Corporate Cash Shortfalls and Financing Decisions

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Abstract

An influential paper by DeAngelo, DeAngelo, and Stulz (2010) concludes that near-term cash needs are the primary motive for seasoned equity offerings. We find that this is even more true for debt issues. Conditional on external financing, Tobin's Q and firm size are highly important predictors for the choice between debt and equity, even for firms that are running out of cash. Our findings suggest that a near-term cash need is the primary motive for debt issues, but market timing, precautionary saving, and corporate lifecycle motives are economically important for equity issues and the debt versus equity choice.

Key Words: Cash Holding, Cash Need, Equity Issue, Debt Issue, Security Issue, Financing Decision, Capital Structure, Market Timing, Precautionary Saving, Corporate Lifecycle, Financial Flexibility, Static Tradeoff

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1. Introduction

This paper documents the economic importance of near-term cash needs in predicting debt and equity issue decisions of U.S. firms during 1972-2010. Our findings contribute to the literature on securities issuance, capital structure, and cash savings , and provide strong support for a modified version of the pecking order theory that incorporates market timing, precautionary saving, and corporate lifecycle motives.[1]

The standard pecking order theory predicts that firms raise external funds only after they have exhausted internal funds, and that they raise external equity only after they have exhausted debt capacity (Myers (1984)). Consistent with this theory, we find that firms issue securities primarily to fund immediate cash needs rather than future cash needs, and that an immediate cash need is the dominant predictor for the decision to issue debt.

Non-pecking order theories suggest that firms issue securities even if they do not have immediate cash needs. 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. The precautionary saving theory posits that firms without immediate cash needs issue securities when capital can be raised on attractive terms (McLean (2011)). Both the market timing and precautionary saving theories allow the cost of capital to vary across time. The corporate lifecycle theory posits that young firms rely more on external equity than old firms (DeAngelo, DeAngelo, and Stulz (2010)). The static tradeoff theory emphasizes adjustment toward an optimal leverage ratio.

[1] See Loughran and Ritter (1995), Opler, Pinkowitz, Stulz, and Williamson (1999), Hovakimian, Opler, and Titman (2001), Baker and Wurgler (2002), Baker, Greenwood, and Wurgler (2003), Frank and Goyal (2003), Hovakimian (2004), Welch (2004), Fama and French (2005), Leary and Roberts (2005), Flannery and Rangan (2006), Kim and Weisbach (2008), Bates, Kahle, and Stulz (2009), Huang and Ritter (2009), Billett, Flannery, and Garfinkel (2011), and Denis and McKeon (2012), among others.

Our findings suggest that market timing, precautionary saving, and corporate lifecycle theories are economically important in explaining the decision to issue equity and the choice between debt and equity. Tobin's Q and firm size are highly important determinants for the decision to issue equity and the choice of issuing debt or equity. Conditional on running out of cash and raising external funds, Tobin's Q and firm size are the two most important determinants for the debt versus equity choice, suggesting that immediate cash needs are not incompatible with other motives such as market timing. A measure of immediate cash needs using only ex ante information (with predicted spending) is less predictive than an ex post measure (which uses actual spending), suggesting that using an ex post measure tends to overstate the importance of immediate cash needs relative to that of non-pecking order proxies. Consistent with the tradeoff theory, lagged leverage is positively associated with the likelihood of an equity issue, although its economic effect is secondary.

It is important to distinguish between near-term cash needs and future cash needs. Recently, the economic importance of explicit measures of near-term cash needs as a motivation for equity issues 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 without the proceeds. In other words, for most SEO firms, the proceeds are quickly spent instead of being stockpiled for future use, consistent with Myers' (1984) pecking order theory. 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 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. They conclude that a near-term cash need is the primary motive for SEOs, and that both the market timing and corporate lifecycle theories are of secondary importance. To alleviate potential endogeneity concerns, they conduct a robustness test by further 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 most SEO issuers would have run out of cash.

DDS also estimate logit regressions for the decision to conduct an SEO. They find that many companies with high Tobin's Q, large stock price runups, and low future stock returns do not conduct an SEO, and that the probability of an SEO is much higher for young firms than for old firms. They thus question the economic significance of market timing in explaining equity issue decisions and interpret the facts as consistent with the corporate lifecycle theory being more important than the market timing theory.

In another important paper that explicitly measures an immediate cash need, Denis and McKeon (2012) document that debt issues accompanied by large leverage increases are primarily used to fund immediate operating needs, and that there is little attempt to subsequently reduce the debt ratio, inconsistent with the static tradeoff model. Our paper differs from the work of DDS and Denis and McKeon in several important regards.

First, we study the role of both external equity and external debt in funding near-term cash shortfalls. Consistent with the finding of DDS, we find that most firms that issue equity in year t would run out of cash if they do not issue any security in t and t+1, holding other sources and uses of cash at their actual values. We also find that most debt issuers are also running out of cash, consistent with Denis and McKeon (2012), who focus on a much smaller sample of debt issues associated with large leverage increases. Extending this prior work, we examine the choice between debt and equity to fund immediate cash needs. We document that debt issues are

about twice as common as equity issues, and that near-term cash shortfalls are more frequently funded with debt than with equity, consistent with the standard pecking order theory. We also find some evidence that the more a firm needs cash, the more likely that it will issue debt rather than equity, inconsistent with the standard pecking order theory, which would predict that firms with the biggest cash needs might have already used up their debt capacity. In our sample, 57.1% of firms that issue only equity, 89.2% of firms that issue both debt and equity, and 69.9% of firms that issue only debt would run out of cash at the end of year t+1 if they have zero net debt and net equity issues in t and t+1 and other sources and uses of cash stay the same.

Second, we examine security issues more broadly 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 are at least 5% of beginning-of-year assets. In our definition, equity issues include SEOs, private placements in public equity (PIPEs), stock option and warrant exercises, employee stock purchases, and preferred stock issues.[2] Similarly, debt issues include straight and convertible bond offerings and increases in bank loans. One argument against the market timing theory is that many firms with good market timing opportunities do not conduct SEOs. Our broader definition of equity issues permits market timing via non-SEO equity issues. In our sample, an equity issue occurs in 11.3% of the firm-years. In sharp contrast, DDS document that the probability of an SEO in a given year is 3.4%. This large difference partly explains why we reach different conclusions than they do on the economic significance of near-term cash needs and other determinants of equity issues.

[2] Since we require a one-year stock return prior to the beginning of the current fiscal year, initial public offerings (IPOs) are not included in our sample. Because cash flow statements are used, stock-financed acquisitions are not counted as equity issues in this paper. Fama and French (2005) document that although SEOs are rare, 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.

Third, in addition to cash need measures using ex post cash uses, we also construct ex ante cash need measures using only information prior to debt and equity issues, to avoid a look-ahead bias. Firms are less likely to run out of cash on the basis of ex ante measures instead of ex post measures. In contrast, both DDS and Denis and McKeon (2012) rely primarily on ex post measures of cash shortfalls.

Finally, and most importantly, we use a near-term cash need measure as an independent variable and estimate multinomial logit regressions of financing decisions, conditional or unconditional on the decision to issue a security. These regressions allow us to compare the marginal economic significance of immediate cash needs and other traditional determinants. Furthermore, controlling for a near-term cash need sharpens the interpretation of the coefficients on other independent variables. For example, without controlling for a near-term cash need, a finding that a firm with a higher Tobin's Q is more likely to issue equity can be interpreted as consistent with the conjecture that the firm has an urgent need for cash to take advantage of positive net present value investment opportunities. After controlling for a near-term cash need, the finding would provide more support for the market timing and precautionary saving theories. In a frictionless economy, a firm without immediate cash needs would find it optimal to wait to issue securities later when it needs the cash, because of the opportunity costs of cash holdings.

To our best knowledge, the literature has not estimated a multinomial logit model that compares the economic significance of near-term cash shortfalls and other determinants of both debt and equity issue decisions. Huang and Ritter (2009) study the decision to raise external capital and the choice between debt and equity, but they do not control for near-term cash needs in their nested logit regressions. DDS do not examine the choice between debt and equity and do not include a near-term cash shortfall measure as an independent variable in their logit

regressions for the decision to conduct an SEO. Denis and McKeon (2012) focus on only debt issues associated with large leverage increases, and do not estimate a multinomial logit model.[3]

To predict a security issue in year t at the end of year t-1, we construct several projected cash ratios for each firm to measure its cash shortfall in year t, assuming no external financing in year t. The projected cash ratios are computed on the basis of the cash flow identity: Investments + ΔNWC + Cash Dividends – ICF ≡ ΔD + ΔE, where ΔNWC is the change in net working capital, ICF is the internal cash flow, ΔD is the net external debt issue, and ΔE is the net external equity issue (see the Appendix for details).

We focus on two projected cash ratios as cash need measures. Our first projected cash ratio, $\text{Cash}_{\text{ex post}}$, is defined as $(\text{Cash}_{t-1} + \text{ICF}_t - \text{Investments}_t - \Delta\text{Non-Cash NWC}_t - \text{Cash Dividends}_t) \div \text{Assets}_{t-1}$, where $\Delta\text{Non-Cash NWC}_t$ is the change in non-cash net working capital. The larger the value of this measure, the less likely it is that a firm will run out of cash if it does not issue external equity or debt. If issuers of securities merely stockpile the issue proceeds, then $\text{Cash}_{\text{ex post}}$ will not be an important predictor of issuance or what security is issued.

When $\text{Cash}_{\text{ex post}}$ is used to predict financing decisions in year t, the ICF, investments, ΔNon-Cash NWC, and cash dividends in year t are assumed to be exogenously determined at the beginning of year t. It is plausible that some firms use more cash in year t only because they successfully raise external capital in the same year. To mitigate the causality problem, we also use lagged values of the cash flow items to construct an ex ante projected cash ratio, $\text{Cash}_{\text{ex ante}}$. Specifically, it equals $(\text{Cash}_{t-1} + \text{ICF}_{t-1} - \text{Investments}_{t-1} - \Delta\text{Non-Cash NWC}_{t-1} - \text{Cash Dividends}_{t-1}) \div \text{Assets}_{t-1}$.

[3] Hovakimian (2004) estimates a multinomial logit model for financing decisions, but he does not focus on the role of cash shortfalls and does not evaluate the economic effects of the independent variables.

We first estimate multinomial logit regressions for the decision to issue debt, equity, both debt and equity, or neither debt nor equity. The ex post measure of cash shortfall, $\text{Cash}_{\text{ex post}}$, is an important determinant of equity issues, even after controlling for other important determinants suggested by the literature. Economically, if we change the actual value of $\text{Cash}_{\text{ex post}}$ for each observation in our sample from one standard deviation below to one standard deviation above its actual value, without changing the actual values of other independent variables, then the predicted likelihood of an equity issue in a given year on average decreases by 11.4%, from 17.3% to 5.9%, a decrease of almost 66%.

$\text{Cash}_{\text{ex post}}$ is much more economically significant for debt issues than for equity issues. A two standard deviation increase in $\text{Cash}_{\text{ex post}}$ on average reduces the likelihood of a debt issue by 53.3% (from 58.9% to 5.6%, a decrease of over 90%). The economic effect of $\text{Cash}_{\text{ex post}}$ dwarfs those of other determinants of debt issues, suggesting that $\text{Cash}_{\text{ex post}}$ dominates market timing, corporate lifecycle, precautionary saving, and static tradeoff proxies in predicting debt issues. The decrease in the likelihood for a debt issue of 53.3% is much larger than the decrease for an equity issue of 11.4%, suggesting that external debt is a more important source than external equity in meeting corporate cash needs, consistent with the pecking order theory of capital structure. The economic effects of $\text{Cash}_{\text{ex post}}$ on financing decisions are large, given that the unconditional probabilities of debt issues and equity issues for the firm-year observations in our sample are 22.0% and 11.3%, respectively.

Although $\text{Cash}_{\text{ex post}}$ is the dominant predictor for debt issues, its economic effect on equity issues is comparable in magnitude to those of the key predictors suggested by the precautionary saving, corporate lifecycle, and market timing theories, inconsistent with DDS, who conclude that a near-term cash need is the primary motive for SEOs. Simply put, a near-

term cash need is not the only important motive for equity issues. Even after controlling for a near-term cash need, a two standard deviation increase in Tobin's Q still increases the likelihood of an equity issue by 10.2%, while a two standard deviation increase in firm size, as measured by the natural logarithm of net sales, still reduces the likelihood of an equity issue by 9.5%. Consistent with the precautionary saving and corporate lifecycle theories, smaller and younger firms are more likely to issue equity. Firms with a higher Tobin's Q and a higher stock return in year t-1 are more likely to issue equity, consistent with the precautionary saving and market timing theories. Firms with a lower return from t+1 to t+3 are more likely to issue equity, consistent with the market timing theory. The economic effects of Tobin's Q and stock returns combined are comparable to those of firm size and age combined, suggesting that the corporate lifecycle and market timing theories have similar explanatory power for equity issues.

Our ex ante measure of cash shortfall, $\text{Cash}_{\text{ex ante}}$, is still important in predicting security issues, although it has less explanatory power than $\text{Cash}_{\text{ex post}}$. It is still the primary predictor for debt issues. Economically, a two standard deviation increase in $\text{Cash}_{\text{ex ante}}$ will on average decrease the predicted likelihood of debt issues by 16.6%. The economic effect of $\text{Cash}_{\text{ex ante}}$ is still much larger than those of other determinants of debt issues, consistent with the pecking order theory. For equity issues, $\text{Cash}_{\text{ex ante}}$ has an economic effect of 5.2% and is less predictive than firm size, Tobin's Q, and the stock return in the following three years.

We also estimate a multinomial logit regression for the choice of securities, conditional on external financing. Tobin's Q and firm size are two important predictors for the debt versus equity choice. Firms with larger cash needs are more likely to issue debt instead of equity, inconsistent with the strict pecking order. We further estimate a multinomial logit regression for the choice of securities, conditional on doing external financing *and* running out of cash. Tobin's

Q and firm size are the two most important predictors for the debt versus equity choice, suggesting that immediate cash needs are not incompatible with market timing and corporate lifecycle motives. Furthermore, firms with lower stock returns in the following three years are more likely to issue equity instead of debt. Consistent with DDS and Myers (1984), a cash shortfall is the most important determinant of whether a firm does external financing. Inconsistent with these papers, however, we find that the market timing, precautionary savings, and corporate lifecycle theories are economically important in explaining the debt versus equity choice, even for firms that are running out of cash. In other words, companies usually raise cash only when they need to, but if firm is young or equity is cheap, the firm will issue equity rather than debt.

2. Data, Variables, and Summary Statistics

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 in fiscal year t and t-1. Since the statement of cash flow information is only available from 1971, our final sample starts from 1972.[4] Since we also require stock returns in the three years after each financing decision, our sample period ends at 2010. We also drop firm-year observations for which a variable used in our paper has a missing value, the net sales is not positive, the book value of total 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 total assets at the end of year t-2 is

[4] 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.

missing, the cash flow identity is violated, or there is a major merger.[5] To avoid the effect of regulations on financing choices, we remove financial and utility firms from our analysis. Our final sample includes 122,510 firm-year observations from 1972-2010.

The variables used in this paper include cash shortfall measures and their components, Tobin's Q, the stock return in year t-1, the stock return from t+1 to t+3, the natural logarithm of net sales, the natural logarithm of firm age, book leverage, industry fixed effects, and year fixed effects. Detailed definitions of these variables are provided in the Appendix. To minimize the influence of outliers, all non-categorical variables except for the stock returns are winsorized at the 0.5% level at each tail of our sample.

We use Tobin's Q, the stock return in year t-1, and the stock return in year t+1 to t+3 as market timing proxies (see Baker and Wurgler (2002), Huang and Ritter (2009), and DDS). The post-issue stock long-run performance is extensively studied in the literature.[6] Tobin's Q and the stock return in year t-1 could also measure precautionary saving motives if cash savings are more important for growth firms. Note, however, the precautionary saving theory has a market timing flavor in that it also assumes time-varying costs of capital.[7] 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 proxies for corporate lifecycle effects. If cash savings are more important for young and small

[5] 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.

[6] The literature has studied long-run stock performance following not only SEOs, but also other forms of equity issues and other securities issues. Daniel and Titman (2006) 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. One could argue that employees and private investors are more informed than the public and should not be willing to accept overvalued shares. However, we note that their willingness depends on their ability to flip their shares to the public.

[7] To help illustrate this point, assume that firm A has a higher Tobin's Q than firm B, but they have the same near-term cash need and other firm characteristics. It is possible that firm A is more likely to issue equity for a precautionary purpose as it will need more capital in the future. However, one could argue that firm A should be no more likely to issue equity now than firm B because they have the same near-term cash need. If firm B can wait, firm A can wait too. In this sense, firm A is timing the market by issuing equity now instead of waiting to issue in the future when it needs cash.

firms, then firm size and age can also be viewed as proxies for precautionary savings. We also control for other determinants, such as lagged leverage, as suggested by the static tradeoff theory.

2.2. Summary Statistics

Figure 1A shows the likelihood of cash depletion on the basis of $\text{Cash}_{\text{ex post}}$. The likelihood of cash depletion is 75.8% for debt issuers. For equity issuers, the likelihood of cash depletion is 51.6%, consistent with the findings of DDS. Note that a firm is defined as a debt issue or an equity issuer if net debt or net equity proceeds are at least 5% of beginning-of-year assets. A larger relative issue size is generally associated with a higher likelihood of cash depletion, suggesting that a firm that raises more external capital has a larger financing need.[8]

Figure 1B shows the likelihood of cash depletion on the basis of $\text{Cash}_{\text{ex ante}}$. $\text{Cash}_{\text{ex ante}}$ is fully ex ante because it only uses information prior to year t. It assumes that the ICF, investments, ΔNon-Cash NWC, and cash dividends in year t will stay the same as those in year t-1. For both debt issuers and equity issuers, the likelihoods on the basis of $\text{Cash}_{\text{ex ante}}$ are lower than those on the basis of $\text{Cash}_{\text{ex post}}$. The positive correlation between issue size and the likelihood of cash depletion is also weaker in Figure 1B than in Figure 1A.

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. Issuance years are defined as years in which the amount of net debt or net equity changes by at least 5% of beginning-of-year assets, using cash flow statement information. Using this information, in 69.7% of firm-years, there is no security issue.

[8] McLean (2011) finds that firms increasingly issue equity for the purpose of cash savings, using offerings from 1971-2008. His sample of equity issues includes those with the proceeds being less than 5% of beginning-of-year assets.

A debt issue occurs more often than an equity issue. A pure debt issue occurs in 19.0% of firm-years, a pure equity issue occurs in 8.3% of firm-years, and dual issues of debt and equity occur in 3.0% of firm-years. An equity issue occurs in 11.3% of firm-years in our sample. For comparison, DDS document that the probability of an SEO in a given year is 3.4%.[9]

Conditional on issuing a security, the likelihoods of a pure debt issue, dual issues, and a pure equity issue are 62.7%, 9.9%, and 27.3%, respectively. Conditional on issuing a security and running out of cash at the end of year t without a debt or equity issue in year t, the likelihoods of a pure debt issue, dual issues, and a pure equity are 70.8%, 13.0%, and 16.2%, respectively. Note that conditioning on running out of cash unless external financing is raised increases the probability of a debt issue and decreases the probability of an equity issue. Among issuers that are not running out of cash, the likelihood of a pure equity issue is much higher at 48.6%. Among all equity issues, 7,129 issues occur when firms are running out of cash, and 6,680 issues occur when firms are not running out of cash. Some of the latter equity issues involve the exercise of employee stock options. Although they 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. Net debt issuance activity, on the other hand, is always active.

[9] An SEO in the DDS sample will not be identified as an equity issue in our sample if the sum of all equity issues and repurchases in a year is less than 5% of the beginning of year assets. Our equity issuance probabilities are lower than those reported in Fama and French (2005), who do not impose a 5% of assets minimum, and who include share issuances that do not generate cash, such as stock-financed acquisitions and contributions to employee stock ownership plans (ESOPs). We randomly select 50 equity issuers based on our definition and check Thomson Reuters' SDC new issue database, Sagient Research's PlacementTracker database, and the annual reports on the SEC's EDGAR website. We are able to confirm that an SEO occurs in 18 and a PIPE occurs in 16 of the 50 firm-years with an equity issue, employee stock purchases and exercises of options and warrants are the primary form of equity issue in six firm-years, and a preferred stock (convertible or straight) issue is the primary form of equity issue in four firm-years. Information from EDGAR suggests that SDC misses three of the 18 SEOs. For one of the 50 equity issuers, Compustat misclassifies a public debt offering as an equity offering. We are unable to confirm the equity type(s) for seven equity issues. McKeon (2014) reports that a 3% of assets screen removes most firm-years with stock option exercises from the equity issuance category.

Table 2 reports the means for the components of cash flows. On average, pure equity issuers and dual issuers have the lowest internal cash flow as a percent of assets, suggesting that they are less able to rely on internally generated funds. Dual issuers make the largest investments relative to their assets, followed by pure debt issuers, pure equity issuers, and firms with no security issues. The mean of Cash Dividends ÷Assets 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 change in net working capital as a percent of assets has a mean that varies from 0.2% for firms with no security issues to 20.1% for dual issuers. The change in net working capital appears positively correlated with investments, suggesting that firms have to increase their working capital to support their investment increases.

Table 2 does not consider the cash holding that a firm has at the beginning of the year. Firms could fund their uses of cash by using previously accumulated cash. Table 3 reports the summary statistics for cash, excess cash (i.e., industry-adjusted), and projected ratios. Panel A of Table 3 reports the means of cash and excess cash as a percent of assets at the end of each year from t-1 to t+1. Notably, pure equity issuers have much higher mean cash ratios in the year before, the year of, and the year after the issue than the other sets of firms. The persistently higher cash ratios of pure equity issuers suggest a potential stockpiling effect: These firms issue equity even when they start with a higher cash ratio.

A higher cash ratio can be optimal for firms that face financial constraints and have more growth opportunities (Opler, Pinkowitz, Stulz, and Williamson (1999) and McLean (2011)). To control for the effects of industry, growth opportunities, and firm size on cash holdings, we compute the excess cash ratios as the difference between the cash ratio of the firm and the

industry median cash ratio 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 have a positive mean excess cash ratio of 4.3% at the end of year t-1, but still choose to raise more equity capital. The mean excess ratio increases to 5.9% at the end of year t, suggesting that equity issuers do not use all of the issue proceeds during year t. The mean excess cash ratio drops in year t+1 to 5.4%, indicating a weak cash stockpiling effect.

Panel B of Table 3 reports the summary statistics for the projected cash ratios. Intuitively, we want to know what the cash ratios would be with the projected uses of cash and internal cash flow if the firms had chosen to issue neither debt nor equity. The first two projected cash ratios, $\text{Cash}_{\text{ex post}}$ and $\text{Cash}_{\text{ex ante}}$, are as defined earlier. Firms could sit on newly raised cash in year t and spend all of it in year t+1. We thus also forecast cash ratios at the end of year t+1, $\text{Cash}_{\text{ex post}} + \text{FCF}_{t+1}$, where $\text{FCF}_{t+1} = (\text{ICF}_{t+1} - \text{Investments}_{t+1} - \Delta\text{Non-Cash NWC}_{t+1} - \text{Cash Dividends}_{t+1}) \div \text{Assets}_{t-1}$, which assumes net equity issues and net debt issues are zero and that other cash flow items are exogenous in both t and t+1. $\text{Cash}_{\text{ex ante}} + \text{FCF}_{t-1}$, where $\text{FCF}_{t-1} = (\text{ICF}_{t-1} - \text{Investments}_{t-1} - \Delta\text{Non-Cash NWC}_{t-1} - \text{Cash Dividends}_{t-1}) \div \text{Assets}_{t-1}$, also assumes zero net equity issues and net debt issues, and no changes in other cash flow items in t and t+1.

Note that $\text{Cash}_{\text{ex post}}$ and $\text{Cash}_{\text{ex ante}}$ are the projected cash scaled by the book value of assets at the end of year t-1. However, security issuers generally have larger assets after the issue than before the issue. One could argue that when firms become larger, they should have more cash to support their operations. To assess the impact of the choice of the denominator, we also try $\text{Cash}_{\text{ex post}} \times \text{Assets}_{t-1} \div \text{Assets}_t$ and $\text{Cash}_{\text{ex ante}} \times \text{Assets}_{t-1} \div \text{Assets}_t$, which rescale the projected cash amount by the book value of total assets at the end of year t instead of year t-1.

In Panel B, dual issuers have the lowest mean projected cash ratios, suggesting that these firms have the largest cash shortfalls. It also appears that a near-term cash need is a less important motive for pure equity issues than it is for pure debt issues.

Following DDS, we further present the likelihoods of cash depletion on the basis of the six projected cash ratios in Panel C. Firms that issue both equity and debt are the most likely to run out of cash without external financing. For example, 86.2% of dual issuers would have run out of cash on the basis of $\text{Cash}_{\text{ex post}}$. If we use $\text{Cash}_{\text{ex ante}}$, the likelihood of cash depletion for dual issuers is much lower, but still high, at 55.9%. The differences in the likelihood of cash depletion between using $\text{Cash}_{\text{ex post}}$ and $\text{Cash}_{\text{ex ante}}$ suggest that on average firms spend more cash following debt and equity issues than they would have if they didn't issue. Pure debt issuers are more likely to run out of cash than pure equity issuers. On the basis of $\text{Cash}_{\text{ex post}}$, the likelihood of cash depletion is 74.1% for pure debt issuers and 39.1% for pure equity issuers.

Panel D reports the likelihood of having a cash ratio below the median of firms in the same industry and the same Tobin's Q and assets terciles. The patterns are similar to those in Panel C. Note that, for a randomly selected firm, the likelihood of having a cash ratio below the median of the firms in the same industry is 50%.

On the basis of high likelihoods of cash depletion without the SEO proceeds, DDS conclude that near-term cash shortfalls are the primary motive of SEOs. While it is tempting to draw the same conclusion based on our Table 3 results using the ex post cash shortfall measures, we provide three cautionary notes. First, if an equity issuer uses more cash merely because it has raised equity capital, then the ex post measures will overstate the likelihood of cash depletion without an equity issue. Only a fully ex ante measure would avoid this problem. Second, it is important to control for other determinants when analyzing the role of immediate cash shortfalls

in financing decisions. Third, firms that are running out of cash might still time the markets when choosing between debt and equity. So immediate cash needs are not completely incompatible with the market timing and corporate lifecycle motives.

The summary statistics in Table 3 suggest that a near-term cash need is often more important for pure debt issues than for pure equity issues, but do not control for other determinants of security issues.

Table 4 presents the means for the control variables that are used in our regressions. Panel A presents the means for the full sample of firm-years. Among the four sets 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 stock returns of 47.0% and 56.5%, respectively, in year t-1, and the lowest 3-year buy-and-hold stock returns of 16.8% and 10.3% from year t+1 to t+3, consistent with the market timing literature. The average stock return from t+1 to t+3 is much higher for pure debt issuers than for equity issuers. Equity issuers have the smallest firm size as measured by the natural logarithm of net sales, and are younger than other firms. Pure equity issuers also have lower lagged leverage ratios than pure debt issuers and dual issuers. Therefore, it is important to control for lagged leverage when evaluating the choice between debt and equity in funding immediate cash shortfalls.

To understand the differences between young and old firms, Panels B and C of Table 4 report the mean 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.

Cash needs and market timing motives are not mutually exclusive 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 and use the proceeds for investments about which investors are overly optimistic. Panels D-F of Table 4 report the mean characteristics for firms that are running out of cash and issuing a security. Panel D shows that 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 5.1%, suggesting that these firms are still able to time the equity market when choosing between debt and equity. Panels E and F show that the patterns hold for both young and old firms. It is difficult to justify this extremely low return with any risk adjustments. These findings suggest that firms successfully time the market to issue equity and quickly spend the proceeds. Whether the low subsequent stock returns 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 helps to evaluate the effects of our cash shortfall measures and control variables on the propensities to issue securities. We first assign each firm-year into one of the five quintiles for each variable. We then compute for each quintile the proportion of firm-years that fall into one of the four categories of security issue choices.

For firms in the first quintile of $\text{Cash}_{\text{ex post}}$, the probabilities of a pure debt issue and dual issues are 60.4% and 12.6%, respectively. In the fifth quintile, the probabilities of a pure debt issue and dual issues drop to 3.4% and 0.6%, respectively. In contrast, cash needs play a much less important role in pure equity issue decisions. For firms in the first and fifth $\text{Cash}_{\text{ex post}}$ quintiles, the probabilities of pure equity issues are 14.3% and 9.3%, respectively. Thus, for

firms with the largest and smallest near-term cash needs, the probabilities of a pure equity issue differ by only 5%.

$\text{Cash}_{\text{ex ante}}$ plays a less dominant role than $\text{Cash}_{\text{ex post}}$ in debt issues. But $\text{Cash}_{\text{ex ante}}$ still plays an important role in debt issue decisions. In the first quintile of $\text{Cash}_{\text{ex ante}}$, the probabilities of a pure debt issue and dual issues are 27.1% and 6.9%, respectively. In the fifth quintile, the probabilities of a pure debt issue and dual issues of both debt and equity drop to 9.8% and 1.8%, respectively. For the firms with the largest and smallest $\text{Cash}_{\text{ex ante}}$, the probabilities of pure equity issues are 12.4% and 10.1%, respectively, suggesting that some firms with large projected cash ratios still choose to issue equity. $\text{Cash}_{\text{ex ante}}$ is even less important than $\text{Cash}_{\text{ex post}}$ in predicting a pure equity issue.

Tobin's Q is strongly positively related to the probability of issuing equity. For example, the probabilities of a pure equity issue are 3.0% and 18.8%, respectively, for firms in the first and fifth quintiles of Tobin's Q, suggesting that Tobin's Q is more important than $\text{Cash}_{\text{ex post}}$ or $\text{Cash}_{\text{ex ante}}$ in predicting a pure equity issue. The likelihood of dual issues of debt and equity also increases with Tobin's Q. For a firm in the highest quintile of Tobin's Q, the likelihood of an equity issue is 25% in a given year. Tobin's Q is not so strongly related to the likelihood of a pure debt issue.

The stock return in year t-1 is positively related to the likelihood of both debt and equity issues. The stock return from t+1 to t+3 is negatively related to the likelihood of an equity issue, consistent with the market timing literature that documents poor long-run performance following equity issues. For a firm in the lowest quintile of the stock return from t+1 to t+3, the likelihood of an equity issue in a given year is 20.7%, suggesting that a significant proportion of firms with poor stock performance from t+1 to t+3 are able to successfully time the market. It is reasonable

to ask why we do not see even more firms in the lowest quintile of future stock returns issue equity. Most importantly, realized stock returns are largely determined by future surprises, such as the rise of tech stock valuations in the late 1990s and the collapse of oil prices in the second half of 2008. Among many potential other reasons, it is possible that the market will lower the valuation of the stock of an equity issuer if the managers fail to justify why they need to raise equity capital. Another possibility is that managers are overly optimistic about their companies even when the stocks are overvalued (Heaton (2002)). The stock return from t+1 to t+3 is not so strongly related to the likelihood of a pure debt issue. Larger and older firms are less likely to issue equity, consistent with the corporate lifecycle theory.

3. Multinomial Logit Regression Results for Financing Decisions

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 on security issue decisions of our cash shortfall measures and the variables suggested by the market timing, precautionary saving, corporate lifecycle, and static tradeoff theories. Since the dependent variable is categorical, we estimate multinomial logit regressions.

Table 6 reports the multinomial logit results for the decision to issue a security and the choice between debt and equity. Panel A reports the coefficients and z-statistics. The base category consists of firms that have no security issues. We also report the economic effects in Panel B. Furthermore, we add up the economic effects for all equity issues and all debt issues, respectively, and report the subtotal economic effects in the last two columns of Panel B. For example, the subtotal economic effect of $\text{Cash}_{\text{ex post}}$ for all equity issues is the sum of its economic effects for dual issues and pure equity issues. Note that because the multinomial logit

model is nonlinear, the economic effects are perhaps more important than the coefficients. Therefore, we focus our discussions on the economic effects in Panel B.

Regression (1) includes $\text{Cash}_{\text{ex post}}$ as an independent variable. The more important the cash shortfall measure in predicting financing decisions, the less important is the cash stockpiling effect. The control variables are chosen based on the literature and include Tobin's Q, the stock return in year t-1, the stock return from t+1 to t+3, the natural logarithm of net sales, the natural logarithm of the number of years the firm has been listed on CRSP, book leverage, industry fixed effects, and year fixed effects. For brevity, the coefficients and economic effects for the industry and year fixed effects are not tabulated.

Panel B of Table 6 shows that, holding the control variables at their actual values, an increase in $\text{Cash}_{\text{ex post}}$ from one standard deviation below to one standard deviation above its actual value on average decreases the probability of a pure debt issue by 45.8% (from 50.4% to 4.6%) and the probability of dual issues by 7.5% (from 8.5% to 1.0%), and increases the probability of no security issue by 57.2% (from 32.3% to 89.5%). A two standard deviation increase in $\text{Cash}_{\text{ex post}}$ on average reduces the probabilities of debt and equity issues by 53.3% and 11.4%, respectively.

Tobin's Q remains an important predictor for security issues even after controlling for near-term cash needs, consistent with Huang and Ritter (2009, Table 4). A two standard deviation increase in Tobin's Q on average increases the probability of a pure debt issue by 5.7% (from 16.1% to 21.8%) and the probability of a pure equity issue by 8.6% (from 4.9% to 13.5%). On average, a two standard deviation increase in Tobin's Q increases the probabilities of a debt issue and an equity issue by 7.3% and 10.2%, respectively. Since immediate cash needs are controlled for, Tobin's Q captures either market timing opportunities or future cash needs. These

findings suggest that market timing and precautionary saving motives are important for equity issues.

Firms with a higher stock return in year t-1 are more likely to issue both debt and equity. A two standard deviation increase in the stock return in year t-1 increases the probabilities of a debt and an equity issue by 2.5% and 2.3%, respectively. Firms with a lower stock return from year t+1 to t+3 are more likely to issue equity. A two standard deviation increase in the stock return from t+1 to t+3 decreases the probability of an equity issue by 3.8%, consistent with the literature on the poor long-run stock performance following equity issues. The economic effects of the stock returns in t-1 and from t+1 to t+3 are generally smaller than those of Tobin's Q.

Larger and older firms are less likely to issue equity, consistent with the corporate lifecycle theory. The economic effect of firm size on the probability of an equity issue, -9.5%, is comparable in absolute value to that of Tobin's Q, 10.2%, inconsistent with the conclusion of DDS that the corporate lifecycle theory is more important than the market timing theory in predicting equity issues. The economic effect of leverage is of secondary importance. A two standard deviation increase in leverage decreases the likelihood of a debt issue by 3.2% and increases the likelihood of an equity issue by 1.2%, providing some support for the static tradeoff theory.

The findings that small growth firms are more likely to issue equity cannot be easily reconciled with Myers' (1984) pecking order theory, which predicts that firms with higher information asymmetry would be less likely to raise external funds, especially external equity. However, a modified pecking order could argue that small growth firms are more likely to issue equity because they are more likely to have used up internal funds and debt capacity, an argument the precautionary saving theory also uses.

Overall, the regression (1) results in Table 6 suggest that debt issues play a dominant role in meeting cash shortfalls. $\text{Cash}_{\text{ex post}}$ is the dominant predictor for debt issues. But its economic effects for equity issues are comparable in magnitude to those of some predictors suggested by the corporate lifecycle, precautionary saving, and market timing theories. Specifically, for equity issues, $\text{Cash}_{\text{ex post}}$ is comparable in economic significance to Tobin's Q and firm size, inconsistent with DDS's conclusion that near-term cash needs are the primary determinant for equity issues.

As we discussed earlier, the projected cash ratio $\text{Cash}_{\text{ex post}}$ suffers from a look-ahead bias. To avoid this bias, we also estimate regression (2) by replacing $\text{Cash}_{\text{ex post}}$ with $\text{Cash}_{\text{ex ante}}$ as an independent variable. The regression (2) results suggest that the ex ante measure of cash shortfall, $\text{Cash}_{\text{ex ante}}$, remains an important predictor for security issues. A two standard deviation increase in $\text{Cash}_{\text{ex ante}}$ on average decreases the probability of a pure debt issue by 13.6% (from 26.6% to 13.0%), the probability of dual issues by 3.0% (from 4.8% to 1.8%), and the probability of a pure equity issue by 2.2% (from 9.3% to 7.1%), and increases the probability of no security issue by 18.9% (from 59.3% to 40.4%).

The economic effect of $\text{Cash}_{\text{ex ante}}$ is still the largest of any variable for the decisions to issue no security, to issue only debt, or to issue both debt and equity. However, for both pure equity issues and all equity issues, $\text{Cash}_{\text{ex ante}}$ is less important than firm size, Tobin's Q, and the stock return from t+1 to t+3. Therefore, after correcting for a possible look-ahead bias, a near-term cash need is an important but not the primary determinant of equity issues.

The economic effects of our control variables in regression (2) of Table 6 are qualitatively similar to those in regression (1), although the magnitudes do change. For example, the economic effect of Tobin's Q on a pure debt issue is 5.7% in regression (1), and 2.2% in

regression (2). Such changes are at least partly because the correlations between $\text{Cash}_{\text{ex post}}$ and the controls are different from the correlations between $\text{Cash}_{\text{ex ante}}$ and the controls. Note that $\text{Cash}_{\text{ex post}}$ is constructed using year t internal cash flow, investments, change in net working capital, and cash dividends. The year t values could be a response to year t-1 stock returns, Tobin's Q, and other control variables measured at the end of year t-1.

Comparing regressions (1) and (2), although both $\text{Cash}_{\text{ex post}}$ and $\text{Cash}_{\text{ex ante}}$ play an important role in security issue decisions, $\text{Cash}_{\text{ex ante}}$ has much less predictive power than $\text{Cash}_{\text{ex post}}$. In other words, many firms spend more money than they would otherwise have done because they have raised external debt or equity capital (Baker, Stein, and Wurgler (2003)).

$\text{Cash}_{\text{ex post}}$ and $\text{Cash}_{\text{ex ante}}$ are based on projected cash balances at the end of year t. Our results are robust to alternative definitions of project cash ratios. Firms could sit on newly raised cash in year t and spend all of it in year t+1. To evaluate the importance of this possibility, we check whether our results are robust to using $\text{Cash}_{\text{ex post}} + \text{FCF}_{t+1}$ and $\text{Cash}_{\text{ex post}} + \text{FCF}_{t-1}$. Our results on $\text{Cash}_{\text{ex post}} + \text{FCF}_{t+1}$ are similar to the results on $\text{Cash}_{\text{ex post}}$, and our results on $\text{Cash}_{\text{ex post}} + \text{FCF}_{t-1}$ are similar to the results on $\text{Cash}_{\text{ex ante}}$. Security issuers are likely to experience large changes in their assets, so it may not be entirely appropriate to scale projected cash ratios at t or t+1 by assets at the end of t-1. The denominator of $\text{Cash}_{\text{ex post}}$, $\text{Cash}_{\text{ex ante}}$, $\text{Cash}_{\text{ex post}} + \text{FCF}_{t+1}$, and $\text{Cash}_{\text{ex post}} + \text{FCF}_{t-1}$ is assets at the end of t-1 to avoid using future information. Our regression results, however, are robust to scaling the projected cash ratios by assets at the end of t or t+1 instead.

Our Table 6 results are consistent with those of Denis and McKeon (2012), who conclude that most debt issues are motivated by a need for cash rather than a desire to rebalance capital structure by issuing debt to make payouts to equityholders.

3.2. The Choice between Debt and Equity Conditional on Issuing a Security

Although cash shortfalls are important in predicting external financing, especially debt financing, it is important to understand the determinants of the choice between debt and equity to fund the cash shortfalls. In this subsection, we focus on the choice between debt and equity, conditional on issuing a security. Specifically, we estimate multinomial logit regressions for which the dependent variable takes a categorical value of issuing only debt, issuing both debt and equity, and issuing only equity. The results are reported in Table 7. Panel A reports the coefficients and z-statistics, and Panel B reports the economic effects. Regression (1) uses Cash $_{ex\ post}$ as an independent variable, and regression (2) uses Cash $_{ex\ ante}$ as an independent variable.

The results conditional on external financing in Table 7 are generally consistent with the unconditional results in Table 6. Cash $_{ex\ post}$ is negatively related to the likelihoods of debt issues and positively related to the likelihood of equity issues, suggesting that firms that need more cash are more likely to issue debt. This finding is inconsistent with a strict version of the pecking order theory, which predicts that firms with the larger cash needs are more likely to exhaust or have exhausted debt capacity and should be more likely to issue equity and build up debt capacity for the future. Economically, a two standard deviation increase in Cash $_{ex\ post}$ reduces the likelihood of a debt issue by 24.1% and increases the likelihood of an equity issue by 12.0%. For debt issues, Cash $_{ex\ post}$ is the most important predictor, followed by Tobin's Q and firm size.

For equity issues, Tobin's Q and firm size are the two most important predictors. A two standard deviation increase in Tobin's Q increases the likelihood of an equity issue by 23.3%, while a two standard deviation increase in firm size reduces the likelihood of an equity issue by 18.4%. Firms that have higher stock returns in year t-1 and younger firms are more likely to issue equity. Equity issuers have lower stock returns from year t+1 to t+3, providing some

evidence of successful market timing. Lagged leverage is positively related to the likelihood of an equity issue, consistent with the static tradeoff theory of capital structure. But the economic significance of lagged leverage is low. $\text{Cash}_{\text{ex ante}}$ is much less predictive than $\text{Cash}_{\text{ex post}}$, suggesting that the look-ahead bias can be potentially large. In regression (2) where $\text{Cash}_{\text{ex post}}$ is replaced by $\text{Cash}_{\text{ex ante}}$, Tobin's Q and firm size remain the two most important predictors for equity issues. For equity issues, the evidence suggests that the market timing, precautionary saving, and corporate lifecycle theories are all important.

3.3. Debt and Equity Issues Conditional on Running out of Cash and Issuing a Security

DDS argue that, since most SEO firms would run out of cash, the market timing and corporate lifecycle theories are of secondary importance in predicting SEOs. However, it is important to note that near-term cash needs and market timing motives are not mutually exclusive. In other words, a finding that immediate cash needs are important does not mean market timing is not important. Firms running out of cash can still choose between debt and equity, unless firms that issue equity have no debt capacity. It is possible that at least some firms with immediate financing needs choose to issue equity instead of debt now when they view equity market conditions as favorable to preserve debt capacity for the future. In Panels D-F of Table 4, we documented that equity issuers that are running out of cash have much lower stock returns in the following three years than pure debt issuers, suggesting that these firms can still time the market by choosing between debt and equity. In Table 8 we estimate multinomial logit regressions for the choice between only debt, only equity, and both debt and equity, conditional on running out of cash.

Similar to Table 7, Table 8 reports the results for two regressions. Regression (1) includes $\text{Cash}_{\text{ex post}}$ as an independent variable and uses only firms with $\text{Cash}_{\text{ex post}} < 0$. Regression (2)

includes $\text{Cash}_{\text{ex ante}}$ as an independent variable and uses only firms with $\text{Cash}_{\text{ex ante}} < 0$. In regression (1), $\text{Cash}_{\text{ex post}}$ is positively related to the likelihoods of pure debt and pure equity issues, and negatively related to the likelihood of dual issues. $\text{Cash}_{\text{ex post}}$ has a much smaller economic effect in Table 8 than in Table 7, largely because the firms used in Table 8 are those that are running out of cash. Larger cash shortfalls are more likely to issue equity instead of debt, suggesting that the standard pecking order largely holds for firms that are running out of cash. More importantly, Tobin's Q and firm size continue to have high power in predicting the debt versus equity choice of firms that are running out of cash. In regression (1), a two standard deviation increase in Tobin's Q increases the likelihood of an equity issue by 18.3%, and a two standard deviation increase in firm size reduces the likelihood of an equity issue by 14.6%. These two variables are the most important predictors in both regressions (1) and (2) of Table 8. Consequently, the market timing and corporate lifecycle theories are economically significant in explaining the choice between debt and equity even for firms that are running out of cash.

3.4. Components of Projected Cash Ratio and Financing Decisions

In our previous analysis, we aggregate the lagged cash holding, internal cash flow, and various uses of cash to obtain the cash shortfall measures. In this subsection, we examine whether these different components have different impacts on security issue decisions.

We first replace $\text{Cash}_{\text{ex post}}$ with its components in a multinomial logit regression and report the estimation results in Table 9. Firms with a higher lagged cash ratio are less likely to issue debt. In regression (1), a two standard deviation increase in the lagged cash ratio is associated with a decrease of 25.4% in all debt issues, including 23.2% in pure debt issues and 2.2% in dual issues. The lagged cash ratio has zero effect on the likelihood of a pure equity issue.

These results are consistent with our earlier finding that cash needs are less important for equity issues than for debt issues.

More internally generated funds reduce the probability of a debt issue, inconsistent with the static tradeoff theory, which predicts that profitable firms will have more debt due to the tax benefits. Firms with more internally generated funds are also less likely to issue equity. A two standard deviation increase in $ICF_t \div Assets_{t-1}$ reduces the probabilities of debt and equity issues by 37.3% and 11.1%, respectively.

Firms that make more investments are more likely to issue securities. The economic effects of investments are large. A two standard deviation increase in investments increases the probabilities of debt and equity issues by 56.7% and 16.8%, respectively. Firms often have to increase their net working capital to support investment expansions. We thus expect similar effects of the change in net working capital and investments on security issue decisions. Consistent with our conjecture, firms with larger increases in net working capital are more likely to issue securities. Cash dividends are positively related to the likelihood of a debt issue and negatively related to the likelihood of an equity issue, although the economic effects are smaller.

Note that when the components of $Cash_{ex\ post}$ are all included as independent variables, the economic effects of our control variables are generally smaller in Table 9 than in Table 6, likely because these component variables are correlated with the controls. For example, the economic effect of Tobin's Q on equity issues decreases from 10.2% in Table 6 to 7.4% in Table 9. Lagged Tobin's Q could be correlated with the internal cash flow, investments, change in net working capital, and cash dividends in year t.

In regression (2) of Table 9, we replace the components of $Cash_{ex\ post}$ with the components of $Cash_{ex\ ante}$ to mitigate a look-ahead bias. Firms with more internal funds in year t-

1 are less likely to issue securities in year t. Compared with $ICF_t \div Assets_{t-1}$, $ICF_{t-1} \div Assets_{t-1}$ are much less important in predicting debt issues and equity issues.

Lagged investments are generally an important predictor for security issues. For debt issues, the economic effect of lagged investments is 10.0%, which is larger in magnitude than all but one variable, the effect of -16.4% of lagged cash ratios. For equity issues, the effect of lagged investments is 4.0%, which is smaller in magnitude than the effects of lagged internal funds, Tobin's Q, the stock return from t+1 to t+3, and firm size. The lagged change in net working capital is positively related to the propensities to issue debt and equity. The economic effects of the lagged change in net working capital on debt issue and equity issue decisions are much smaller than the effects of the current change in net working capital. Firms that pay more cash dividends in year t-1 are less likely to issue equity in year t.

The regression (1) results in Table 9 suggest that the components of $Cash_{ex\ post}$ play a dominant role in security issue choices. The regression (2) results suggest that the lagged cash ratio and investments are the two main predictors for debt issues and the components of $Cash_{ex\ ante}$ are generally as important as Tobin's Q and stock returns in predicting equity issues. These results suggest that the components of $Cash_{ex\ post}$ and $Cash_{ex\ ante}$ capture more than just near-term cash needs. Notably, even after controlling for other variables, there is still a higher propensity to issue equity for firms that are smaller, have a higher Tobin's Q, have a higher stock price runup, or that have lower stock returns in the following three years.

4. Conclusions

DeAngelo, DeAngelo, and Stulz (2010) (DDS in this paper) report that 62.6% of SEO firms will run out of cash at the end of year t+1 without the SEO proceeds in year t, and that an

SEO occurs in only 3.4% of firm-years. They also find that many companies with high Tobin's Q, large stock price runups, and low future stock returns do not conduct an SEO, and that firm age is better than the valuation variables in predicting SEOs. They conclude that near-term cash needs are the primary motive for equity issues, and that the corporate lifecycle theory is more important than the market timing theory, with both theories being of secondary importance.

Although 62.6% of SEO firms are running out of cash and an SEO occurs in only 3.4% of firm years, these facts do not prove that an immediate cash need dominates other motives for equity issues. First, immediate cash needs are not necessarily incompatible with other motives. Firms can, and do, issue debt instead of equity to fund their immediate cash needs when debt market conditions are relatively more favorable than equity market conditions. Second, firms can also fund an immediate cash need or time the market via non-SEO equity issues such as PIPEs. Third, facing an immediate cash shortfall, firms could reduce their uses of cash as an alternative to issuing stock to increase the sources. Fourth, an ex post measure that takes subsequent investment as given overstates the likelihood of cash depletion without an SEO, since firms that raise capital are likely to spend more than they otherwise would.

We examine the role of both debt and equity issues in funding immediate cash needs and use information from cash flow statements to define security issues. In our sample, when ex post capital expenditures are used, 57.1% of pure equity issuers, 89.2% of dual issuers, and 69.9% of pure debt issuers will run out of cash at the end of year t+1 if they have zero net debt and net equity issues in year t and t+1. These findings suggest that firms with larger near-term cash needs are more likely to issue debt than equity. In our sample, the unconditional likelihoods of a pure equity, dual issues, and a pure debt issue in a given year are 8.3%, 3.0%, and 19.0%, respectively. Debt issues are more frequent than equity issues, consistent with the pecking order

theory. However, the high frequency of equity issues is inconsistent with the theory, which also predicts that equity issues should be rare. The unconditional probability of an equity issue is much higher than the unconditional probability of an SEO, suggesting much larger economic effects of the market timing and corporate lifecycle variables in our multinomial logit regressions than in DDS' logit regressions.

Our multinomial logit regression analysis finds that firms raise external capital primarily to fund immediate cash needs rather than future cash needs, and that debt rather than equity is more frequently issued to fund immediate cash needs, consistent with the pecking order theory. However, near-term needs do not dominate other variables in explaining the decision to issue equity and the debt versus equity choice, calling for a modified pecking order theory that incorporates market timing, precautionary saving, and corporate lifecycle motives.

An ex post measure of near-term cash shortfalls plays the dominant role in predicting debt issues, consistent with the pecking order theory. For equity issues, an ex post measure of immediate cash shortfalls is an important predictor, but it is not the only important predictor. It has comparable economic significance to Tobin's Q and firm size. This finding suggests that the corporate lifecycle, precautionary saving, and market timing proxies are important in explaining the decision to issue equity. A two standard deviation increase in Tobin's Q increases the likelihood of an equity issue in a given year by 10.2%, while a two standard deviation increase in either firm size or an ex post measure of a projected cash ratio reduces the likelihood of an equity issue by 9.5% and 11.4%, respectively. The economic effects of Tobin's Q and stock returns combined are comparable to those of firm size and age combined for equity issues, suggesting that the market timing and corporate lifecycle theories have comparable economic significance.

An ex post measure of cash needs suffers from a look-ahead bias, so we also examine the effects of a fully ex ante measure of cash needs on financing decisions. We find that the ex ante measure is much less predictive than the ex post measure, suggesting that using an ex post measure likely overstates the importance of cash shortfalls for financing decisions. Our ex ante cash need measure is still the most important predictor for debt issues, although for equity issues it is less important than firm size, Tobin's Q, and the stock return from t+1 to t+3.

We find that conditional on issuing a security, Tobin's Q and firm size are two highly important predictors for the choice between debt and equity, consistent with the market timing, precautionary saving, and corporate lifecycle theories. A two standard deviation increase in Tobin's Q increases the likelihood of an equity issue in a given year by 23.3%, while a two standard deviation increase in firm size reduces the likelihood by 18.4%. Firms with larger immediate cash needs are more likely to issue debt instead of equity, inconsistent with the strict pecking order. Lagged leverage is positively related to the likelihood of issuing equity instead of debt, but its economic effect is secondary, providing limited support for the tradeoff theory. For the subsample of firms that are running out of cash, Tobin's Q and firm size are the two most important predictors for the choice between debt and equity, suggesting that such firms can still time the market by choosing between debt and equity. Equity issuers that are running out of cash have an average buy-and-hold return of only 5.1% over the following three years. Our findings suggest that a near-term cash need is the primary motive for debt issues, but the market timing, precautionary saving, and corporate lifecycle theories are economically important in explaining the decision to issue equity and the debt versus equity choice.

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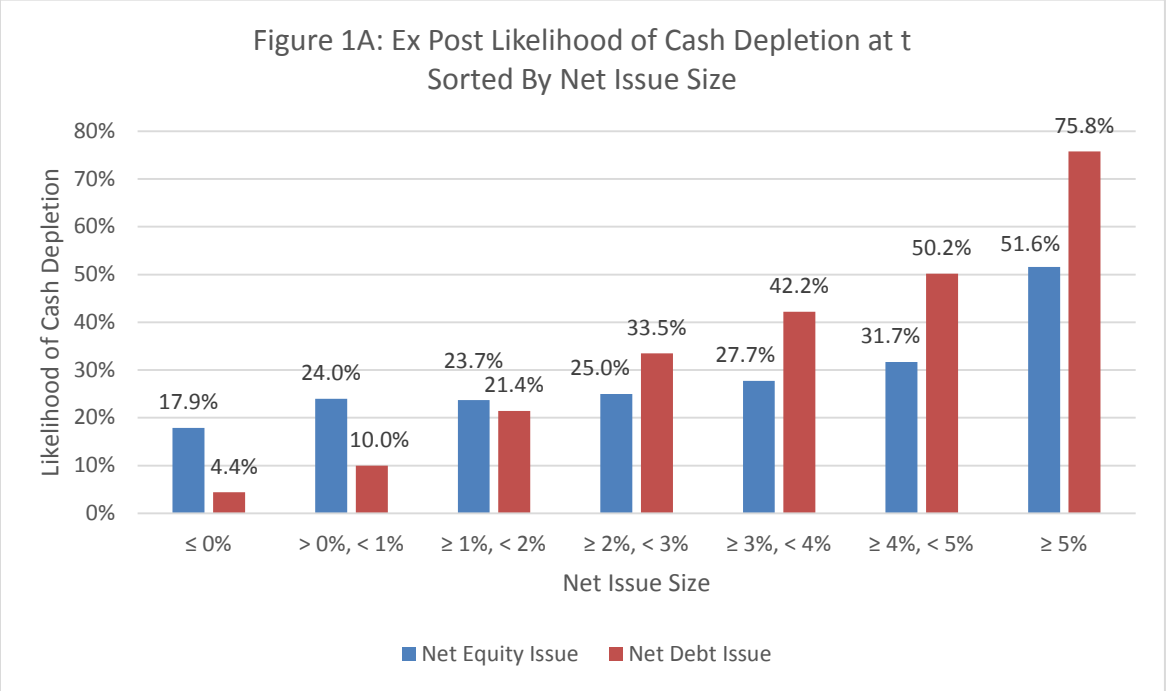
Appendix. Variable Definitions

Variable Name	Detailed Definition
ΔDebt	For firms reporting format codes 1 to 3, ΔDebt = Long-Term Debt Issuance (Compustat item DLTIS) – Long-Term Debt Reduction (DLTR) – Current Debt Changes (DLCCH). For firms reporting format code 7, ΔDebt = DLTIS – DLTR + DLCCH.
ΔEquity	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 (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).
$Cash_{t-1}$	Cash and Short-Term Investments (CHE) at the end of year t-1.
ΔCash	$Cash_t – Cash_{t-1}$.
ΔNon-Cash NWC	ΔNWC – ΔCash.
$Cash_{ex\ post}$	$(Cash_{t-1} + ICF_t – Investments_t – \Delta Non\text{-}Cash\ NWC_t – Cash\ Dividends_t) \div Assets_{t-1}$.
$Cash_{ex\ ante}$	$(Cash_{t-1} + ICF_{t-1} – Investments_{t-1} – \Delta Non\text{-}Cash\ NWC_{t-1} – Cash\ Dividends_{t-1}) \div Assets_{t-1}$.
FCF_{t+1}	$(ICF_{t+1} – Investments_{t+1} – \Delta Non\text{-}Cash\ NWC_{t+1} – Cash\ Dividends_{t+1}) \div Assets_{t-1}$.
FCF_{t-1}	$(ICF_{t-1} – Investments_{t-1} – \Delta Non\text{-}Cash\ NWC_{t-1} – Cash\ Dividends_{t-1}) \div Assets_{t-1}$.
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)) ÷ the book value of assets (item AT) at the end of fiscal year 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.
$Ln(Sales)_{t-1}$	The natural logarithm of net sales at the end of fiscal year t-1. Net sales is in $millions and expressed in the 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.
Industry Dummies	Dummy variables using Ken French's 17 industry classification at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/.

Figure 1. Likelihood of Cash Depletion Sorted by Issue Size

In Figure 1A, a firm is defined as running out of cash at the end of fiscal year t if Cash $_{ex\ post} < 0$. In Figure 1B, a firm is defined as running out of cash at the end of fiscal year t if Cash $_{ex\ ante} < 0$. Net equity issue size and net debt issue size are defined as $\Delta Equity_t \div AT_{t-1}$ and $\Delta Debt_t \div AT_{t-1}$, respectively. See the Appendix for the detailed definitions of $\Delta Equity_t$, $\Delta Debt_t$, Cash $_{ex\ post}$, and Cash $_{ex\ ante}$.



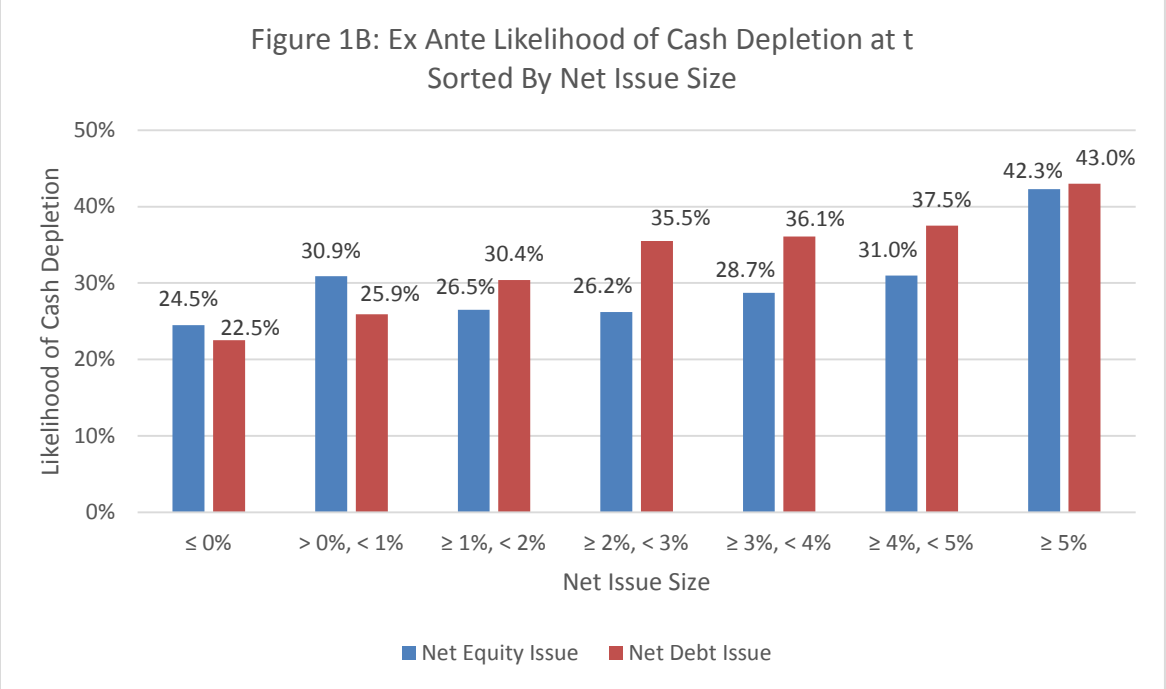


Table 1. Sample Distribution

This table reports the distribution of firm-year observations in our sample of CRSP- and Compustat-listed firms from 1972-2010. Utility and financial firms are excluded. N denotes the number of firm-year observations. % denotes the number of firm-year observations in a subgroup as a percent of the total number of firm-year observations in the subgroup. A firm is defined to have a pure equity issue if A firm is defined to have a pure equity issue if $\Delta Equity_t \div AT_{t-1} \geqslant 0.05$ and $\Delta Debt_t \div AT_{t-1} < 0.05$. A firm is defined to have a pure debt issue if $\Delta Debt_t \div AT_{t-1} \geqslant 0.05$ and $\Delta Equity_t \div AT_{t-1} < 0.05$. A firm is defined to have dual issues of debt and equity if $\Delta Equity_t \div AT_{t-1} \geqslant 0.05$ and $\Delta Debt_t \div AT_{t-1} \geqslant 0.05$. AT_{t-1} denotes the book value of assets at the end of fiscal year t-1. A firm is considered as running out of cash if $Cash_{ex\ post} < 0$. See the Appendix for the detailed definitions of $\Delta Equity_t$, $\Delta Debt_t$, and $Cash_{ex\ post}$.

	N	%
All firm-years	122,510	100.0
No debt or equity issue	85,400	69.7
Pure debt issue	23,301	19.0
Dual issues of debt and equity	3,674	3.0
Pure equity issue	10,135	8.3
Conditional on external financing	37,110	100.0
Pure debt issue	23,301	62.7
Dual issues of debt and equity	3,674	9.9
Pure equity issue	10,135	27.3
Conditional on external financing and running out of cash	24,417	100.0
Pure debt issue	17,288	70.8
Dual issues of debt and equity	3,166	13.0
Pure equity issue	3,963	16.2
Conditional on external financing and not running out of cash	12,693	100.0
Pure debt issue	6,013	47.4
Dual issues of debt and equity	508	4.0
Pure equity issue	6,172	48.6

Table 2. Cash Flows for Firms Sorted by Security Issues

This table reports the means of the cash flow items. A firm is defined to have a pure equity issue if $\Delta Equity_t \div AT_{t-1} \geq 0.05$ and $\Delta Debt_t \div AT_{t-1} < 0.05$. A firm is defined to have a pure debt issue if $\Delta Debt_t \div AT_{t-1} \geq 0.05$ and $\Delta Equity_t \div AT_{t-1} < 0.05$. A firm is defined to have dual issues of debt and equity if $\Delta Equity_t \div AT_{t-1} \geq 0.05$ and $\Delta Debt_t \div AT_{t-1} \geq 0.05$. AT_{t-1} denotes the book value of assets at the end of fiscal year t-1. See the Appendix for the detailed definitions of $\Delta Equity_t$, $\Delta Debt_t$, and other variables.

	No debt or equity issue	Pure debt issue	Dual issues	Pure equity issue	All
$\Delta Debt_t \div AT_{t-1}$	-2.0	17.8	32.3	-4.8	2.5
$\Delta Equity_t \div AT_{t-1}$	-0.4	-0.5	30.1	37.6	3.7
External Financing$_t \div AT_{t-1}$	-2.4	17.3	62.4	32.8	6.2
$ICF_t \div AT_{t-1}$	10.3	10.4	1.6	1.5	9.3
$Investment_t \div AT_{t-1}$	6.5	20.6	43.2	14.8	11.0
Cash $Dividend_t \div AT_{t-1}$	1.2	1.0	0.7	0.6	1.1
$\Delta NWC_t \div AT_{t-1}$	0.2	6.1	20.1	18.9	3.4
Financing Deficit$_t \div AT_{t-1}$	-2.4	17.3	62.4	32.8	6.2
ΔNon-Cash $NWC_t \div AT_{t-1}$	0.1	5.2	6.7	1.8	1.4
$\Delta Cash_t \div AT_{t-1}$	0.0	0.9	13.5	17.1	2.0

Table 3. Cash, Excess Cash, and Projected Cash of Firms Sorted by Security Issues

This table reports the means of cash, excess cash, and projected cash ratios and the likelihoods of cash depletion and negative excess cash. The excess cash ratios are measured relative to the median cash ratios of firms in the same industry (15 industries after financials and utilities are excluded) and with similar Tobin's Q and book assets. For example, Excess ($Cash_{t-1} \div AT_{t-1}$) is the difference between $Cash_{t-1} \div AT_{t-1}$ of a firm and the median $Cash_{t-1} \div AT_{t-1}$ of all firms in the same industry, the same tercile of Tobin's Q, and the same tercile of book assets at the end of fiscal year t-1. Excess Cash $_{ex\ post}$, Excess Cash $_{ex\ ante}$, Excess Cash $_{ex\ post} + FCF_{t+1}$, and Excess Cash $_{ex\ ante} + FCF_{t-1}$ are measured relative to the median $Cash_{t-1} \div AT_{t-1}$ of firms in the same industry and the same Tobin's Q and assets terciles. Excess $Cash_{ex\ post} \times Assets_{t-1}/Assets_t$ and Excess Cash $_{ex\ ante} \times Assets_{t-1}/Assets_t$ are measured relative to the median $Cash_t \div AT_t$ of firms in the same industry and the same Tobin's Q and assets terciles. See the Appendix and Table 2 for variable definitions.

	No debt or equity issue	Pure debt issue	Dual issues	Pure equity issue	All
Panel A. Means of Cash and Excess Cash Ratios (%)					
$Cash_{t-1} \div AT_{t-1}$	14.3	8.8	15.2	24.1	14.1
$Cash_t \div AT_t$	14.0	7.5	15.4	27.0	13.9
$Cash_{t+1} \div AT_{t+1}$	14.1	7.7	14.0	25.1	13.8
Excess ($Cash_{t-1} \div AT_{t-1}$)	4.3	0.7	1.5	4.3	3.5
Excess $Cash_t \div AT_t$	3.9	-0.3	1.3	5.9	3.2
Excess ($Cash_{t+1} \div AT_{t+1}$)	4.3	0.1	0.8	5.4	3.5
Panel B. Means of Projected Cash Ratios (%)					
$Cash_{ex\ post}$	16.7	-7.2	-28.6	8.5	10.1
Cash $_{ex\ ante}$	13.2	3.7	-1.9	10.4	10.7
Cash $_{ex\ post} + FCF_{t+1}$	15.7	-13.5	-58.1	-11.3	5.7
Cash $_{ex\ ante} + FCF_{t-1}$	12.1	-1.5	-18.8	-3.0	7.3
Cash $_{ex\ post} \times Assets_{t-1}/Assets_t$	16.8	-4.9	-16.8	7.3	10.9
Cash $_{ex\ ante} \times Assets_{t-1}/Assets_t$	13.0	2.8	-2.5	7.3	10.1
Panel C: Likelihood of Cash Depletion without External Financing (%)					
Cash $_{ex\ post}$	6.4	74.2	86.2	39.1	24.4
Cash $_{ex\ ante}$	23.2	41.0	55.9	37.4	28.8
Cash $_{ex\ post} + FCF_{t+1}$	16.6	69.9	89.2	57.1	32.3
Cash $_{ex\ ante} + FCF_{t-1}$	30.7	49.7	67.3	51.0	37.1
Cash $_{ex\ post} \times Assets_{t-1}/Assets_t$	6.4	74.2	86.2	39.1	24.4
Cash $_{ex\ ante} \times Assets_{t-1}/Assets_t$	23.2	41.0	55.9	37.4	28.8
Panel D: Likelihood of Negative Excess Cash without External Financing (%)					
Excess Cash $_{ex\ post}$	33.9	87.6	94.3	68.0	48.8
Excess Cash $_{ex\ ante}$	46.0	63.1	75.4	65.1	51.7
Excess Cash $_{ex\ post} + FCF_{t+1}$	36.1	82.5	94.3	73.8	49.8
Excess Cash $_{ex\ ante} + FCF_{t-1}$	46.2	63.3	77.8	68.5	52.3
Excess Cash $_{ex\ post} \times Assets_{t-1}/Assets_t$	34.0	89.1	96.7	75.0	49.8
Excess Cash $_{ex\ ante} \times Assets_{t-1}/Assets_t$	46.9	66.8	83.5	72.8	53.9

Table 4. Means of Control Variables Sorted by Security Issues

This table reports the means of the control variables used in the multivariate analysis. A firm is considered as running out of cash if $Cash_{ex\ post}<0$. An old firm is defined as one that has been listed on CRSP for more than 10 years. See the Appendix and Table 2 for variable definitions.

Panel A. All Firms (N=122,510)

	No debt or equity issue	Pure debt issue	Dual issues	Pure equity issue	All
Tobin's Q_{t-1}	1.5	1.6	2.6	2.9	1.6
$Return_{t-1}$(%)	13.4	22.2	56.5	47.0	19.1
$Return_{t+1,\ t+3}$(%)	64.1	46.2	10.3	16.8	55.2
$Ln(Sales)_{t-1}$	5.9	5.8	4.6	4.3	5.7
$Ln(Age)_t$	2.5	2.3	2.0	2.0	2.4
$Leverage_{t-1}$(%)	46.4	50.3	54.4	46.9	47.4

Panel B. Young Firms (N=56,648)

	No debt or equity issue	Pure debt issue	Dual issues	Pure equity issue	All
Tobin's Q_{t-1}	1.6	1.6	2.7	3.2	1.8
$Return_{t-1}$(%)	11.5	22.0	54.3	49.8	19.7
$Return_{t+1,\ t+3}$(%)	72.1	49.5	6.8	15.5	58.4
$Ln(Sales)_{t-1}$	5.2	5.2	4.2	3.9	5.0
$Ln(Age)_t$	1.7	1.6	1.6	1.6	1.6
$Leverage_{t-1}$(%)	45.4	50.7	53.5	44.7	46.7

Panel C. Old Firms (N=65,862)

	No debt or equity issue	Pure debt issue	Dual issues	Pure equity issue	All
Tobin's Q_{t-1}	1.4	1.5	2.3	2.4	1.5
$Return_{t-1}$(%)	14.8	22.4	60.7	42.2	18.6
$Return_{t+1,\ t+3}$(%)	58.1	43.0	17.0	18.8	52.4
$Ln(Sales)_{t-1}$	6.4	6.3	5.3	5.0	6.3
$Ln(Age)_t$	3.0	3.0	2.9	2.8	3.0
$Leverage_{t-1}$(%)	47.2	49.9	56.1	50.6	48.0

Panel D. Firms that are Running Out of Cash and Issuing a Security (N=24,417)

	Pure debt issue	Dual issues	Pure equity issue	All
Tobin's Q_{t-1}	1.5	2.4	2.8	1.8
$Return_{t-1}$(%)	21.6	50.2	44.7	29.1
$Return_{t+1, t+3}$(%)	44.1	8.1	5.1	33.1
$Ln(Sales)_{t-1}$	5.7	4.6	4.1	5.3
$Ln(Age)_t$	2.3	2.0	2.0	2.2
$Leverage_{t-1}$(%)	51.9	56.5	53.0	52.7

Panel E. Young Firms that are Running Out of Cash and Issuing a Security (N=13,215)

	Pure debt issue	Dual issues	Pure equity issue	All
Tobin's Q_{t-1}	1.6	2.6	3.0	2.0
$Return_{t-1}$(%)	21.5	53.5	45.7	31.2
$Return_{t+1, t+3}$(%)	47.4	4.1	3.7	32.1
$Ln(Sales)_{t-1}$	5.2	4.2	3.8	4.8
$Ln(Age)_t$	1.6	1.6	1.6	1.6
$Leverage_{t-1}$(%)	52.5	55.7	52.2	53.0

Panel F. Old Firms that are Running Out of Cash and Issuing a Security (N=11,202)

	Pure debt issue	Dual issues	Pure equity issue	All
Tobin's Q_{t-1}	1.4	2.1	2.3	1.6
$Return_{t-1}$(%)	21.8	43.9	43.0	26.5
$Return_{t+1, t+3}$(%)	40.9	15.9	7.7	34.4
$Ln(Sales)_{t-1}$	6.2	5.4	4.8	5.9
$Ln(Age)_t$	3.0	2.9	2.8	3.0
$Leverage_{t-1}$(%)	51.4	58.1	54.6	52.4

Table 5. Likelihood of Security Issues Sorted by Firm Characteristics

This table reports the likelihoods (in percent) of security issues for the quintiles sorted by firm characteristics. See the Appendix and Table 2 for variable definitions.

	No debt or equity issue	Pure debt issue	Dual issues	Pure equity issue	Total
All	69.7	19.0	3.0	8.3	100.0
$Cash_{ex\ post}$ Quintile:					
1 (running out)	12.8	60.4	12.6	14.3	100.0
2	73.7	18.9	0.8	6.6	100.0
3	87.3	7.1	0.5	5.1	100.0
4	88.0	5.4	0.5	6.1	100.0
5	86.7	3.4	0.6	9.3	100.0
$Cash_{ex\ ante}$ Quintile:					
1 (running out)	53.7	27.1	6.9	12.4	100.0
2	67.6	23.1	2.5	6.8	100.0
3	73.3	19.3	2.0	5.4	100.0
4	75.7	15.9	1.8	6.7	100.0
5	78.3	9.8	1.8	10.1	100.0
Tobin's Q_{t-1} Quintile:					
1 (low)	80.5	15.6	0.9	3.0	100.0
2	74.5	19.2	1.8	4.4	100.0
3	70.0	21.1	2.5	6.3	100.0
4	66.1	21.5	3.6	8.8	100.0
5 (high)	57.4	17.6	6.2	18.8	100.0
Stock $Return_{t-1}$ Quintile:					
1 (low)	72.8	15.7	2.6	8.8	100.0
2	73.4	18.3	2.2	6.1	100.0
3	72.3	19.4	2.4	5.8	100.0
4	69.6	20.6	2.8	7.1	100.0
5 (high)	60.4	21.0	5.0	13.5	100.0
Stock $Return_{t+1,\ t+3}$ Quintile:					
1 (low)	57.0	22.2	6.0	14.7	100.0
2	68.7	19.3	3.1	8.9	100.0
3	74.1	17.8	2.1	6.0	100.0
4	74.4	18.1	1.8	5.7	100.0
5 (high)	74.3	17.6	2.0	6.1	100.0

Table 5 Continued:

	No debt or equity issue	Pure debt issue	Dual issues	Pure equity issue	Total
$Ln(Sales)_{t-1}$ Quintile:					
1 (low)	61.5	15.7	5.7	17.1	100.0
2	68.5	19.1	3.3	9.2	100.0
3	70.3	20.5	2.4	6.8	100.0
4	71.8	20.9	2.3	5.0	100.0
5 (high)	76.4	19.0	1.4	3.3	100.0
Age_t Quintile:					
1 (young)	61.5	20.6	5.1	12.8	100.0
2	66.5	19.2	3.7	10.7	100.0
3	69.4	19.0	3.0	8.6	100.0
4	73.2	18.7	2.0	6.1	100.0
5 (old)	77.9	17.7	1.3	3.2	100.0
$Leverage_{t-1}$ Quintile:					
1 (low)	75.4	11.9	2.2	10.4	100.0
2	69.8	19.4	2.7	8.1	100.0
3	68.1	22.1	2.8	7.0	100.0
4	68.1	21.7	3.2	6.9	100.0
5 (high)	67.1	19.9	4.1	8.9	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. Regression (1) includes $\text{Cash}_{\text{ex post}}$, an ex post cash need measure, as an independent variable, and regression (2) includes $\text{Cash}_{\text{ex ante}}$, an ex ante cash need measure, as an independent variable. Panel A reports the coefficients and t-statistics, with the base category consisting of firm-years with no security issues. Panel B report 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. In the last two columns of Panel B, the subtotal economic effects are reported. For example, the subtotal economic effect of $\text{Cash}_{\text{ex post}}$ on debt issues is the sum of the economic effects of $\text{Cash}_{\text{ex post}}$ on pure debt issues and dual issues of debt and equity. See the Appendix and Table 2 for 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.

Panel A: Coefficients and z-Statistics

	(1) Ex Post Cash Need Measure			(2) Ex Ante Cash Need Measure		
VARIABLES	Pure debt issue	Dual issues	Pure equity issue	Pure debt issue	Dual issues	Pure equity issue
$\text{Cash}_{\text{ex post}}$	-11.70***	-14.03***	-5.84***			
	(-66.01)	(-61.19)	(-34.27)			
$\text{Cash}_{\text{ex ante}}$				-2.42***	-3.37***	-1.60***
				(-48.21)	(-33.54)	(-24.88)
Tobin's Q_{t-1}	0.28***	0.45***	0.53***	0.10***	0.34***	0.35***
	(15.80)	(18.37)	(25.11)	(9.14)	(21.69)	(23.30)
Return_{t-1}	0.13***	0.26***	0.18***	0.25***	0.35***	0.25***
	(8.96)	(14.83)	(11.34)	(19.12)	(17.97)	(15.44)
$\text{Return}_{t+1,\ t+3}$	-0.01	-0.10***	-0.13***	-0.06***	-0.22***	-0.15***
	(-1.45)	(-4.43)	(-9.04)	(-8.45)	(-7.94)	(-10.79)
Ln(Sales)_{t-1}	-0.00	-0.13***	-0.34***	-0.01	-0.20***	-0.29***
	(-0.67)	(-9.06)	(-35.73)	(-1.52)	(-17.67)	(-34.42)
Ln(Age)_{t}	-0.15***	-0.41***	-0.40***	-0.17***	-0.44***	-0.35***
	(-11.61)	(-13.22)	(-18.98)	(-14.79)	(-15.84)	(-18.22)
Leverage_{t-1}	-0.54***	-0.13	0.16**	0.19***	0.69***	0.53***
	(-10.34)	(-1.41)	(2.53)	(4.35)	(9.29)	(7.88)
Constant	-0.59***	-1.85***	0.63***	-1.41***	-2.15***	-0.36***
	(-8.85)	(-12.45)	(6.84)	(-24.72)	(-17.26)	(-4.34)
Industry dummies	Yes			Yes		
Year dummies	Yes			Yes		
Observations	122,510			122,510		
Pseudo R^2	0.29			0.11		

Panel B. Economic Effects (%)

VARIABLES	No debt or equity issue	Pure debt issue	Dual issues	Pure equity issue	All debt issues	All equity issues
Regression (1):						
$Cash_{ex\ post}$	57.2	-45.8	-7.5	-3.9	-53.3	-11.4
Tobin's Q_{t-1}	-15.9	5.7	1.6	8.6	7.3	10.2
$Return_{t-1}$	-4.2	1.8	0.7	1.6	2.5	2.3
$Return_{t+1,\ t+3}$	2.9	1.0	-0.7	-3.1	0.3	-3.8
$Ln(Sales)_{t-1}$	6.7	2.8	-0.7	-8.8	2.1	-9.5
$Ln(Age)_t$	5.7	-1.1	-1.0	-3.6	-2.1	-4.6
$Leverage_{t-1}$	2.2	-3.4	0.2	1.0	-3.2	1.2
Regression (2):						
$Cash_{ex\ ante}$	18.9	-13.6	-3.0	-2.2	-16.6	-5.2
Tobin's Q_{t-1}	-10.8	2.2	2.2	6.4	4.4	8.6
$Return_{t-1}$	-9.4	6.0	1.3	2.1	7.3	3.4
$Return_{t+1,\ t+3}$	7.3	-2.0	-2.0	-3.4	-4.0	-5.4
$Ln(Sales)_{t-1}$	7.2	1.9	-1.6	-7.5	0.3	-9.1
$Ln(Age)_t$	7.3	-2.7	-1.5	-3.1	-4.2	-4.6
$Leverage_{t-1}$	-3.1	0.8	0.8	1.5	1.6	2.3

Table 7: Mulitinomial Logit for the Debt-Equity Choice, Conditional on Issuing a Security

This table reports the results for the multinomial logit regressions for the decision to issue only debt, only equity, or both debt and equity, conditional on issuing a security. Regression (1) includes $\text{Cash}_{\text{ex post}}$, an ex post cash need measure, as an independent variable, and regression (2) includes $\text{Cash}_{\text{ex ante}}$, an ex ante cash need measure, as an independent variable. Panel A reports the coefficients and t-statistics, with the base category consisting of firm-years with pure debt issues. Panel B report 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. In the last two columns of Panel B, the subtotal economic effects are reported. For example, the subtotal economic effect of $\text{Cash}_{\text{ex post}}$ on debt issues is the sum of the economic effects of $\text{Cash}_{\text{ex post}}$ on pure debt issues and dual issues of debt and equity. See the Appendix and Table 2 for 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.

Panel A: Coefficients and z-Statistics

	(1)		(2)	
VARIABLES	Dual issues	Pure equity issue	Dual issues	Pure equity issue
$\text{Cash}_{\text{ex post}}$	-2.00***	2.61***		
	(-25.13)	(29.47)		
$\text{Cash}_{\text{ex ante}}$			-0.91***	0.69***
			(-9.99)	(10.48)
Tobin's Q_{t-1}	0.26***	0.32***	0.33***	0.35***
	(13.32)	(19.30)	(18.39)	(21.02)
Return_{t-1}	0.13***	0.07***	0.15***	0.05***
	(7.25)	(4.16)	(7.07)	(3.04)
$\text{Return}_{t+1,\ t+3}$	-0.09***	-0.08***	-0.11***	-0.06***
	(-4.23)	(-6.41)	(-5.10)	(-5.31)
Ln(Sales)_{t-1}	-0.14***	-0.29***	-0.19***	-0.27***
	(-10.95)	(-29.46)	(-15.70)	(-28.57)
Ln(Age)_{t}	-0.26***	-0.18***	-0.27***	-0.18***
	(-8.69)	(-8.00)	(-9.24)	(-8.48)
Leverage_{t-1}	0.57***	0.74***	0.65***	0.43***
	(5.74)	(8.71)	(6.87)	(5.28)
Constant	-1.32***	0.63***	-1.04***	0.73***
	(-8.95)	(6.00)	(-7.61)	(7.20)
Industry dummies	Yes		Yes	
Year dummies	Yes		Yes	
Observations	37,110		37,110	
Pseudo R^2	0.21		0.15	

Panel B. Economic Effects (%)

VARIABLES	Pure debt issue	Dual issues	Pure equity issue	All debt issues	All equity issues
Regression (1):					
$Cash_{ex\ post}$	-12.0	-12.1	24.1	-24.1	12.0
Tobin's Q_{t-1}	-23.3	5.4	17.9	-17.9	23.3
$Return_{t-1}$	-4.6	2.4	2.2	-2.2	4.6
$Return_{t+1,\ t+3}$	4.8	-1.5	-3.3	3.3	-4.8
$Ln(Sales)_{t-1}$	18.4	-1.8	-16.6	16.6	-18.4
$Ln(Age)_t$	5.9	-2.6	-3.3	3.3	-5.9
$Leverage_{t-1}$	-6.9	1.5	5.5	-5.4	7.0
Regression (2):					
$Cash_{ex\ ante}$	-1.9	-4.7	6.6	-6.6	1.9
Tobin's Q_{t-1}	-26.8	7.0	19.8	-19.8	26.8
$Return_{t-1}$	-4.2	3.1	1.1	-1.1	4.2
$Return_{t+1,\ t+3}$	4.4	-2.4	-2.0	2.0	-4.4
$Ln(Sales)_{t-1}$	19.0	-3.1	-15.9	15.9	-19.0
$Ln(Age)_t$	6.2	-2.8	-3.4	3.4	-6.2
$Leverage_{t-1}$	-5.1	2.3	2.8	-2.8	5.1

Table 8: Mulitinomial Logit for the Debt-Equity Choice, Conditional on Running Out of Cash and Issuing a Security

This table reports the results for the multinomial logit regressions for the decision to issue only debt, only equity, or both debt and equity, conditional on running out of cash and issuing a security. Regression (1) includes $Cash_{ex\ post}$, an ex post cash need measure, as an independent variable, and regression (2) includes $Cash_{ex\ ante}$, an ex ante cash need measure, as an independent variable. The sample used for regression (1) requires $Cash_{ex\ post}<0$, and the sample used for regression (2) requires $Cash_{ex\ ante}<0$. Panel A reports the coefficients and t-statistics, with the base category consisting of firm-years with pure debt issues. Panel B report 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. In the last two columns of Panel B, the subtotal economic effects are reported. For example, the subtotal economic effect of $Cash_{ex\ post}$ on debt issues is the sum of the economic effects of $Cash_{ex\ post}$ on pure debt issues and dual issues of debt and equity. See the Appendix and Table 2 for 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.

Panel A: Coefficients and z-Statistics

	(1)		(2)	
VARIABLES	Dual issues	Pure equity issue	Dual issues	Pure equity issue
$Cash_{ex\ post}$	-2.67***	0.37***		
	(-27.38)	(2.93)		
$Cash_{ex\ ante}$			-1.81***	-0.69***
			(-10.01)	(-4.14)
Tobin's Q_{t-1}	0.26***	0.34***	0.25***	0.28***
	(10.29)	(13.83)	(9.39)	(10.56)
$Return_{t-1}$	0.14***	0.10***	0.23***	0.04
	(5.54)	(4.50)	(7.43)	(1.28)
$Return_{t+1,\ t+3}$	-0.11***	-0.13***	-0.11***	-0.05***
	(-4.83)	(-6.27)	(-3.95)	(-3.13)
$Ln(Sales)_{t-1}$	-0.12***	-0.31***	-0.16***	-0.23***
	(-8.00)	(-22.33)	(-9.90)	(-15.98)
$Ln(Age)_t$	-0.22***	-0.20***	-0.22***	-0.07**
	(-6.67)	(-6.30)	(-5.77)	(-2.24)
$Leverage_{t-1}$	0.60***	0.53***	0.59***	0.38***
	(4.96)	(4.86)	(4.54)	(3.23)
Constant	-1.75***	0.18	-1.03***	0.46***
	(-9.75)	(1.19)	(-4.95)	(2.76)
Industry dummies	Yes		Yes	
Year dummies	Yes		Yes	
Observations	24,417		15,408	
Pseudo R^2	0.17		0.12	

Panel B. Economic Effects (%)

VARIABLES	Pure debt issue	Dual issues	Pure equity issue	All debt issues	All equity issues
Regression (1):					
$Cash_{ex\ post}$	7.5	-12.7	5.2	-5.2	-7.5
Tobin's Q_{t-1}	-18.3	6.0	12.3	-12.3	18.3
$Return_{t-1}$	-3.6	2.0	1.6	-1.6	3.6
$Return_{t+1,\ t+3}$	6.3	-2.3	-4.0	4.0	-6.3
$Ln(Sales)_{t-1}$	14.6	-1.5	-13.1	13.1	-14.6
$Ln(Age)_t$	5.5	-2.6	-2.8	2.9	-5.4
$Leverage_{t-1}$	-5.2	2.5	2.7	-2.7	5.2
Regression (2):					
$Cash_{ex\ ante}$	6.3	-5.1	-1.2	1.2	-6.3
Tobin's Q_{t-1}	-19.9	6.3	13.6	-13.6	19.9
$Return_{t-1}$	-3.4	3.9	-0.5	0.5	3.4
$Return_{t+1,\ t+3}$	4.3	-3.1	-1.2	1.2	-4.3
$Ln(Sales)_{t-1}$	16.0	-3.4	-12.6	12.6	-16.0
$Ln(Age)_t$	3.9	-3.4	-0.4	0.5	-3.8
$Leverage_{t-1}$	-5.3	2.9	2.3	-2.4	5.2

Table 9. Cash Flow Components 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. Regression (1) includes cash flow components in year t, and regression (2) includes cash flow components in year t-1, as independent variables. Panel A reports the coefficients and t-statistics, with the base category consisting of firm-years with no security issues. Panel B report 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. In the last two columns of Panel B, the subtotal economic effects are reported. For example, the subtotal economic effect of $Cash_{t-1} \div AT_{t-1}$ on debt issues is the sum of the economic effects of $Cash_{t-1} \div AT_{t-1}$ on pure debt issues and dual issues of debt and equity. See the Appendix and Table 2 for 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.

Panel A: Coefficients and z-Statistics

	(1)			(2)		
VARIABLES	Pure debt issue	Dual issues	Pure equity issue	Pure debt issue	Dual issues	Pure equity issue
$Cash_{t-1} \div AT_{t-1}$	-7.26***	-7.21***	-2.85***			
	(-45.72)	(-29.02)	(-19.07)			
$ICF_t \div AT_{t-1}$	-13.19***	-14.95***	-9.29***			
	(-59.64)	(-52.25)	(-37.22)			
$Investments_t \div AT_{t-1}$	18.44***	20.37***	13.62***			
	(82.05)	(79.02)	(51.82)			
Non-cash $\Delta NWC_t \div AT_{t-1}$	14.61***	15.98***	9.31***			
	(58.48)	(47.11)	(31.64)			
Cash $Dividends_t \div AT_{t-1}$	8.82***	6.26***	-2.47			
	(11.34)	(3.84)	(-1.58)			
$Cash_{t-1} \div AT_{t-1}$				-3.09***	-2.20***	-0.65***
				(-33.83)	(-14.45)	(-6.96)
$ICF_{t-1} \div AT_{t-1}$				-1.04***	-4.60***	-3.55***
				(-9.84)	(-31.06)	(-32.38)
$Investments_{t-1} \div AT_{t-1}$				3.01***	4.85***	2.47***
				(33.24)	(31.71)	(21.21)
Non-cash $\Delta NWC_{t-1} \div AT_{t-1}$				1.23***	2.74***	1.90***
				(10.99)	(14.39)	(15.32)
Cash $Dividends_{t-1} \div AT_{t-1}$				-3.95***	-8.57***	-16.64***
				(-5.87)	(-3.91)	(-9.34)
Tobin's Q_{t-1}	0.07***	0.25***	0.37***	0.12***	0.31***	0.32***
	(3.68)	(9.92)	(17.90)	(10.39)	(19.12)	(20.58)
$Return_{t-1}$	0.05***	0.21***	0.13***	0.22***	0.38***	0.29***
	(2.78)	(4.78)	(6.27)	(16.66)	(18.37)	(16.72)
$Return_{t+1, t+3}$	-0.01	-0.11***	-0.11***	-0.06***	-0.20***	-0.14***
	(-1.35)	(-4.93)	(-8.28)	(-8.65)	(-7.89)	(-10.68)
$Ln(Sales)_{t-1}$	0.03***	-0.06***	-0.22***	-0.03***	-0.11***	-0.15***
	(4.04)	(-4.31)	(-21.01)	(-4.53)	(-8.64)	(-15.97)
$Ln(Age)_t$	-0.06***	-0.30***	-0.26***	-0.14***	-0.37***	-0.28***
	(-4.67)	(-10.01)	(-12.53)	(-12.13)	(-13.17)	(-14.22)
$Leverage_{t-1}$	0.31***	0.93***	0.91***	0.12***	0.57***	0.37***
	(5.50)	(9.01)	(10.48)	(2.63)	(7.16)	(5.32)
Constant	-2.05***	-3.87***	-1.39***	-1.35***	-2.87***	-1.27***
	(-29.44)	(-25.29)	(-13.69)	(-22.02)	(-21.02)	(-13.93)
Industry dummies	Yes			Yes		
Year dummies	Yes			Yes		
Observations	122,510			122,510		
Pseudo R^2	0.33			0.12		

Panel B. Economic Effects (%)

VARIABLES	No debt or equity issue	Pure debt issue	Dual issues	Pure equity issue	All debt issues	All equity issues
Regression (1):						
$Cash_{t-1} \div AT_{t-1}$	25.4	-23.2	-2.2	0.0	-25.4	-2.2
$ICF_t \div AT_{t-1}$	44.0	-32.9	-4.5	-6.7	-37.3	-11.1
$Investments_t \div AT_{t-1}$	-66.9	50.1	6.7	10.2	56.7	16.8
Non-cash $\Delta NWC_t \div AT_{t-1}$	-36.9	28.8	3.5	4.6	32.3	8.0
Cash $Dividends_t \div AT_{t-1}$	-2.6	3.7	0.2	-1.4	3.9	-1.2
Tobin's Q_{t-1}	-6.5	-0.9	1.0	6.3	0.2	7.4
$Return_{t-1}$	-2.0	0.1	0.7	1.2	0.8	1.9
$Return_{t+1, t+3}$	2.2	1.1	-0.8	-2.5	0.3	-3.3
$Ln(Sales)_{t-1}$	2.6	3.2	-0.3	-5.5	2.9	-5.8
$Ln(Age)_t$	2.7	0.3	-0.9	-2.2	-0.5	-3.0
$Leverage_{t-1}$	-3.3	0.3	0.7	2.4	1.0	3.1
Regression (2):						
$Cash_{t-1} \div AT_{t-1}$	15.9	-15.1	-1.3	0.5	-16.4	-0.8
$ICF_{t-1} \div AT_{t-1}$	9.3	-1.8	-2.6	-4.9	-4.4	-7.5
$Investments_{t-1} \div AT_{t-1}$	-12.0	7.9	2.1	1.9	10.0	4.0
Non-cash $\Delta NWC_{t-1} \div AT_{t-1}$	-4.9	2.4	1.0	1.6	3.4	2.6
Cash $Dividends_{t-1} \div AT_{t-1}$	4.5	-0.9	-0.4	-3.2	-1.3	-3.5
Tobin's Q_{t-1}	-10.9	3.5	1.9	5.6	5.4	7.4
$Return_{t-1}$	-9.2	5.1	1.4	2.7	6.5	4.1
$Return_{t+1, t+3}$	7.1	-2.3	-1.8	-3.0	-4.2	-4.8
$Ln(Sales)_{t-1}$	4.8	-0.4	-0.8	-3.6	-1.2	-4.4
$Ln(Age)_t$	5.9	-2.3	-1.3	-2.3	-3.6	-3.6
$Leverage_{t-1}$	-2.1	0.5	0.7	1.0	1.2	1.7