)	(-5.24)	(-2.47)
Constant	-8.03***	-9.06***	-12.50***
	(-14.96)	(-13.59)	(-14.71)
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Observations	116,488	109,605	102,773
Adjusted R^2 (%)	21.06	13.75	10.27

Figure 1. Likelihood of cash depletion sorted by net issue size

In Figure 1A, a firm is defined as running out of cash at the end of fiscal year t if $Cash_{ex\ post} \leq 0$, where $Cash_{ex\ post} = Cash_t - \Delta D_t - \Delta E_t$. In Figure 1B, a firm is defined as running out of cash at the end of fiscal year t if $Cash_{ex\ ante} \leq 0$, where $Cash_{ex\ ante} = Cash_{t-1} + NCF_{t-1}$. Net issue size, net equity issue size, and net debt issue size are defined as $(\Delta E_t + \Delta D_t) \div Assets_{t-1}$, $\Delta E_t \div Assets_{t-1}$, and $\Delta D_t \div Assets_{t-1}$, respectively. See Appendix I for detailed variable definitions.



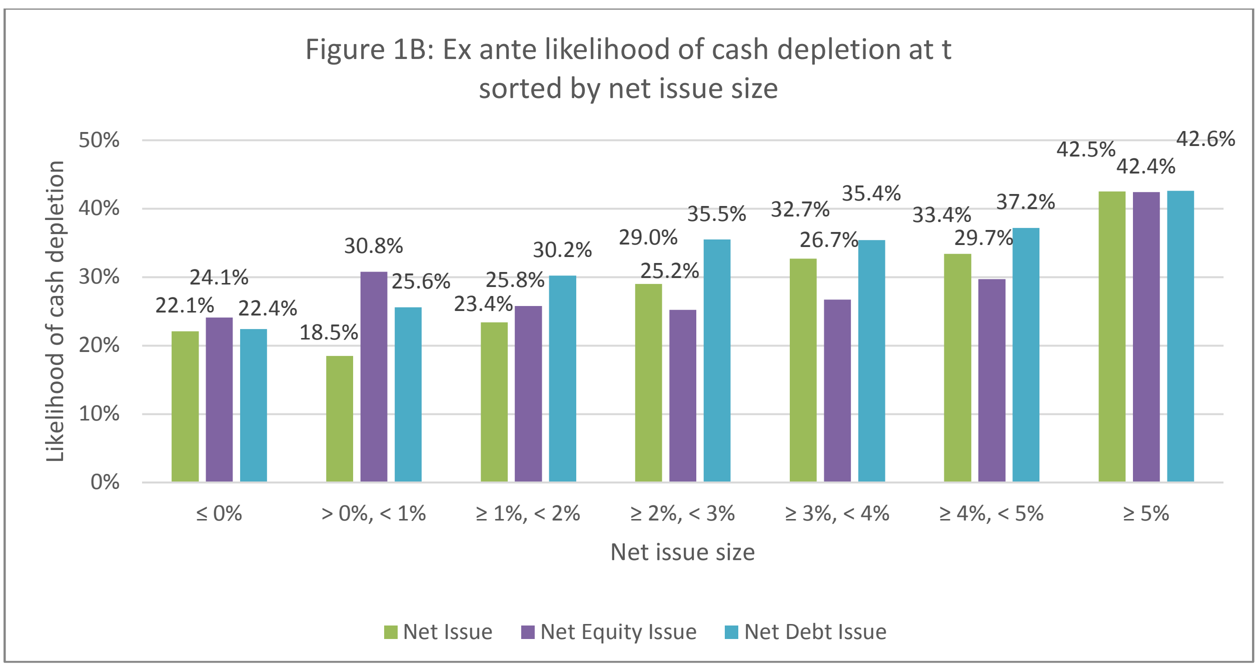


Figure 2. Fraction of issuers that issue equity and average Tobin's Q each year

This figure shows for each fiscal year of 1972-2010 the fraction of issuers that have an equity issue in the year and the average Tobin's Q at the end of the year for our sample firms. Note that average Tobin's Q ÷ 5 is plotted. The number of issuers in a fiscal year is the number of firms that have a debt issue or an equity issue in the year. A firm is defined to have an equity issue in year t if ($\Delta E_t \div Assets_{t-1} \geq 0.05$ and $\Delta E_t \div ME_{t-1} \geq 0.03$). A firm is defined to have a debt issue if ($\Delta D_t \div Assets_{t-1} \geq 0.05$ and $\Delta D_t \div ME_{t-1} \geq 0.03$). $Assets_{t-1}$ and ME_{t-1} denote the book value of assets and the market value of equity, respectively, at the end of fiscal year t-1. The fraction of issuers that have an equity issue varies from 0.05 in 1974 to 0.65 in 2009. The average Tobin's Q varies from 0.92 in 1974 to 2.25 in 1999. The correlation between the fraction of issuers that have an equity issue and the average Tobin's Q is 0.74 for the 39 annual observations. See Appendix I for the detailed definitions of Tobin's Q and other variables.

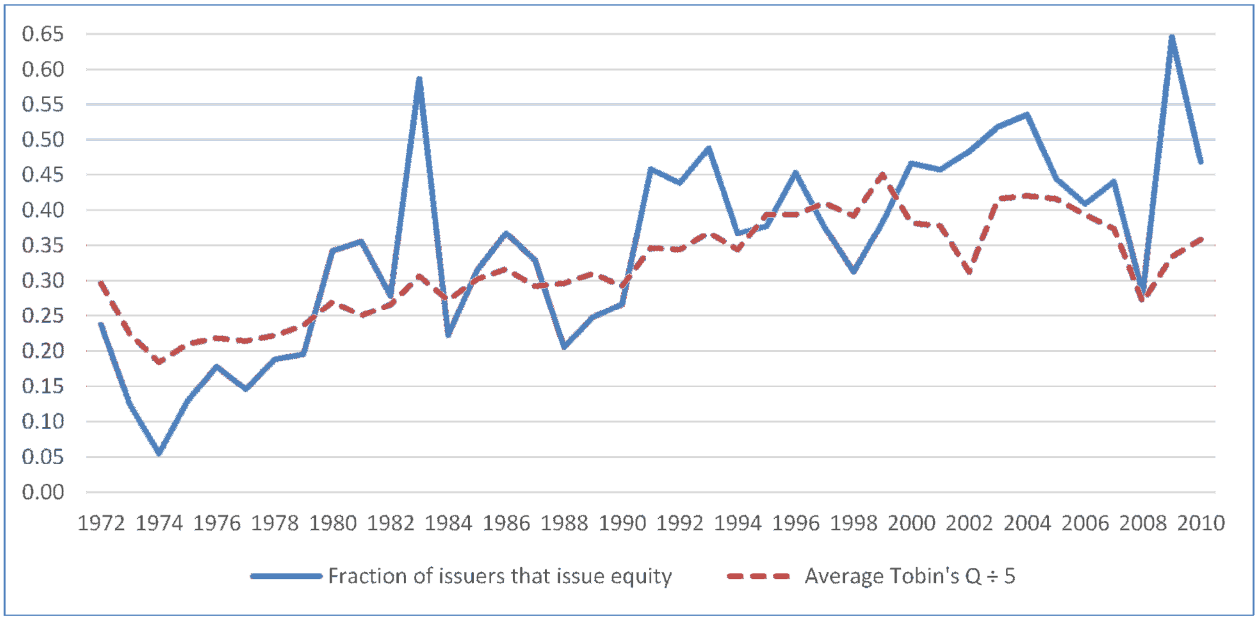


Table 1. Sample distribution

This table reports the distribution of our sample of CRSP- and Compustat-listed firms from 1972-2010. Utility and financial firms are excluded. Panel A reports the distribution by security issuance and choice. Panel B reports the distribution by cash depletion and issuing a security or not. Panel C reports the distribution by cash depletion and security choice. Panel D reports the probability of issuing, conditional on cash depletion or not. Panel E reports the probability of issuing debt or equity, conditional on running out of cash and issuing. N denotes the number of firm-year observations. % denotes the percent of firm-year observations in a group. A firm is defined to have a pure equity issue if ($\Delta E_t \div Assets_{t-1} \geq 0.05$ and $\Delta E_t \div ME_{t-1} \geq 0.03$) and ($\Delta D_t \div Assets_{t-1} < 0.05$ or $\Delta D_t \div ME_{t-1} < 0.03$). A firm is defined to have a pure debt issue if ($\Delta E_t \div Assets_{t-1} < 0.05$ or $\Delta E_t \div ME_{t-1} < 0.03$) and ($\Delta D_t \div Assets_{t-1} \geq 0.05$ and $\Delta D_t \div ME_{t-1} \geq 0.03$). A firm is defined to have dual issues of debt and equity if ($\Delta E_t \div Assets_{t-1} \geq 0.05$ and $\Delta E_t \div ME_{t-1} \geq 0.03$) and $\Delta D_t \div Assets_{t-1} \geq 0.05$ and $\Delta D_t \div ME_{t-1} \geq 0.03$). $Assets_{t-1}$ and ME_{t-1} denote the book value of assets and the market value of equity, respectively, at the end of fiscal year t-1. Ex post cash depletion is defined as $Cash_{\text{ex post}} \leq 0$, where $Cash_{\text{ex post}} = Cash_t - \Delta D_t - \Delta E_t$ (or equivalently, $Cash_{t-1} + ICF_t - Investments_t - \Delta\text{Non-Cash } NWC_t - \text{Cash } Dividends_t$ when the cash flow identity is satisfied). Ex ante cash depletion is defined as $Cash_{\text{ex ante}} \leq 0$, where $Cash_{\text{ex ante}} = Cash_{t-1} + NCF_{t-1}$. See Appendix I and Table 1 for detailed variable definitions.

Panel A. Distribution by security issuance and choice

	N	%
All firm-years	116,488	100.0
No security issue	82,297	70.7
Pure debt issue	21,749	18.7
Dual issues of debt and equity	3,110	2.7
Pure equity issue	9,332	8.0
Conditional on issuing a security	34,191	100.0
Pure debt issue	21,749	63.6
Dual issues of debt and equity	3,110	9.1
Pure equity issue	9,332	27.3

Panel B. Distribution by cash depletion and issuing a security or not

		All firms		No security issue		Security issue	
		N	%	N	%	N	%
All		116,488	100.0	82,297	100.0	34,191	100.0
Ex post cash depletion	Yes	28,304	24.3	5,356	6.5	22,948	67.1
	No	88,184	75.7	76,941	93.5	11,243	32.9
Ex ante cash depletion	Yes	33,248	28.5	18,757	22.8	14,491	42.4
	No	83,240	71.5	63,540	77.2	19,700	57.6

Panel C. Distribution by cash depletion and security choice

		Pure debt issue		Dual issues		Pure equity issue	
		N	%	N	%	N	%
All		21,749	100.0	3,110	100.0	9,332	100.0
Ex post cash depletion	Yes	16,175	74.4	2,753	88.5	4,020	43.1
	No	5,574	25.6	357	11.5	5,312	56.9
Ex ante cash depletion	Yes	8,917	41.0	1,794	57.7	3,780	40.5
	No	12,832	59.0	1,316	42.3	5,552	59.5

Panel D. Probability of issuing, conditional on cash depletion

	Running out of cash	Not running out of cash
Ex post measure	22,948÷28,304 = 81.1%	11,243÷88,184 = 12.7%
Ex ante measure	14,491÷33,248 = 43.6%	19,700÷83,240 = 23.7%

Panel E. Probability of issuing debt, equity, or both, conditional on ex post cash depletion and issuing

Debt issue	18,928÷22,948 = 82.5%
Equity issue	6,773÷22,948 = 29.5%
Dual issues of debt and equity	2,753÷22,948 = 12.0%

Table 2. Mean and median annual cash flows (%) sorted by security issues

This table reports the means and medians of the cash flow items (as a percent of the end of the prior fiscal year's assets) for our sample of Compustat- and CRSP-listed firms from 1972-2010. The medians are reported in the parentheses below the means. ΔD_t is the change in interest-bearing debt and ΔE_t is the change in equity from the statements of cash flow. ICF is internal cash flow, and NWC is net working capital. See Appendix I and Table 1 for detailed variable definitions.

VARIABLES	No security issue	Pure debt issue	Dual issues	Pure equity issue	All
$\Delta D_t \div Assets_{t-1}$	-1.9	18.3	30.4	-4.8	2.5
	(-0.4)	(12.2)	(20.1)	(-1.4)	(0.0)
$\Delta E_t \div Assets_{t-1}$	-0.4	-0.7	29.3	37.7	3.4
	(0.0)	(0.0)	(18.3)	(22.9)	(0.0)
$ICF_t \div Assets_{t-1}$	10.3	10.4	3.7	-0.5	9.3
	(10.7)	(11.2)	(10.0)	(7.4)	(10.6)
$Investments_t \div Assets_{t-1}$	6.7	20.7	41.4	14.6	10.8
	(5.5)	(15.4)	(32.1)	(8.8)	(7.0)
Cash $Dividends_t \div Assets_{t-1}$	1.2	1.0	0.7	0.5	1.1
	(0.1)	(0.0)	(0.0)	(0.0)	(0.0)
$\Delta NWC_t \div Assets_{t-1}$	0.3	6.3	17.9	17.4	3.3
	(0.8)	(4.3)	(9.8)	(8.9)	(1.7)
ΔNon-Cash $NWC_t \div Assets_{t-1}$	0.4	5.1	6.7	2.5	1.6
	(0.4)	(3.3)	(4.2)	(1.8)	(1.0)
$\Delta Cash_t \div Assets_{t-1}$	-0.0	1.1	10.6	15.1	1.7
	(0.0)	(0.1)	(2.5)	(4.5)	(0.2)

Table 3. Cash, excess cash, and likelihoods of cash depletion

Panel A reports the mean and median cash and excess cash ratios for firms categorized by their security issuance in year t. The medians are reported in the parentheses below the means. In computing the excess cash ratios, Median Cash Ratio for a firm at the end of a fiscal year is defined as the median cash ratio for all firms in the same industry (using the two-digit SIC code), the same tercile of Tobin's Q, and the same tercile of assets at the end of the same year as the firm. Panel B reports the likelihoods (in percent) of cash depletion and the likelihoods of a subnormal cash ratio, conditional on the securities that are issued. $NCF_t = \Delta Cash_t - \Delta D_t - \Delta E_t$ (or equivalently, ICF_t – $Investments_t$ $-\Delta$Non-Cash NWC_t –Cash $Dividends_t$ when the cash flow identity is satisfied). NCF_{t-1}, NCF_{t+1}, and NCF_{t+2} are similarly defined. By definition, $Cash_{t-1} + NCF_t + NCF_{t+1} = Cash_{t+1} - \Delta D_t - \Delta E_t - \Delta D_{t+1} - \Delta E_{t+1}$ and $Cash_{t-1} + NCF_t + NCF_{t+1} + NCF_{t+2} = Cash_{t+2} - \Delta D_t - \Delta E_t - \Delta D_{t+1} - \Delta E_{t+1} - \Delta D_{t+2} - \Delta E_{t+2}$. Gross Equity $Issue_t$ equals Sale of Common and Preferred Stock (Compustat item SSTK) in year t. Median NCF_t for a firm equals $Assets_{t-1}$ of the firm times the median of $NCF_t \div Assets_{t-1}$ of all firms in the same industry (using the two-digit SIC code), the same tercile of Tobin's Q_{t-1}, and the same tercile of $Assets_{t-1}$. Similarly, Median NCF_{t+1} equals $Assets_{t-1}$ of the firm times the median of $NCF_{t+1} \div Assets_{t-1}$, and Median NCF_{t+2} equals $Assets_{t-1}$ of the firm times the median of $NCF_{t+2} \div Assets_{t-1}$. Fitted NCF_t equals $Assets_{t-1}$ times the fitted value from the regression using $NCF_t \div Assets_{t-1}$ as the dependent variable in Appendix II. Similarly, Fitted NCF_{t+1} equals $Assets_{t-1}$ times the fitted value from the regression using $NCF_{t+1} \div Assets_{t-1}$ as the dependent variable, and Fitted NCF_{t+2} equals $Assets_{t-1}$ times the fitted value from the regression using $NCF_{t+2} \div Assets_{t-1}$ as the dependent variable. See Appendix I and Table 1 for detailed variable definitions.

Panel A. Mean and median cash and excess cash ratios (%)

	No security issue	Pure debt issue	Dual issues	Pure equity issue	All debt issue	All equity issue	All
$Cash_{t-1} \div Assets_{t-1}$	15.4	9.0	13.6	23.5	9.6	21.0	14.8
	(8.2)	(4.6)	(6.4)	(11.9)	(4.8)	(10.1)	(7.4)
$Cash_t \div Assets_t$	15.0	7.7	14.0	27.1	8.5	23.8	14.5
	(8.2)	(3.7)	(6.7)	(18.1)	(4.0)	(13.9)	(7.3)
$Cash_{t+1} \div Assets_{t+1}$	15.1	7.8	12.6	24.9	8.4	21.9	14.4
	(8.3)	(3.8)	(5.5)	(14.8)	(4.0)	(11.4)	(7.3)
Excess $Cash_{t-1}$:	3.8	-0.3	-0.3	2.5	-0.3	1.8	2.8
$Cash_{t-1} \div Assets_{t-1}$ –Median Cash $Ratio_{t-1}$	(0.0)	(-0.5)	(-0.5)	(-0.0)	(-0.5)	(-0.0)	(0.0)
Excess $Cash_t$:	3.4	-0.6	0.8	6.0	-0.4	4.7	2.8
$Cash_t \div Assets_t$ –Median Cash $Ratio_t$	(0.0)	(-0.7)	(-0.2)	(1.3)	(-0.6)	(0.2)	(0.0)
Excess $Cash_{t+1}$:	3.4	-0.5	0.4	5.2	-0.4	4.0	2.8
$Cash_{t+1} \div Assets_{t+1}$ –Median Cash $Ratio_{t+1}$	(0.0)	(-0.6)	(-0.4)	(0.4)	(-0.6)	(0.0)	(0.0)

Panel B: Likelihoods of cash depletion (%) with alternative NCF and financing assumptions

	No security issue	Pure debt issue	Dual issues	Pure equity issue	All debt issue	All equity issue	All
Immediate cash depletion (running out of cash at the end of t):							
(1) $Cash_t – ΔD_t – ΔE_t ≤0$ $(=Cash_{t-1}+NCF_t ≤0)$	6.5	74.4	88.5	43.1	76.1	54.4	24.3
(2) $Cash_{t-1}+NCF_{t-1} ≤0$	22.8	41.0	57.7	40.5	43.1	44.8	28.5
(3) $Cash_{t-1}$+Median $NCF_t ≤0$	11.0	34.4	43.2	24.6	35.5	29.2	17.3
(4) $Cash_{t-1}$+Fitted $NCF_t ≤0$	16.9	33.5	52.3	34.5	35.8	38.9	22.3
(5) $Cash_t – ΔE_t ≤0$	2.9	5.1	66.9	56.8	12.8	59.3	9.3
(6) $Cash_t – ΔD_t ≤0$	6.5	78.1	67.3	2.9	76.7	19.0	21.2
(7) $Cash_t – 0.5×(ΔD_t + ΔE_t) ≤0$	3.6	56.9	68.9	23.3	58.4	34.7	16.9
(8) $Cash_t – ΔD_t – ΔE_t$ +Cash $Dividends_t ≤0$	4.6	70.5	87.7	41.8	72.7	53.3	22.1
(9) $Cash_t – ΔD_t – ΔE_t + Interest_t – Interest_{t-1} ≤0$	6.1	72.2	87.3	43.2	74.0	54.2	23.6
(10) $Cash_t$ –Gross Equity $Issue_t ≤0$ (McLean (2011))	4.0	7.4	67.4	57.4	14.9	59.9	10.6
Immediate subnormal cash ratio (≤ the industry median cash ratio at the end of t):							
(11) $(Cash_t – ΔD_t – ΔE_t)÷(Assets_t – ΔD_t – ΔE_t) ≤$Median Cash $Ratio_t$ or $Cash_{t-1}+NCF_t ≤0$	35.8	89.4	96.2	73.2	90.3	79.0	50.4
(12) $(Cash_{t-1}+NCF_{t-1})÷[Assets_{t-1}+(ΔAssets_{t-1} – ΔD_{t-1} – ΔE_{t-1})] ≤$Median Cash $Ratio_{t-1}$ or $Cash_{t-1}+NCF_{t-1} ≤0$	47.8	66.6	78.3	66.1	68.1	69.1	53.6
(13) $[Cash_t – 0.5(ΔD_t+ΔE_t)]÷[Assets_t – 0.5(ΔD_t+ΔE_t)] ≤$Median Cash $Ratio_t$ or $Cash_t – 0.5(ΔD_t+ΔE_t) ≤0$	39.0	83.6	87.3	59.6	84.1	66.5	50.3
Near-term cash depletion (running out of cash at the end of t or t+1):							
(14) $Cash_t – ΔD_t – ΔE_t ≤0$ or $Cash_{t-1}+NCF_t+NCF_{t+1} ≤0$	19.2	82.7	95.3	64.7	84.2	72.3	36.7
(15) $Cash_{t-1}+NCF_{t-1} ≤0$ or $Cash_{t-1}+2×NCF_{t-1} ≤0$	30.5	49.6	68.5	54.7	52.0	58.2	37.0
(16) $Cash_{t-1}$+Median $NCF_t ≤0$ or $Cash_{t-1}$ +Median NCF_t+Median $NCF_{t+1} ≤0$	18.9	44.8	56.1	38.7	46.2	43.0	26.3
(17) $Cash_{t-1}$+Fitted $NCF_t ≤0$ or $Cash_{t-1}$+Fitted NCF_t +Fitted $NCF_{t+1} ≤0$	28.5	49.2	70.7	58.2	51.9	61.3	35.9
(18) $Cash_{t+1} – ΔE_t ≤0$ (DDS (2010))	2.9	4.7	66.2	58.0	12.3	60.0	9.3
(19) $Cash_t – ΔE_t ≤0$ or $Cash_{t+1} – ΔE_t ≤0$	4.3	7.3	77.9	68.5	16.4	70.8	12.2
Near-future cash depletion (running out of cash at the end of t+1 but not at the end of t):							
(20) $Cash_t – ΔD_t – ΔE_t >0$ and $Cash_{t-1}+NCF_t+NCF_{t+1} ≤0$	12.8	8.6	7.1	22.1	8.4	18.4	12.6
(21) $Cash_{t-1}+NCF_{t-1}>0$ and $Cash_{t-1}+2×NCF_{t-1} ≤0$	7.7	8.6	10.8	14.2	8.9	13.4	8.5
(22) $Cash_{t-1}$ +Median $NCF_t >0$ and $Cash_{t-1}$ +Median NCF_t +Median $NCF_{t+1} ≤0$	8.1	10.6	13.6	14.2	11.0	14.1	9.2
(23) $Cash_{t-1}$ +Fitted $NCF_t >0$ and $Cash_{t-1}$ +Fitted NCF_t +Fitted $NCF_{t+1} ≤0$	12.0	16.4	19.2	24.1	16.7	22.9	14.0
Remote-future cash depletion (running out of cash at the end of t+2 but not at the end of t or t+1):							
(24) $Cash_t – ΔD_t – ΔE_t >0$, $Cash_{t-1} +NCF_t +NCF_{t+1} >0$, and $Cash_{t-1} +NCF_t +NCF_{t+1} +NCF_{t+2} ≤0$	9.7	3.4	2.1	9.0	3.2	7.3	8.3
(25) $Cash_{t-1} +NCF_{t-1} >0$, $Cash_{t-1} +2×NCF_{t-1} >0$, and $Cash_{t-1} +3×NCF_{t-1} ≤0$	4.4	3.8	3.6	6.2	3.8	5.6	4.4
(26) $Cash_{t-1}$+Median $NCF_t >0$, $Cash_{t-1}$ +Median NCF_t +Median $NCF_{t+1} >0$, and $Cash_{t-1}$ +Median NCF_t +Median NCF_{t+1} +Median $NCF_{t+2} ≤0$	6.2	6.0	8.1	11.2	6.3	10.4	6.6
(27) $Cash_{t-1}$ +Fitted $NCF_t >0$, $Cash_{t-1}$ +Fitted NCF_t +Fitted $NCF_{t+1} >0$, and $Cash_{t-1}$ +Fitted NCF_t +Fitted NCF_{t+1} +Fitted $NCF_{t+2} ≤0$	9.9	9.0	7.8	14.1	8.9	12.6	10.0

Table 4. Means and medians of control variables sorted by security issues

This table reports the means and medians of the control variables. The medians are reported in the parentheses below the means. See Appendix I and Table 1 for detailed variable definitions.

Panel A. All firms (N=116,488)

VARIABLES	No security issue	Pure debt issue	Dual issues	Pure equity issue	All
Tobin's Q_{t-1}	1.6	1.6	2.1	2.6	1.7
	(1.2)	(1.3)	(1.7)	(1.9)	(1.3)
$Return_{t-1}$(%)	17.1	23.0	46.7	44.8	21.2
	(5.0)	(11.3)	(20.7)	(14.8)	(7.0)
$Return_{t+1, t+3}$(%)	60.3	44.5	10.5	14.9	52.4
	(28.8)	(14.4)	(-24.8)	(-18.8)	(21.8)
Term $Spread_{t-1}$(%)	1.1	1.0	1.0	1.2	1.1
	(1.0)	(0.8)	(0.9)	(1.1)	(1.0)
Default $Spread_{t-1}$(%)	1.1	1.1	1.1	1.1	1.1
	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)
$Ln(Sales)_{t-1}$	5.9	5.9	4.7	4.3	5.8
	(5.8)	(5.8)	(4.7)	(4.3)	(5.7)
$Ln(Age)_t$	2.5	2.3	2.0	2.1	2.4
	(2.5)	(2.3)	(2.0)	(2.0)	(2.4)
$Leverage_{t-1}$(%)	44.9	49.4	54.3	47.5	46.2
	(43.7)	(48.1)	(52.3)	(44.6)	(45.0)
$R\&D_{t-1}$ (%)	3.8	2.6	6.2	11.6	4.2
	(0.0)	(0.0)	(0.0)	(2.7)	(0.0)
Industry $Volatility_{t-1}$ (%)	17.9	15.2	19.3	24.4	17.9
	(11.8)	(10.5)	(14.2)	(20.5)	(12.0)
Dividend $Payer_{t-1}$ (%)	47.7	45.8	24.0	17.4	44.3

Panel B. Firms that are running out of cash and issuing a security in t

	$Cash_{ex\ post} \leqslant 0$ (N=22,948)				$Cash_{ex\ ante} \leqslant 0$ (N=14,491)			
VARIABLES	Pure debt issue	Dual issues	Pure equity issue	All	Pure debt issue	Dual issues	Pure equity issue	All
Tobin's Q_{t-1}	1.5	2.1	2.8	1.8	1.6	2.1	2.6	1.9
	(1.3)	(1.6)	(1.9)	(1.4)	(1.3)	(1.7)	(1.8)	(1.4)
$Return_{t-1}$(%)	23.2	46.7	48.8	30.5	16.0	36.6	25.6	21.1
	(11.3)	(22.0)	(16.7)	(13.0)	(5.7)	(15.0)	(2.3)	(5.9)
$Return_{t+1, t+3}$(%)	42.7	8.7	2.8	31.6	37.7	5.0	10.7	26.6
	(11.7)	(-25.8)	(-31.9)	(0.5)	(6.0)	(-33.3)	(-26.9)	(-6.0)
Term $Spread_{t-1}$(%)	0.9	1.0	1.1	0.9	0.9	0.9	1.1	0.9
	(0.8)	(0.8)	(0.9)	(0.8)	(0.7)	(0.7)	(0.9)	(0.8)
Default $Spread_{t-1}$(%)	1.0	1.1	1.1	1.1	1.0	1.1	1.1	1.1
	(1.0)	(1.0)	(0.9)	(0.9)	(0.9)	(0.9)	(0.9)	(0.9)
$Ln(Sales)_{t-1}$	5.8	4.7	4.1	5.4	5.6	4.5	4.2	5.1
	(5.7)	(4.7)	(4.1)	(5.4)	(5.6)	(4.5)	(4.1)	(5.1)
$Ln(Age)_t$	2.3	2.0	2.0	2.2	2.2	1.9	2.0	2.1
	(2.3)	(2.0)	(1.9)	(2.2)	(2.2)	(1.9)	(2.0)	(2.1)
$Leverage_{t-1}$(%)	50.9	55.5	51.1	51.5	53.0	57.7	54.4	54.0
	(49.6)	(53.7)	(48.9)	(49.9)	(51.7)	(55.4)	(51.8)	(52.1)
$R\&D_{t-1}$ (%)	2.1	5.2	9.6	3.8	2.4	5.8	9.8	4.7
	(0.0)	(0.0)	(0.4)	(0.0)	(0.0)	(0.0)	(0.8)	(0.0)
Industry $Volatility_{t-1}$ (%)	14.0	18.1	21.0	15.7	14.0	19.1	22.3	16.8
	(9.9)	(13.8)	(16.3)	(11.2)	(10.3)	(14.4)	(16.9)	(11.9)
Dividend $Payer_{t-1}$ (%)	45.5	25.2	18.2	38.3	40.9	20.7	17.5	32.3

Table 5. Likelihood of security issues sorted by firm characteristics

This table reports the likelihoods (in percent) of security issues in year t for the subgroups sorted by firm characteristics. The cutoff points are determined each fiscal year. The likelihoods for all debt issues are the sums of the likelihoods of pure debt issues and dual issues. The likelihoods for all equity issues are the sums of the likelihoods of pure equity issues and dual issues. See Appendix I and Table 1 for detailed variable definitions.

	No security issue	Pure debt issue	Dual issues	Pure equity issue	All debt issue	All equity issue	Total
All	70.7	18.7	2.7	8.0	21.4	10.7	100.0
$Cash_{t-1}$÷$Assets_{t-1}$ Quartile:							
1 (low)	66.3	24.6	2.8	6.4	27.4	9.2	100.0
2	67.6	22.8	3.0	6.7	25.8	9.7	100.0
3	72.6	17.6	2.7	7.1	20.3	9.8	100.0
4 (high)	76.1	9.8	2.3	11.9	12.1	14.2	100.0
NCF_{t-1}÷$Assets_{t-1}$ Quartile:							
1 (low)	55.3	22.6	6.0	16.1	28.6	22.1	100.0
2	70.4	20.7	2.2	6.7	22.9	8.9	100.0
3	77.1	17.2	1.3	4.5	18.5	5.8	100.0
4 (high)	79.8	14.3	1.2	4.7	15.5	5.9	100.0
NCF_{t}÷$Assets_{t-1}$ Quartile:							
1 (low)	27.1	45.6	10.0	17.3	55.6	27.3	100.0
2	70.8	22.3	0.4	6.5	22.7	6.9	100.0
3	92.2	4.1	0.1	3.6	4.2	3.7	100.0
4 (high)	92.5	2.7	0.2	4.6	2.9	4.8	100.0
NCF_{t+1}÷$Assets_{t-1}$ Quartile:							
1 (low)	54.1	22.3	6.3	17.3	28.6	23.6	100.0
2	73.4	19.1	1.5	6.0	20.6	7.5	100.0
3	79.5	15.8	0.9	3.7	16.7	4.6	100.0
4 (high)	75.7	17.5	1.8	5.0	19.3	6.8	100.0
NCF_{t+2}÷$Assets_{t-1}$ Quartile:							
1 (low)	58.5	20.2	5.5	15.9	25.7	21.4	100.0
2	75.0	17.7	1.7	5.7	19.4	7.4	100.0
3	77.4	17.3	1.2	4.1	18.5	5.3	100.0
4 (high)	72.4	19.5	2.0	6.1	21.5	8.1	100.0

Table 5 Continued:

	No security issue	Pure debt issue	Dual issues	Pure equity issue	All debt issue	All equity issue	Total
Cash $_{ex\ post}$÷Assets$_{t-1}$ Quartile:							
1	22.1	54.4	9.5	14.1	63.9	23.6	100.0
2	82.9	11.1	0.5	5.5	11.6	6.0	100.0
3	88.6	5.6	0.4	5.5	6.0	5.9	100.0
4	89.0	3.6	0.3	7.0	3.9	7.3	100.0
Cash $_{ex\ ante}$÷Assets$_{t-1}$ Quartile:							
1	56.1	26.3	5.5	12.1	31.8	17.6	100.0
2	70.4	21.4	2.1	6.1	23.5	8.2	100.0
3	75.4	17.0	1.6	6.0	18.6	7.6	100.0
4	80.7	10.0	1.4	7.9	11.4	9.3	100.0
ΔCash$_t$÷Assets$_{t-1}$ Quartile:							
1 (low)	75.4	16.7	2.0	5.9	18.7	7.9	100.0
2	73.2	20.8	1.7	4.3	22.5	6.0	100.0
3	71.3	21.4	2.1	5.2	23.5	7.3	100.0
4 (high)	62.7	15.8	4.8	16.7	20.6	21.5	100.0
ΔNon-Cash Assets$_t$÷Assets$_{t-1}$ Quartile:							
1 (low)	84.9	7.0	1.0	7.2	8.0	8.2	100.0
2	84.7	9.2	0.6	5.5	9.8	6.1	100.0
3	72.5	19.9	1.0	6.7	20.9	7.7	100.0
4 (high)	40.5	38.7	8.1	12.6	46.8	20.7	100.0
Tobin's Q$_{t-1}$ Quartile:							
1 (low)	79.3	16.4	1.1	3.2	17.5	4.3	100.0
2	72.0	20.4	2.1	5.4	22.5	7.5	100.0
3	67.2	21.4	3.4	8.1	24.8	11.5	100.0
4 (high)	64.1	16.4	4.2	15.3	20.6	19.5	100.0
Stock Return$_{t-1}$ Quartile:							
1 (low)	72.8	16.2	2.4	8.6	18.6	11.0	100.0
2	73.6	18.6	2.0	5.8	20.6	7.8	100.0
3	72.0	19.5	2.4	6.1	21.9	8.5	100.0
4 (high)	64.2	20.4	4.0	11.5	24.4	15.5	100.0
Stock Return$_{t+1,\ t+3}$ Quartile:							
1 (low)	60.0	21.3	4.9	13.8	26.2	18.7	100.0
2	72.1	18.5	2.2	7.2	20.7	9.4	100.0
3	75.5	17.6	1.8	5.1	19.4	6.9	100.0
4 (high)	75.0	17.4	1.8	5.8	19.2	7.6	100.0

Table 5 Continued:

	No security issue	Pure debt issue	Dual issues	Pure equity issue	All debt issue	All equity issue	Total
Term Spread$_{t-1}$ Quartile:							
1 (low)	71.3	18.2	2.6	8.0	20.8	10.6	100.0
2	73.6	19.5	1.8	5.1	21.3	6.9	100.0
3	65.5	22.4	3.7	8.4	26.1	12.1	100.0
4 (high)	70.8	17.4	2.7	9.0	20.1	11.7	100.0
Default Spread$_{t-1}$ Quartile:							
1 (low)	71.3	18.2	2.4	8.0	20.6	10.4	100.0
2	68.5	20.1	3.0	8.4	23.1	11.4	100.0
3	67.6	22.4	3.0	6.9	25.4	9.9	100.0
4 (high)	71.7	17.5	2.6	8.1	20.1	10.7	100.0
Ln(Sales)$_{t-1}$ Quartile:							
1 (low)	63.2	16.0	4.5	16.2	20.5	20.7	100.0
2	70.5	19.4	2.6	7.5	22.0	10.1	100.0
3	72.2	20.5	2.1	5.2	22.6	7.3	100.0
4 (high)	76.6	18.8	1.4	3.2	20.2	4.6	100.0
Age$_t$ Quartile:							
1 (young)	63.4	19.8	4.3	12.5	24.1	16.8	100.0
2	68.7	18.9	3.1	9.3	22.0	12.4	100.0
3	72.6	18.3	2.1	7.0	20.4	9.1	100.0
4 (old)	77.7	17.7	1.2	3.4	18.9	4.6	100.0
Leverage$_{t-1}$ Quartile:							
1 (low)	77.1	12.4	1.6	8.8	14.0	10.4	100.0
2	70.3	20.2	2.4	7.2	22.6	9.6	100.0
3	68.6	21.6	2.8	7.0	24.4	9.8	100.0
4 (high)	66.6	20.5	3.9	9.0	24.4	12.9	100.0
R&D$_{t-1}$ Group:							
0 (zero or missing)	68.8	21.9	3.1	6.2	25.0	9.3	100.0
1 (low)	75.7	17.5	1.6	5.2	19.1	6.8	100.0
2 (high)	69.4	13.1	2.8	14.7	15.9	17.5	100.0
Industry Volatility$_{t-1}$ Quartile:							
1 (low)	73.2	20.6	1.9	4.3	22.5	6.2	100.0
2	70.8	19.5	2.7	7.0	22.2	9.7	100.0
3	69.7	17.4	3.0	9.8	20.4	12.8	100.0
4 (high)	68.4	16.7	3.2	11.8	19.9	15.0	100.0
Dividend Payer$_{t-1}$:							
0 (Non-payer)	66.3	18.2	3.6	11.9	21.8	15.5	100.0
1 (Payer)	76.1	19.3	1.4	3.1	20.7	4.5	100.0

Table 6. Multinomial logit for the issuance and choice of securities

This table reports the results for the multinomial logit regressions for the decision to issue only debt, only equity, both debt and equity, or neither debt nor equity (the base case). A firm is defined to have a pure equity issue if ($\Delta E_t \div Assets_{t-1} \geq 0.05$ and $\Delta E_t \div ME_{t-1} \geq 0.03$) and ($\Delta D_t \div Assets_{t-1} < 0.05$ or $\Delta D_t \div ME_{t-1} < 0.03$). A firm is defined to have a pure debt issue if ($\Delta E_t \div Assets_{t-1} < 0.05$ or $\Delta E_t \div ME_{t-1} < 0.03$) and ($\Delta D_t \div Assets_{t-1} \geq 0.05$ and $\Delta D_t \div ME_{t-1} \geq 0.03$). A firm is defined to have dual issues of debt and equity if ($\Delta E_t \div Assets_{t-1} \geq 0.05$ and $\Delta E_t \div ME_{t-1} \geq 0.03$) and ($\Delta D_t \div Assets_{t-1} \geq 0.05$ and $\Delta D_t \div ME_{t-1} \geq 0.03$). $Assets_{t-1}$ and ME_{t-1} denote the book value of assets and the market value of equity, respectively, at the end of fiscal year t-1. Current Depletion Dummy equals one if $Cash_{t-1} + NCF_t \leq 0$ and zero otherwise. Near Depletion Dummy equals one if $Cash_{t-1} + NCF_t > 0$ and $Cash_{t-1} + NCF_t + NCF_{t+1} \leq 0$, and equals zero otherwise. Remote Depletion Dummy equals one if $Cash_{t-1} + NCF_t > 0$, $Cash_{t-1} + NCF_t + NCF_{t+1} > 0$, and $Cash_{t-1} + NCF_t + NCF_{t+1} + NCF_{t+2} \leq 0$, and equals zero otherwise. Note that by definition, $Cash_{t-1} + NCF_t = Cash_{t+1} - \Delta D_t - \Delta E_t$, $Cash_{t-1} + NCF_t + NCF_{t+1} = Cash_{t+1} - \Delta D_t - \Delta E_t - \Delta D_{t+1} - \Delta E_{t+1}$, and $Cash_{t-1} + NCF_t + NCF_{t+1} + NCF_{t+2} = Cash_{t+2} - \Delta D_t - \Delta E_t - \Delta D_{t+1} - \Delta E_{t+1} - \Delta D_{t+2} - \Delta E_{t+2}$. Ex ante measures of cash depletion are similarly defined. Current Depletion Dummy $_{ex\ ante}$ equals one if $Cash_{t-1} + NCF_{t-1} \leq 0$ and equals zero otherwise. Near Depletion Dummy $_{ex\ ante}$ equals one if $Cash_{t-1} + NCF_{t-1} > 0$ and $Cash_{t-1} + 2 \times NCF_{t-1} \leq 0$, and equals zero otherwise. Remote Depletion Dummy $_{ex\ ante}$ equals one if $Cash_{t-1} + NCF_{t-1} > 0$, $Cash_{t-1} + 2 \times NCF_{t-1} > 0$, and $Cash_{t-1} + 3 \times NCF_{t-1} \leq 0$, and equals zero otherwise. Returns are measured as decimals (e.g., a 20% return is measured as 0.20) and spreads are measured as annual percentages. Panel A reports the coefficients and z-statistics, with the base category consisting of firm-years with no security issues. Panel B reports the economic effects. To compute the economic effect of an independent variable on a pure equity issue, for example, we first add one standard deviation of the variable's sample values to its actual value for each observation in our sample, without changing the actual values of other independent variables, and compute the predicted average likelihood of a pure equity issue for all observations using the regressions coefficients. We also subtract its actual value by one standard deviation, without changing the actual values of other variables, and compute the predicted average likelihood of a pure equity issue. We then compute the change in the predicted average likelihood as the economic effect of this variable on a pure equity issue. For brevity, Panel B only reports the changes in the predicted average likelihoods but not the starting and ending values. For example, the economic effect of Current Depletion Dummy is 63.5% (reported in Panel B), which is the difference between the predicted average likelihoods of 69.8% and 6.3% (not reported in Panel B) when the variable equals one and zero, respectively, using the actual values of other independent variables. In the last two columns of Panel B, the subtotal economic effects are reported. For example, the subtotal economic effect of Tobin's Q_{t-1} on all debt issues is the sum of the economic effects of Tobin's Q_{t-1} on pure debt issues and dual issues of debt and equity. See Appendix I for other variable definitions. Z-statistics are in parentheses, calculated using robust standard errors corrected for heteroskedasticity and clustering at the company level. ***, **, and * indicates significance at the 1%, 5%, and 10% level.

Panel A: Coefficients and z-statistics

	(1) Ex post cash need			(2) Ex ante cash need		
VARIABLES	Pure debt issue	Dual issues	Pure equity issue	Pure debt issue	Dual issues	Pure equity issue
Current Depletion Dummy	4.09***	5.87***	2.85***			
	(133.02)	(45.81)	(73.95)			
Near Depletion Dummy	1.22***	2.53***	1.31***			
	(34.58)	(17.34)	(32.54)			
Remote Depletion Dummy	0.56***	1.58***	0.69***			
	(12.00)	(8.40)	(13.68)			
Current Depletion Dummy $_{\text{ex ante}}$				0.79***	1.46***	0.89***
				(39.81)	(29.74)	(30.27)
Near Depletion Dummy $_{\text{ex ante}}$				0.45***	0.96***	0.75***
				(15.09)	(14.26)	(18.71)
Remote Depletion Dummy $_{\text{ex ante}}$				0.21***	0.42***	0.47***
				(5.26)	(4.06)	(8.99)
Tobin's Q_{t-1}	-0.09***	-0.02	0.09***	-0.05***	0.04**	0.12***
	(-6.82)	(-0.74)	(8.18)	(-5.39)	(2.39)	(13.11)
Return_{t-1}	0.07***	0.20***	0.14***	0.18***	0.27***	0.21***
	(2.97)	(2.77)	(5.65)	(11.64)	(5.90)	(9.90)
$\text{Return}_{t+1,\ t+3}$	-0.00	-0.10***	-0.10***	-0.06***	-0.20***	-0.15***
	(-0.70)	(-4.20)	(-7.81)	(-8.11)	(-6.95)	(-10.82)
Term Spread_{t-1}(%)	0.03	0.15***	0.05	0.01	0.14***	0.03
	(1.33)	(3.03)	(1.52)	(0.47)	(3.29)	(1.12)
Default Spread_{t-1} (%)	-0.10**	0.35***	0.35***	-0.18***	0.18**	0.28***
	(-2.21)	(3.79)	(8.01)	(-5.38)	(2.33)	(7.11)
Ln(Sales)_{t-1}	0.04***	-0.12***	-0.18***	-0.00	-0.17***	-0.22***
	(4.20)	(-6.81)	(-18.62)	(-0.63)	(-12.67)	(-24.16)
Ln(Age)_{t}	-0.13***	-0.39***	-0.25***	-0.16***	-0.40***	-0.25***
	(-7.55)	(-11.24)	(-11.60)	(-13.76)	(-13.48)	(-12.60)
Leverage_{t-1}	-0.07	1.16***	0.83***	0.50***	1.56***	1.10***
	(-1.22)	(11.86)	(13.30)	(11.27)	(20.21)	(19.78)
$\text{R\&D}_{t-1}$	-0.18	2.30***	2.76***	-1.62***	1.21***	2.30***
	(-0.87)	(8.43)	(18.88)	(-8.73)	(5.18)	(18.35)
Industry Volatility_{t-1}	0.51***	1.35***	1.03***	-0.55***	-0.16	0.42***
	(3.67)	(4.84)	(6.42)	(-5.42)	(-0.71)	(2.97)
Dividend Payer_{t-1}	-0.15***	-0.40***	-0.52***	-0.03	-0.24***	-0.46***
	(-4.69)	(-5.80)	(-12.15)	(-1.34)	(-4.12)	(-11.63)
Constant	-2.77***	-6.77***	-2.91***	-1.42***	-3.82***	-2.27***
	(-23.12)	(-22.94)	(-18.69)	(-15.51)	(-16.47)	(-15.88)
Industry dummies	Yes			Yes		
Year dummies	Yes			Yes		
Observations	102,773			116,488		
Pseudo R^2 (%)	32.90			10.51		

Panel B. Economic effects (%) of a 2 standard dev. change in the explanatory variable

VARIABLES	No security issue	Pure debt issue	Dual issues	Pure equity issue	All debt issues	All equity issues
Regression (1):						
Current Depletion Dummy	-70.4	52.0	11.5	6.9	63.5	18.4
Near Depletion Dummy	-16.3	5.6	5.6	5.0	11.2	10.6
Remote Depletion Dummy	-7.9	1.7	3.8	2.4	5.5	6.2
Tobin's Q_{t-1}	0.8	-2.8	0.1	2.0	-2.7	2.1
$Return_{t-1}$	-2.3	0.4	0.6	1.3	1.0	1.9
$Return_{t+1,\ t+3}$	2.0	1.1	-0.7	-2.3	0.4	-3.0
Term $Spread_{t-1}$ (%)	-1.2	0.1	0.7	0.4	0.8	1.1
Default $Spread_{t-1}$ (%)	-0.9	-2.1	0.8	2.2	-1.3	3.0
$Ln(Sales)_{t-1}$	2.1	3.6	-0.9	-4.7	2.7	-5.6
$Ln(Age)_{t}$	3.5	-0.6	-1.0	-1.9	-1.6	-2.9
$Leverage_{t-1}$	-1.5	-1.7	1.1	2.1	-0.6	3.2
$R\&D_{t-1}$	-1.9	-1.7	0.7	2.9	-1.0	3.6
Industry $Volatility_{t-1}$	-2.5	0.5	0.6	1.4	1.1	2.0
Dividend $Payer_{t-1}$	3.2	-0.1	-0.5	-2.6	-0.6	-3.1
Regression (2):						
Current Depletion $Dummy_{ex\ ante}$	-17.6	10.2	3.2	4.3	13.4	7.5
Near Depletion $Dummy_{ex\ ante}$	-11.4	4.9	2.3	4.3	7.2	6.6
Remote Depletion $Dummy_{ex\ ante}$	-5.8	2.2	0.8	2.8	3.0	3.6
Tobin's Q_{t-1}	0.1	-2.5	0.2	2.2	-2.3	2.4
$Return_{t-1}$	-7.5	4.5	1.0	2.0	5.5	3.0
$Return_{t+1,\ t+3}$	7.0	-2.2	-1.6	-3.1	-3.8	-4.7
Term $Spread_{t-1}$ (%)	-1.1	0.0	0.8	0.3	0.8	1.1
Default $Spread_{t-1}$ (%)	0.8	-3.2	0.5	2.0	-2.7	2.5
$Ln(Sales)_{t-1}$	5.3	1.4	-1.4	-5.3	0.0	-6.7
$Ln(Age)_{t}$	6.3	-2.9	-1.4	-2.0	-4.3	-3.4
$Leverage_{t-1}$	-6.3	2.2	1.5	2.6	3.7	4.1
$R\&D_{t-1}$	1.5	-5.0	0.5	3.0	-4.5	3.5
Industry $Volatility_{t-1}$	1.6	-2.6	-0.1	1.1	-2.7	1.0
Dividend $Payer_{t-1}$	2.7	0.3	-0.4	-2.6	-0.1	-3.0

Table 7. Alternative cash squeeze measures and multinomial logit for the issuance and choice of securities

This table reports the results for the multinomial logit regressions for the decision to issue only debt, only equity, both debt and equity, or neither debt nor equity, using alternative measures for cash depletion. See Table 6 for the definition of the dependent variable. The independent variables of regression (1) include three cash depletion dummy variables that are based on the firm's lagged cash ratio and its industry median net cash flow (NCF) ratios. Current Depletion $\text{Dummy}_{\text{med NCF}}$ equals one if $\text{Cash}_{t-1} \div \text{Assets}_{t-1}$ +Median NCF $\text{Ratio}_t \leq 0$ and equals zero otherwise. Near Depletion $\text{Dummy}_{\text{med NCF}}$ equals one if $\text{Cash}_{t-1} \div \text{Assets}_{t-1}$ +Median NCF $\text{Ratio}_t > 0$ and $\text{Cash}_{t-1} \div \text{Assets}_{t-1}$ +Median NCF Ratio_t +Median NCF $\text{Ratio}_{t+1} \leq 0$, and equals zero otherwise. Remote Depletion $\text{Dummy}_{\text{med NCF}}$ equals one if $\text{Cash}_{t-1} \div \text{Assets}_{t-1}$ +Median NCF $\text{Ratio}_t > 0$, $\text{Cash}_{t-1} \div \text{Assets}_{t-1}$ +Median NCF Ratio_t +Median NCF $\text{Ratio}_{t+1} > 0$, and $\text{Cash}_{t-1} \div \text{Assets}_{t-1}$ +Median NCF Ratio_t +Median NCF Ratio_{t+1} +Median NCF $\text{Ratio}_{t+2} \leq 0$, and equals zero otherwise. Median NCF Ratio_t denotes the median of the net cash flow in year t divided by beginning-of-year assets (or $\text{NCF}_t \div \text{Assets}_{t-1}$) of firms in the same industry (using the two-digit SIC code), the same tercile of Tobin's Q, and the same tercile of total assets at beginning of the year. Similarly, Median NCF Ratio_{t+1} is the median of $\text{NCF}_{t+1} \div \text{Assets}_{t-1}$, and Median NCF Ratio_{t+2} is the median of $\text{NCF}_{t+2} \div \text{Assets}_{t-1}$. The independent variables of regression (2) include Current Depletion $\text{Dummy}_{\text{fitted NCF}}$, Near Depletion $\text{Dummy}_{\text{fitted NCF}}$, and Remote Depletion $\text{Dummy}_{\text{fitted NCF}}$. They are defined similarly to the three dummy variables on the basis of Median NCF Ratios, expect that Median NCF Ratios are replaced with the fitted values from the regressions in Appendix II. Returns are measured as decimals (e.g., a 20% return is measured as 0.20) and spreads are measured as annual percentages. Panel A reports the coefficients and z-statistics, with the base category consisting of firm-years with no security issues. Panel B reports the economic effects (see Table 6 for details). See Appendix I for other variable definitions. Z-statistics are in parentheses, calculated using robust standard errors corrected for heteroskedasticity and clustering at the company level. ***, **, and * indicates significance at the 1%, 5%, and 10% level.

Panel A: Coefficients and z-statistics

VARIABLES	(1) Cash need using industry median net cash flow			(2) Cash need using fitted value of net cash flow		
	Pure debt issue	Dual issues	Pure equity issue	Pure debt issue	Dual issues	Pure equity issue
Current Depletion Dummy $_{\text{med NCF}}$	1.40***	1.67***	0.99***			
	(59.85)	(31.50)	(27.07)			
Near Depletion Dummy $_{\text{med NCF}}$	0.59***	0.90***	0.65***			
	(19.69)	(13.54)	(15.59)			
Remote Depletion Dummy $_{\text{med NCF}}$	0.34***	0.64***	0.48***			
	(9.71)	(8.25)	(10.28)			
Current Depletion Dummy $_{\text{fitted NCF}}$				0.86***	1.42***	1.02***
				(32.24)	(21.21)	(24.70)
Near Depletion Dummy $_{\text{fitted NCF}}$				0.62***	0.86***	0.77***
				(21.93)	(11.89)	(18.40)
Remote Depletion Dummy $_{\text{fitted NCF}}$				0.28***	0.26***	0.50***
				(8.64)	(2.97)	(11.17)
Tobin's Q_{t-1}	-0.09***	0.01	0.10***	-0.06***	0.03*	0.11***
	(-8.55)	(0.53)	(9.91)	(-6.13)	(1.83)	(10.92)
Return_{t-1}	0.12***	0.20***	0.16***	0.13***	0.20***	0.16***
	(7.76)	(3.74)	(7.28)	(7.85)	(3.81)	(6.95)
$\text{Return}_{t+1,\ t+3}$	-0.05***	-0.18***	-0.14***	-0.03***	-0.15***	-0.12***
	(-6.79)	(-6.17)	(-10.25)	(-4.92)	(-5.26)	(-8.85)
Term Spread_{t-1}(%)	0.00	0.12***	0.03	-0.01	0.11**	0.03
	(0.07)	(2.62)	(1.04)	(-0.45)	(2.41)	(0.88)
Default Spread_{t-1} (%)	-0.15***	0.29***	0.33***	-0.15***	0.30***	0.33***
	(-4.16)	(3.41)	(8.00)	(-4.26)	(3.52)	(7.95)
Ln(Sales)_{t-1}	0.01*	-0.16***	-0.22***	0.04***	-0.13***	-0.18***
	(1.96)	(-10.21)	(-22.16)	(5.34)	(-8.24)	(-18.67)
Ln(Age)_t	-0.18***	-0.45***	-0.29***	-0.12***	-0.37***	-0.23***
	(-13.68)	(-13.76)	(-13.37)	(-9.90)	(-11.28)	(-10.50)
Leverage_{t-1}	0.45***	1.65***	1.11***	0.33***	1.40***	0.88***
	(8.82)	(19.28)	(18.25)	(6.53)	(15.99)	(14.21)
$\text{R\&D}_{t-1}$	-0.76***	2.02***	2.78***	-1.70***	1.24***	2.26***
	(-3.79)	(7.71)	(19.73)	(-8.21)	(4.73)	(16.52)
Industry Volatility_{t-1}	-0.33***	-0.01	0.42***	-0.09	0.46*	0.81***
	(-2.90)	(-0.05)	(2.66)	(-0.82)	(1.80)	(5.24)
Dividend Payer_{t-1}	-0.01	-0.20***	-0.43***	-0.05**	-0.27***	-0.47***
	(-0.42)	(-3.17)	(-10.16)	(-2.26)	(-4.30)	(-11.25)
Constant	-1.51***	-3.88***	-2.11***	-1.73***	-4.26***	-2.53***
	(-15.61)	(-15.53)	(-14.03)	(-17.61)	(-17.05)	(-16.79)
Industry dummies	Yes			Yes		
Year dummies	Yes			Yes		
Observations	102,773			102,773		
Pseudo R^2 (%)	11.77			10.10		

Panel B. Economic effects (%) of a 2 standard dev. change in the explanatory variable

VARIABLES	No security issue	Pure debt issue	Dual issues	Pure equity issue	All debt issues	All equity issues
Regression (1):						
Current Depletion Dummy $_{\text{med NCF}}$	-28.5	21.4	3.5	3.5	24.9	7.0
Near Depletion Dummy $_{\text{med NCF}}$	-12.3	7.3	1.9	3.2	9.2	5.1
Remote Depletion Dummy $_{\text{med NCF}}$	-7.6	3.8	1.3	2.5	5.1	3.8
Tobin's Q_{t-1}	1.7	-3.8	0.1	2.0	-3.7	2.1
$Return_{t-1}$	-5.0	2.8	0.7	1.5	3.5	2.2
$Return_{t+1, t+3}$	6.5	-1.6	-1.5	-3.3	-3.1	-4.8
Term $Spread_{t-1}$ (%)	-0.8	-0.2	0.6	0.4	0.4	1.0
Default $Spread_{t-1}$ (%)	-0.1	-2.8	0.7	2.2	-2.1	2.9
$Ln(Sales)_{t-1}$	4.4	2.4	-1.2	-5.5	1.2	-6.7
$Ln(Age)_{t}$	7.0	-3.1	-1.5	-2.4	-4.6	-3.9
$Leverage_{t-1}$	-5.9	1.7	1.5	2.7	3.2	4.2
$R\&D_{t-1}$	-1.1	-2.8	0.8	3.2	-2.0	4.0
Industry $Volatility_{t-1}$	0.6	-1.6	0.0	0.9	-1.6	0.9
Dividend $Payer_{t-1}$	2.3	0.5	-0.3	-2.5	0.2	-2.8
Regression (2):						
Current Depletion Dummy $_{\text{fitted NCF}}$	-19.6	11.3	3.0	5.2	14.3	8.2
Near Depletion Dummy $_{\text{fitted NCF}}$	-13.6	7.9	1.6	4.1	9.5	5.7
Remote Depletion Dummy $_{\text{fitted NCF}}$	-6.5	3.3	0.3	3.0	3.6	3.3
Tobin's Q_{t-1}	0.7	-2.9	0.2	2.0	-2.7	2.2
$Return_{t-1}$	-5.4	3.2	0.7	1.5	3.9	2.2
$Return_{t+1, t+3}$	5.2	-1.1	-1.3	-2.8	-2.4	-4.1
Term $Spread_{t-1}$ (%)	-0.4	-0.5	0.6	0.3	0.1	0.9
Default $Spread_{t-1}$ (%)	0.0	-2.9	0.7	2.2	-2.2	2.9
$Ln(Sales)_{t-1}$	2.3	3.5	-1.1	-4.8	2.4	-5.9
$Ln(Age)_{t}$	5.4	-2.2	-1.3	-1.9	-3.5	-3.2
$Leverage_{t-1}$	-4.8	1.3	1.3	2.1	2.6	3.4
$R\&D_{t-1}$	1.7	-5.1	0.5	2.9	-4.6	3.4
Industry $Volatility_{t-1}$	-1.0	-0.8	0.3	1.6	-0.5	1.9
Dividend $Payer_{t-1}$	3.1	-0.1	-0.4	-2.6	-0.5	-3.0

Table 8. Cash needs, cash changes, and cash sources

This table reports the results for the firm fixed effects regressions for cash changes. In Panel A, the dependent variable is $\Delta Cash_t \times 100 \div Assets_{t-1}$. The explanatory variables measure firm fundamentals. The dependent variable in Panel B is $Res\ \Delta Cash_t \times 100 \div Assets_{t-1}$, or the residuals from the regressions in Panel A. The explanatory variables measure market conditions. In regressions (1), (5), and (9) of Panel C, the dependent variable is $\Delta Cash_t \div Assets_{t-1}$. In regressions (2), (6), and (10) of Panel C, the dependent variable is $Fitted\ \Delta Cash_t \times 100 \div Assets_{t-1}$, or the fitted values from the regressions in Panel A (the $\Delta Cash_t$ due to fundamentals). In regressions (3), (7), and (11), the dependent variable is $Fitted\ Res\ \Delta Cash_t \times 100 \div Assets_{t-1}$, or the fitted values from the regressions in Panel B (the $\Delta Cash_t$ due to market conditions). In regressions (4), (8), and (12), the dependent variable is $Res\ Res\ \Delta Cash_t \times 100 \div Assets_{t-1}$, or the residuals from the regressions in Panel B (the unexplained $\Delta Cash_t$). A firm is defined to have an equity issue in year t if $\Delta E_t \div Assets_{t-1} \geq 0.05$ and $\Delta E_t \div ME_{t-1} \geq 0.03$. A firm is defined to have a debt issue in year t if $\Delta D_t \div Assets_{t-1} \geq 0.05$ and $\Delta D_t \div ME_{t-1} \geq 0.03$. $Assets_{t-1}$ and ME_{t-1} denote the book value of assets and the market value of equity, respectively, at the end of fiscal year t-1. Returns are measured as decimals (e.g., a 20% return is measured as 0.20) and spreads are measured as annual percentages. See Appendix I for other variable definitions. N denotes the number of observations. Adjusted within R^2s for the firm fixed effects regressions are reported. T-statistics are in parentheses, calculated using robust standard errors corrected for heteroskedasticity and clustering at the company level. ***, **, and * indicates significance at the 1%, 5%, and 10% level.

Panel A: Dependent variable is $\Delta Cash_t \times 100 \div Assets_{t-1}$

Variables	(1) Full Sample	(2) Equity Issue Sample	(3) Debt Issue Sample
$Cash_{t-1} \div Assets_{t-1}$	-44.3***	-42.3***	-52.6***
	(-43.1)	(-10.4)	(-20.3)
ΔNon-Cash $Assets_t \div Assets_{t-1}$	2.1***	5.1***	1.9***
	(6.7)	(5.4)	(4.6)
$NCF_{t+1} \div Assets_{t-1}$	-13.2***	-18.4***	-9.5***
	(-26.0)	(-13.8)	(-11.8)
$NCF_{t+2} \div Assets_{t-1}$	-5.5***	-7.6***	-3.1***
	(-14.8)	(-7.6)	(-5.2)
$Ln(Assets)_{t-1}$	-5.5***	-7.9***	-2.9***
	(-21.3)	(-7.7)	(-5.5)
$Ln(Sales)_{t-1}$	3.0***	4.4***	1.7***
	(11.8)	(5.5)	(3.4)
$Ln(Age)_t$	0.2	0.2	0.4
	(1.5)	(0.2)	(1.5)
$Leverage_{t-1}$	-0.4	-4.6**	0.7
	(-0.7)	(-2.0)	(0.7)
$R\&D_{t-1}$	27.9***	29.2***	21.7***
	(10.7)	(5.0)	(3.1)
Industry $Volatility_{t-1}$	1.5	-7.1	3.5*
	(1.6)	(-1.0)	(1.9)
Dividend $Payer_{t-1}$	-0.3	-0.6	0.0
	(-1.6)	(-0.4)	(0.0)
Constant	21.9***	36.4***	11.1***
	(22.7)	(7.1)	(6.2)
Year Dummies	Yes	Yes	Yes
N	102,773	10,792	21,842
Adjusted Within R^2 (%)	17.9	20.1	17.1

Panel B: Dependent variable is *Res ΔCash$_t$×100 ÷Assets$_{t-1}$*, the residuals from the Panel A regressions

Variables	(1) Full Sample	(2) Equity Issue Sample	(3) Debt Issue Sample
Tobin's Q_{t-1}	2.3***	4.2***	2.2***
	(19.4)	(10.3)	(6.9)
$Return_{t-1}$	0.3***	0.2	0.3
	(4.6)	(0.6)	(1.4)
$Return_{t+1, t+3}$	-0.2**	-1.7***	-0.3***
	(-2.5)	(-7.7)	(-3.2)
Term $Spread_{t-1}$ (%)	0.1	0.4	0.0
	(1.4)	(1.4)	(0.3)
Default $Spread_{t-1}$ (%)	0.9***	2.0***	0.6**
	(9.9)	(3.2)	(2.4)
Constant	-4.9***	-13.0***	-4.2***
	(-19.4)	(-10.3)	(-6.8)
N	102,773	10,792	21,842
Adjusted Within R^2 (%)	3.4	7.2	2.2

Panel C: Sources of the cash change

Dependent variable	ΔE_t ÷$Assets_{t-1}$		ΔD_t ÷$Assets_{t-1}$		ICF_t ÷$Assets_{t-1}$		Constant			Within Adj. R^2 (%)
	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	N	
Full Sample										
(1) *ΔCash$_t$×100÷Assets$_{t-1}$*	59.8***	73.7	10.8***	14.1	26.8***	32.4	-3.0***	-33.0	102,773	39.7
(2) Fitted *ΔCash$_t$*	13.6***	50.1	4.9***	19.5	5.6***	14.0	0.7***	18.3	102,773	12.1
(3) Fitted Res *ΔCash$_t$*	4.2***	33.3	1.9***	19.7	4.3***	21.5	-0.6***	-32.4	102,773	10.7
(4) Unexplained *ΔCash$_t$*	41.9***	52.4	4.0***	5.7	16.9***	18.9	-3.1***	-32.2	102,773	23.8
Equity Issue Sample										
(5) *ΔCash$_t$×100÷Assets$_{t-1}$*	65.4***	48.7	10.1***	5.0	32.2***	15.7	-9.5***	-19.0	10,792	53.7
(6) Fitted *ΔCash$_t$*	18.0***	28.2	9.3***	10.3	6.4***	5.2	7.9***	34.1	10,792	21.7
(7) Fitted Res *ΔCash$_t$*	9.1***	23.0	2.5***	5.4	0.8	1.1	-3.4***	-23.6	10,792	17.8
(8) Unexplained *ΔCash$_t$*	38.2***	27.1	-1.7	-0.9	25.0***	10.7	-14.0***	-27.0	10,792	25.5
Debt Issue Sample										
(9) *ΔCash$_t$×100÷Assets$_{t-1}$*	29.6***	13.8	14.1***	12.2	12.5***	6.5	-2.5***	-8.5	21,842	16.5
(10) Fitted *ΔCash$_t$*	8.8***	13.8	0.8**	2.0	5.8***	8.1	1.5***	15.0	21,842	6.3
(11) Fitted Res *ΔCash$_t$*	1.9***	7.7	2.3***	16.4	1.8***	6.3	-0.7***	-18.8	21,842	10.5
(12) Unexplained *ΔCash$_t$*	18.8***	9.6	11.0***	9.9	4.8**	2.6	-3.2***	-11.7	21,842	9.0

Table 9: Mulitinomial logit for the debt vs. equity choice

This table reports the results for the multinomial logit regressions for the decision to issue only debt, only equity, or both debt and equity. A firm is defined to have a pure equity issue if ($\Delta E_t \div Assets_{t-1} \geq 0.05$ and $\Delta E_t \div ME_{t-1} \geq 0.03$) and ($\Delta D_t \div Assets_{t-1} < 0.05$ or $\Delta D_t \div ME_{t-1} < 0.03$). A firm is defined to have a pure debt issue if ($\Delta E_t \div Assets_{t-1} < 0.05$ or $\Delta E_t \div ME_{t-1} < 0.03$) and ($\Delta D_t \div Assets_{t-1} \geq 0.05$ and $\Delta D_t \div ME_{t-1} \geq 0.03$). A firm is defined to have dual issues of debt and equity if ($\Delta E_t \div Assets_{t-1} \geq 0.05$ and $\Delta E_t \div ME_{t-1} \geq 0.03$) and ($\Delta D_t \div Assets_{t-1} \geq 0.05$ and $\Delta D_t \div ME_{t-1} \geq 0.03$). $Assets_{t-1}$ and ME_{t-1} denote the book value of assets and the market value of equity, respectively, at the end of fiscal year t-1. Regression (1) uses the subsample of firms that issue a security, regression (2) uses the subsample of security issuers that are running out of cash using an ex post measure ($Cash_{ex\ post} \leq 0$), and regression (3) uses the subsample of security issuers that are running out of cash using an ex ante measure ($Cash_{ex\ ante} \leq 0$). Returns are measured as decimals (e.g., a 20% return is measured as 0.20) and spreads are measured as annual percentages. Panel A reports the coefficients and z-statistics, with the base category consisting of firm-years with pure debt issues. Panel B reports the economic effects (see Table 6 for details). In the last two columns of Panel B, the subtotal economic effects are reported. For example, the subtotal economic effect of Tobin's $Q_{t-1} \div Assets_{t-1}$ on all debt issues is the sum of the economic effects of Tobin's $Q_{t-1} \div Assets_{t-1}$ on pure debt issues and dual issues of debt and equity. See Appendix I for other variable definitions. Z-statistics are in parentheses, calculated using robust standard errors corrected for heteroskedasticity and clustering at the company level. Pseudo R^2 w/o year dummy variables is the pseudo R^2 of the multinomial logit regression for which the independent variables include the timing, lifecycle, precautionary saving, and tradeoff proxies and the industry dummy variables but exclude (w/o stands for without) the year variables. Pseudo R^2 w/o industry dummy variables is the pseudo R^2 of the multinomial logit regression for which the independent variables include the timing, lifecycle, precautionary saving, and tradeoff proxies and the year dummy variables but exclude the industry dummy variables. Pseudo R^2 w/o timing is the pseudo R^2 of the multinomial logit regression that excludes Tobin's Q_{t-1}, $Return_{t-1}$, $Return_{t+1,\ t+3}$, Term $Spread_{t-1}$, and Default $Spread_{t-1}$ from the set of independent variables. Alternatively stated, pseudo R^2 w/o timing is the pseudo R^2 of the multinomial logit regression for which the independent variables include the lifecycle, precautionary saving, and tradeoff proxies, as well as the year and industry dummy variables but exclude the proxies for market conditions. Pseudo R^2 w/o lifecycle is the pseudo R^2 of the multinomial logit regression that excludes $Ln(Sales)_{t-1}$ and $Ln(Age)_{t-1}$ from the set of independent variables. Pseudo R^2 w/o precautionary saving is the pseudo R^2 of the multinomial logit regression that excludes $R\&D_{t-1}$, Industry $Volatility_{t-1}$, and Dividend $Payer_{t-1}$ from the set of independent variables. Pseudo R^2 w/o tradeoff is the pseudo R^2 of the multinomial logit regression that excludes $Leverage_{t-1}$ from the set of independent variables. ***, **, and * indicates significance at the 1%, 5%, and 10% level.

Panel A: Coefficients and z-statistics

	(1) All issuers		(2) Issuers with Cash $_{ex\ post} \leq 0$		(3) Issuers with Cash $_{ex\ ante} \leq 0$	
VARIABLES	Dual issues	Pure equity issue	Dual issues	Pure equity issue	Dual issues	Pure equity issue
$Cash_{t-1}$	0.45***	1.55***				
	(2.61)	(12.41)				
$ICF_{t+1,\ t+3}$	-2.69***	-1.74***				
	(-16.01)	(-12.45)				
$Investments_{t-1}$ (%)	1.72***	-0.25**				
	(10.34)	(-2.00)				
Tobin's Q_{t-1}	0.08***	0.20***	0.14***	0.29***	0.11***	0.25***
	(3.82)	(11.56)	(5.87)	(13.59)	(3.80)	(9.59)
$Return_{t-1}$	0.29***	0.20***	0.21***	0.14***	0.25***	0.11***
	(11.57)	(9.65)	(7.85)	(5.75)	(7.43)	(3.70)
$Return_{t+1,\ t+3}$	-0.10***	-0.06***	-0.12***	-0.12***	-0.10***	-0.05***
	(-4.41)	(-5.08)	(-5.12)	(-6.08)	(-3.64)	(-3.35)
Term $Spread_{t-1}$ (%)	0.12***	0.01	0.13***	0.07	0.25***	0.12**
	(2.62)	(0.18)	(2.69)	(1.44)	(4.04)	(2.36)
Default $Spread_{t-1}$ (%)	0.41***	0.54***	0.34***	0.33***	0.29**	0.44***
	(4.94)	(10.00)	(3.36)	(3.82)	(2.44)	(5.08)
$Ln(Sales)_{t-1}$	-0.11***	-0.14***	-0.16***	-0.26***	-0.19***	-0.20***
	(-6.90)	(-12.14)	(-9.94)	(-17.29)	(-9.67)	(-12.28)
$Ln(Age)_{t}$	-0.25***	-0.13***	-0.26***	-0.18***	-0.28***	-0.09***
	(-8.05)	(-5.79)	(-7.89)	(-5.87)	(-6.70)	(-2.75)
$Leverage_{t-1}$	1.02***	0.61***	1.20***	0.66***	1.14***	0.62***
	(11.21)	(7.78)	(12.50)	(7.04)	(9.80)	(5.94)
$R\&D_{t-1}$	1.21***	2.03***	2.51***	2.93***	2.21***	2.79***
	(4.19)	(8.74)	(7.77)	(10.16)	(6.08)	(8.77)
Industry $Volatility_{t-1}$	0.45*	0.84***	0.86***	0.95***	0.78**	1.47***
	(1.81)	(4.73)	(3.05)	(3.70)	(2.17)	(5.27)
Dividend $Payer_{t-1}$	-0.19***	-0.40***	-0.15**	-0.22***	-0.12	-0.25***
	(-3.28)	(-9.50)	(-2.38)	(-3.82)	(-1.43)	(-3.86)
Constant	-2.61***	-1.36***	-2.10***	-1.01***	-1.76***	-1.25***
	(-10.54)	(-7.67)	(-7.97)	(-4.21)	(-5.16)	(-4.54)
Industry dummies	Yes		Yes		Yes	
Year dummies	Yes		Yes		Yes	
Observations	34,191		22,948		14,491	
Pseudo R^2 (%)	17.54		15.22		13.73	
Pseudo R^2 (%) w/o year dummy variables	15.90		13.50		12.06	
Pseudo R^2 (%) w/o industry dummy variables	16.89		14.51		13.12	
Pseudo R^2 (%) w/o timing	16.26		13.46		12.42	
Pseudo R^2 (%) w/o lifecycle	16.92		13.55		12.50	
Pseudo R^2 (%) w/o precautionary saving	17.06		14.60		12.97	
Pseudo R^2 (%) w/o tradeoff	17.27		14.72		13.30	

Panel B. Economic effects (%) of a 2 standard dev. change in the explanatory variable

VARIABLES	Pure debt issue	Dual issues	Pure equity issue	All debt issues	All equity issues
Regression (1):					
$Cash_{t-1}$	-7.9	-0.4	8.3	-8.3	7.9
ICF_{t-1}	12.6	-5.8	-6.7	6.8	-12.5
$Investments_{t-1}$	-1.4	3.7	-2.3	2.3	1.4
Tobin's Q_{t-1}	-8.4	0.1	8.3	-8.3	8.4
$Return_{t-1}$	-8.0	3.4	4.6	-4.6	8.0
$Return_{t+1, t+3}$	3.9	-1.9	-2.0	2.0	-3.9
Term $Spread_{t-1}$ (%)	-1.5	2.1	-0.6	0.6	1.5
Default $Spread_{t-1}$ (%)	-8.6	1.6	7.0	-7.0	8.6
$Ln(Sales)_{t-1}$	9.4	-1.7	-7.6	7.7	-9.3
$Ln(Age)_t$	4.6	-2.6	-2.0	2.0	-4.6
$Leverage_{t-1}$	-6.0	3.0	3.0	-3.0	6.0
$R\&D_{t-1}$	-7.4	0.8	6.5	-6.6	7.3
Industry $Volatility_{t-1}$	-3.8	0.3	3.5	-3.5	3.8
Dividend $Payer_{t-1}$	5.9	-0.4	-5.5	5.5	-5.9
Regression (2):					
Tobin's Q_{t-1}	-10.2	1.6	8.6	-8.6	10.2
$Return_{t-1}$	-5.5	3.3	2.1	-2.2	5.4
$Return_{t+1, t+3}$	6.0	-2.6	-3.5	3.4	-6.1
Term $Spread_{t-1}$ (%)	-3.4	2.5	0.9	-0.9	3.4
Default $Spread_{t-1}$ (%)	-5.0	2.3	2.7	-2.7	5.0
$Ln(Sales)_{t-1}$	14.2	-3.6	-10.5	10.6	-14.1
$Ln(Age)_t$	5.9	-3.5	-2.4	2.4	-5.9
$Leverage_{t-1}$	-6.7	4.7	2.0	-2.0	6.7
$R\&D_{t-1}$	-8.8	3.4	5.4	-5.4	8.8
Industry $Volatility_{t-1}$	-3.9	1.6	2.3	-2.3	3.9
Dividend $Payer_{t-1}$	3.1	-0.9	-2.2	2.2	-3.1
Regression (3):					
Tobin's Q_{t-1}	-10.9	0.6	10.3	-10.3	10.9
$Return_{t-1}$	-5.2	3.7	1.5	-1.5	5.2
$Return_{t+1, t+3}$	4.0	-2.6	-1.5	1.4	-4.1
Term $Spread_{t-1}$ (%)	-6.8	4.6	2.2	-2.2	6.8
Default $Spread_{t-1}$ (%)	-7.4	1.3	6.1	-6.1	7.4
$Ln(Sales)_{t-1}$	14.7	-4.8	-9.8	9.9	-14.6
$Ln(Age)_t$	4.8	-4.2	-0.6	0.6	-4.8
$Leverage_{t-1}$	-7.2	4.5	2.7	-2.7	7.2
$R\&D_{t-1}$	-11.1	2.8	8.3	-8.3	11.1
Industry $Volatility_{t-1}$	-6.4	0.7	5.7	-5.7	6.4
Dividend $Payer_{t-1}$	3.8	-0.3	-3.4	3.5	-3.7

Table 10. Time-varying liquidity, precautionary savings, and net equity issue size

The dependent variable is $\Delta E_t \times 100 \div Assets_{t-1}$, where ΔE_t is the net equity issue in fiscal year t. A firm is defined to have an equity issue if ($\Delta E_t \div Assets_{t-1} \geq 0.05$ and $\Delta E_t \div ME_{t-1} \geq 0.03$). $Assets_{t-1}$ and ME_{t-1} denote the book value of assets and the market value of equity, respectively, at the end of fiscal year t-1. Returns are measured as decimals (e.g., a 20% return is measured as 0.20) and spreads are measured as annual percentages. The OLS panel dataset regressions include firm fixed effects and year fixed effects. $Amihud_t$ is an illiquidity measure, computed for the calendar year that ends prior to the end of fiscal year t. This measure is obtained from Joel Hasbrouck's website that contains the 1926-2005 liquidity estimates. Thus, the sample for this table excludes almost all observations for which this measure has a missing value after 2005. See Appendix I for other variable definitions. T-statistics are in parentheses, calculated using robust standard errors corrected for heteroskedasticity and clustering at the company level. ***, **, and * indicates significance at the 1%, 5%, and 10% level.

	Full Sample		Equity Issue Sample	
VARIABLES	(1)	(2)	(3)	(4)
$R\&D_{t-1}$	27.86***	19.46***	23.58***	8.64
	(9.25)	(6.83)	(3.53)	(1.36)
Industry $Volatility_{t-1}$	-3.86***	-4.22***	-10.92	-5.90
	(-3.73)	(-4.23)	(-1.32)	(-0.71)
Dividend $Payer_{t-1}$	-0.93***	-0.64***	-1.50	-2.11
	(-4.17)	(-3.02)	(-0.93)	(-1.33)
$Amihud_t$	-0.75***		-0.07	
	(-5.21)		(-0.05)	
$R\&D_{t-1} \times Amihud_t$	-13.57***		-11.45	
	(-6.13)		(-1.53)	
Industry Volatility$\times Amihud_t$	-0.06		-8.93	
	(-0.08)		(-1.60)	
Dividend $Payer_{t-1} \times Amihud_t$	0.55***		1.55	
	(4.17)		(0.88)	
$Amihud_{t-1}$		-0.74***		1.32
		(-4.90)		(1.16)
$R\&D_{t-1} \times Amihud_{t-1}$		12.48***		24.33***
		(3.51)		(4.08)
Industry Volatility$\times Amihud_{t-1}$		2.74***		-4.07
		(3.44)		(-0.85)
Dividend $Payer_{t-1} \times Amihud_{t-1}$		0.21		-0.16
		(1.59)		(-0.10)

Table 10 Continued:

	Full Sample		Equity Issue Sample	
VARIABLES	(1)	(2)	(3)	(4)
$Cash_{t-1} \div Assets_{t-1}$	-25.85***	-25.08***	-27.71***	-24.03***
	(-25.57)	(-24.96)	(-5.87)	(-5.12)
$NCF_t \div Assets_{t-1}$	-25.45***	-25.15***	-33.83***	-33.97***
	(-32.56)	(-32.48)	(-16.74)	(-17.48)
$NCF_{t+1} \div Assets_{t-1}$	-11.60***	-11.62***	-15.21***	-16.24***
	(-20.98)	(-20.94)	(-10.85)	(-11.79)
$NCF_{t+2} \div Assets_{t-1}$	-5.73***	-5.67***	-7.92***	-6.85***
	(-13.06)	(-12.73)	(-6.98)	(-5.86)
Tobin's Q_{t-1}	2.41***	2.64***	6.10***	6.46***
	(16.27)	(17.41)	(12.91)	(13.76)
$Return_{t-1}$	0.51***	0.51***	0.76*	0.45
	(3.52)	(3.42)	(1.91)	(1.08)
$Return_{t+1, t+3}$	-0.31***	-0.33***	-1.57***	-1.50***
	(-7.59)	(-7.50)	(-6.07)	(-5.90)
Term $Spread_{t-1}$ (%)	0.02	-0.05	-2.13*	-2.88***
	(0.16)	(-0.47)	(-1.85)	(-2.63)
Default $Spread_{t-1}$ (%)	0.55*	0.63*	4.50	7.11**
	(1.69)	(1.96)	(1.49)	(2.44)
$Ln(Sales)_{t-1}$	-2.73***	-2.39***	-2.74***	-2.06***
	(-15.92)	(-14.19)	(-3.88)	(-2.91)
$Ln(Age)_t$	0.02	0.01	-2.18	-1.71
	(0.12)	(0.04)	(-1.40)	(-1.09)
$Leverage_{t-1}$	12.41***	11.34***	8.60***	5.11*
	(19.34)	(17.95)	(3.36)	(1.93)
Constant	10.94***	8.81***	22.90***	14.95**
	(9.42)	(7.73)	(3.82)	(2.54)
Year Dummies	Yes	Yes	Yes	Yes
Observations	74,225	74,731	7,545	7,570
Adjusted Within R^2 (%)	25.85	25.43	40.14	39.88