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ABSTRACT

Firms conduct SEOs to resolve a near-term liquidity squeeze, and not primarily to exploit market timing opportunities. Without the SEO proceeds, 62.6% of issuers would have insufficient cash to implement their chosen operating and non-SEO financing decisions the year after the SEO. Although the SEO decision is positively related to a firm's market-to-book (M/B) ratio and prior excess stock return and negatively related to its future excess return, these relations are economically immaterial. For example, a 150% swing in future net of market stock returns (from a 75% gain to a 75% loss over three years) increases by only 1% the probability of an SEO in the immediately prior year. Strikingly, most firms with quintessential "market timer" characteristics fail to issue stock and a non-trivial number of mature firms do issue stock, with current and former dividend payers raising more than half of all issue proceeds.

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Fundamentals, Market Timing, and Seasoned Equity Offerings

1. Introduction

Firms that conduct seasoned equity offerings typically have high stock market valuations that increase markedly before the SEO (Asquith and Mullins (1986), Masulis and Korwar (1986)). These signature issuer characteristics are inconsistent with the traditional trade-off and pecking order models, but are compatible with the "pure" market timing theories of Loughran and Ritter (1995) and Baker and Wurgler (2002) in which stock offerings are motivated primarily by managers' desire to take advantage of an "open financing window" to sell over-valued equity. They are also compatible with theories in which market timing is not the primary motivation, but nonetheless influences financial decisions (Blanchard, Rhee, and Summers (1993) and Baker, Stein, and Wurgler (2003)). Market timing is currently the most strongly supported of the three major theories of financial policy, given the well-documented empirical shortcomings of the trade-off and pecking order models (see, e.g., Frank and Goyal (2003), Welch (2004), and Fama and French (2005)).

Our evidence indicates that market timing is not the primary motivation for selling stock, which is typically a fundamental need for cash to resolve a near-term liquidity squeeze, but it does not rule out market timing as a secondary influence that systematically impacts SEO decisions. Additionally, a subset (9%, two-fifths of which occur in the 1995-2000 "bubble" period) of our sample firms stockpiles the offer proceeds, consistent with "pure" market timing theories. Carlson, Fisher, and Giammarino (2006) argue that SEOs may appear to be driven by market timing when in fact the typical pre-SEO stock price increase simply reflects an increase in the value of issuers' profitable growth options, with an associated need for external capital to exercise those options. Our evidence that most sample issuers increase capital expenditures and experience a near-term liquidity squeeze is consistent with the Carlson, Fisher, and Giammarino model. However, some of our other evidence (e.g, mature issuers' low Altman Z-scores) indicate that SEO decisions do not solely reflect a need to fund growth options.

If market timing is the primary reason for selling stock and if, as commonly thought, growth firms are more difficult to value, we would expect the vast majority of SEO issuers to be growth firms.

We find, however, that current and former dividend payers --- firms that are clearly beyond the growth stage --- account for 52.5% of SEO proceeds and 41.4% of all offers. The population of industrial firms contains many small, growth firms with high market-to-book (M/B) ratios that have never paid dividends, and a moderate number of large, mature firms with lower M/Bs that have paid them (Fama and French (2001)). We find that the probability that a firm conducts an SEO is nearly the same whether or not it has paid dividends, which implies that the prominence of high M/B issuers in SEO samples mainly reflects the large number of growth firms in the population, rather than a higher propensity to conduct SEOs on the part of growth firms. To the extent that market timing opportunities occur primarily at growth firms, this finding casts doubt that market timing is the primary determinant of the decision to issue stock.

We next fit logit regressions on the full sample of industrial firms to test whether the SEO decision is positively related to a firm's M/B ratio and its prior three-year excess stock return, and negatively related to its future three-year excess return. Consistent with market timing theories, all three coefficients are of the predicted sign and statistically significant for the full sample (and most remain significant for subsamples sorted by dividend proxies for growth and mature firms). However, radical changes in M/B and recent and future excess returns have an economically immaterial impact on the probability of an SEO. For given recent and future excess returns, the annual SEO probability increases only by about 1% when a firm's M/B ratio is three times instead of one-half the contemporaneous median M/B for all firms. For given M/B and prior stock performance, a 150% swing in future net of market stock returns (from a 75% gain to a 75% loss over three years) increases by only 1% the SEO probability in the immediately prior year. For given M/B and future returns, a similarly small change in the SEO probability accompanies comparably large differences in prior period excess stock returns.

Paraphrasing Sherlock Holmes, the lack of economic significance for the market timing variables in our logits reflects the fact that many "dogs don't bark" at times when, according to theory, many should be barking. Specifically, while firms that conduct SEOs tend to have high M/Bs, high pre-offer excess returns, and low post-offer excess returns, many other firms in the industrial population also have these quintessential "market timer" characteristics, yet fail to issue stock. The problem with SEO stock

return studies, which brought market timing theories to center stage, is that they consider only the "dogs that bark," i.e., the firms that choose to sell stock, thus provide no data on whether many or few firms with market timing opportunities actually exploit them. Our finding that many firms do not issue stock during an open financing window that is about to close is incompatible with any theory in which market timing is the driving force behind the decision to issue stock.

As Loughran and Ritter (1997, p. 1848) indicate, pure market timing theories predict that issuers will typically not spend the issue proceeds immediately because "the windows of opportunity framework asserts that when a firm is substantially overvalued it is likely to issue equity, taking advantage of the opportune time to augment what Myers refers to as financial slack." Intuitively, if market timing is in fact the primary motivation for selling stock, only by chance would issuers be operating with seriously limited resources when a financing window opens, thus they would most often stockpile the offer proceeds. We observe signs of cash stockpiling in only 9% of our sample SEOs. More problematic for pure timing theories, we find the antithesis of cash stockpiling --- that is, a significant near-term liquidity squeeze --- for the preponderance of the issuers in our sample.

Without the SEO proceeds, 62.6% of issuers in our sample would run out of cash the year after the SEO and 81.1% would have sub-normal cash balances. The fact that, absent the cash infusion, most issuers would have to alter their current operating and other financing decisions supports the view that the primary reason for conducting an SEO is a near-term fundamentals-based need for cash. Furthermore, 60.4% of issuers increased their debt around the time of the SEO and, without the debt increase and the SEO proceeds, 74.2% would run out of cash by the year after the SEO and 87.3% would have sub-normal cash balances. Although most issuers increase capital expenditures post-SEO, these increases do not cause the liquidity squeeze we document. Even had capital expenditures remained flat the year of and the year after the SEO, 40.3% of issuers would still run out of cash in the year after the SEO and 59.6% would have sub-normal cash balances without the SEO proceeds. Mature issuers' low Altman Z-scores show that financial distress is a serious possibility for this subset of issuers, suggesting that mature firms raise equity to obtain some breathing room while managers try to resolve the firm's financial difficulties.

Although our liquidity squeeze evidence is inconsistent with pure market timing theories, it does not rule out behavior in which firms systematically exploit an open financing window, then quickly spend the offer proceeds to avoid revealing that they have just sold over-valued shares. However, our evidence that most sample issuers faced a liquidity squeeze even had managers not increased capital expenditures is problematic for this alternative market timing theory, as is our finding that mature firms with low pre-SEO Altman Z-scores issue stock, since *ex ante* these firms exhibit clear signs of an immediate cash need. The strongest evidence against this alternative timing theory is our finding that most "dogs don't bark," i.e., that the vast majority of firms with market timing opportunities fail to take advantage of them.

Section 2 of the paper describes our sampling procedure, summarizes the cross-sectional distribution of SEO proceeds, and reports the probability that a firm conducts an SEO as a function of its dividend history. Section 3 analyzes the impact of its stock market valuation on a firm's SEO decision. Section 4 documents issuers' immediate need to raise cash. Section 5 reports evidence on issuers' leverage and Altman Z-scores surrounding SEOs. Section 6 concludes.

2. SEO proceeds, dividend histories of issuers, and issuance probabilities

We analyze SEOs conducted by industrial firms, which we define for each year 1973-2001 as those firms on CRSP/Compustat that (1) have four-digit SIC codes outside the intervals 4900-4949 (utilities) and 6000-6999 (financial companies), (2) are listed on the NYSE, Nasdaq, or Amex, (3) have securities with CRSP share codes 10 or 11, (4) are incorporated in the U.S. according to Compustat, and (5) have non-missing values on Compustat for dividends and earnings before extraordinary items. We study 4,291 SEOs from Loughran and Ritter's (1995) data base (as updated by the authors) conducted during 1973-2001 by firms that satisfy conditions (1) through (5) in the fiscal year prior to the SEO. We impose other data availability conditions as necessary (e.g., non-missing data on CRSP/Compustat) and so we sometimes analyze fewer than 4,291 SEOs. In the few cases of multiple SEOs by the same issuer in a given year, we aggregate the issue proceeds and treat them as a single observation.

2.1 The size distribution of SEO proceeds

As does the universe of publicly traded firms, our SEO sample exhibits significant heterogeneity in size, life-cycle stage, and various other financial characteristics. Table 1 shows material variation across SEOs in the amount of cash raised, and provides a hint of the wide differences in issuers' histories of paying dividends which, as detailed below, we use as a proxy to differentiate growth and mature firms. SEOs with the largest 10% of cash proceeds (decile 10) account for 48.6% of the total proceeds from all offerings, while the largest 20% and 30% of offers respectively account for 64.2% and 74.5% of all proceeds. Remarkably, although the lowest eight proceeds deciles together contain 80% of SEOs by number, they account for substantially less in total proceeds than the top decile alone (35.8% versus 48.6%). SEOs in the top decile raise an average of $414.6 million and account for total proceeds of $177.9 billion, both of which are 55 times the average $7.5 million and total $3.2 billion for the bottom decile. Issuers that are current or former dividend payers account for 56.2% of SEOs in the top decile and 41.4% of all SEOs, contrary to the view that SEOs are mainly the province of young growth firms.

The facts that a large number of SEOs raise a small amount of cash and that a modest number of SEOs raise a large amount of cash reflect attributes of the population of publicly held firms. Fama and French (2006) find that the NYSE-Amex-Nasdaq universe contains many tiny to moderate-sized firms and a modest number of large firms, with about 60% of stocks accounting for only 3% of total market capitalization. Fama and French (2001, 2004) document that the industrial population contains a large number of publicly traded growth firms, which tend to be small, have higher M/Bs and lower profitability than mature firms, and not pay dividends. DeAngelo, DeAngelo, and Skinner (2004) find that a small set of firms generates the bulk of earnings and dividends by publicly held industrials, while many firms report only modest earnings and pay few or no dividends. In sum, the universe of potential equity issuers contains many small growth firms and a modest number of mature, profitable firms, and table 1 shows that the size distribution of SEO proceeds is similarly disparate.

2.2 Dividend history and issuance probabilities

We use a firm's dividend history as a proxy for its life-cycle stage, assuming that growth firms

are those that have never paid dividends, and mature firms are those whose cumulative dividends rank in the top 500 of industrial firms. We base these classifications on Fama and French's (2001) analysis of firms that have never paid dividends and on DeAngelo, DeAngelo, and Skinner's (2004) finding that the top 500 payers distribute the vast majority of total dividends paid by industrial firms in a given year.[1] We use the cumulative dividend rank to identify mature firms since a firm that has previously paid substantial dividends, but whose current dividends are low or even nonexistent due to financial distress remains, nonetheless, a mature firm in terms of its growth opportunities. We expect firms whose cumulative dividends place them below the top 500 to fall somewhere between the mature and growth stages on average, since they include both firms in transition from growth to maturity that have just begun to pay dividends and small mature firms whose dividends are simply not that large in absolute terms.

Table 2 reports the probability that a firm conducts an SEO in a given year (the annual SEO probability) for all industrial firms, for firms in the "top payer," "other payer," and "never paid" classes, and for several other dividend categories. It also describes the incidence and dollar proceeds of SEOs, the median number of years listed at the time of the SEO, and the median issuer's standardized M/B ratio (issuer M/B divided by the contemporaneous median for all industrials) closest in time, but prior to the SEO. The annual SEO probability is 4.1% for firms that have never paid dividends, 2.8% for those that have paid them, and 2.3% for those in the top payer group (per column (1)). The probabilities for all dividend categories reported in the table fall within the 2.3% to 4.1% range. We interpret these data as indicating that growth and mature firms conduct SEOs with low probabilities of roughly the same absolute magnitude. On the other hand, the SEO probability is 46% higher for firms that have never paid dividends than for those that have paid them, and 78% higher than for the top dividend payers, and so the relative likelihood of an SEO is clearly greater among growth firms. Consistent with our interpretation,

[1] We classify mature firms based on dividend history rather than on years listed in part because longevity alone does not guarantee sufficient profitability (or sufficiently consistent profitability, per Lintner (1956)) to support ongoing distributions to stockholders. A record of large payouts, on the other hand, is generally not feasible for firms that have not attained such profitability, thus is a more reliable empirical indicator of a mature firm. Finally, inspection of the firms that dominate the supply of dividends readily confirms that these are old-line companies that fit the mature company stereotype (see, e.g., DeAngelo, DeAngelo, and Skinner (2004)).

Loughran and Ritter (1995, fn 11) report an unconditional annual probability of an SEO of roughly 3%, and indicate that the probability of an SEO is "only slightly higher for young firms."

The important role of mature issuers in the SEO market is reinforced by the fact that 52.5% of the total proceeds of all SEOs are raised by firms that have paid dividends, with 27.1% of all proceeds raised by "top payers" and another 25.5% by "other payers" (columns (2) through (5) of table 2). Although other payers raise one-fourth of all SEO proceeds, they account for one-third of offerings because, like issuers in the never paid group, they are typically much smaller firms than the top payers. [The median issuer in the other payer and never paid dividends groups respectively ranks at the 22nd and 25th percentiles of NYSE-listed industrials in terms of total market value of equity, while the median issuer in the top payer group ranks at the 74th percentile (data not reported in table 2).] Top payers account for only 7.8% of SEOs, but they raise more than a quarter of the total sample proceeds because this group is dominated by large, mature firms that typically raise sizable amounts of cash. Top payers account for a modest fraction of all SEOs because their total number in any year is, by definition, limited to 500 firms whereas the other classes face no such limit and contain many more firms, and not because the SEO probability is markedly lower for top payers, which it isn't, per column (1) of table 2. [If firms in the top payer group conducted SEOs at the 4.1% annual rate of firms in the never paid group, the never paid group would account for 55.3% instead of 58.6% of all SEOs.]

The third column of table 2 reports that 12.0% of SEOs (and 13.5% of total proceeds) are accounted for by firms that formerly paid dividends, while 29.4% of SEOs (and 39.0% of total proceeds are by firms that paid dividends the year before the offering. Since dividend omissions are generally a sign of serious financial trouble, the non-trivial incidence of former payers is consistent with evidence reported in section 5 below that mature firms typically conduct SEOs at times when their Altman Z-scores indicate a significant probability of financial distress. The observation that former and current payers conduct SEOs with the same probability (2.8%) suggests that financial difficulties do not preclude a public stock offering, although they might reasonably seem to impede one.

The last two columns in table 2 report the median number of years listed and the median

standardized M/B ratio for the various dividend categories. The median issuer is listed 5.1 years at the SEO date and has a standardized M/B ratio of 1.71 in the prior year. Issuers that have never paid dividends also fit this growth firm stereotype --- the median issuer is listed just 3.0 years and has a relatively high standardized M/B of 2.06. In stark contrast, the median issuer in the top payer group is obviously a mature firm, having been listed for 42.3 years and with a standardized M/B of 0.98, an M/B ratio that is just below the median for all industrial firms. The median issuer in the other payer group falls in between, having been listed 10.2 years and with a standardized M/B of 1.45. These data on M/B ratios and years listed support the view that the "never paid" and "top payer" groups largely consist of growth and mature firms, respectively, while firms in the "other payer" group fall somewhere in between, thus may reasonably be viewed as "transitional" firms.

3. Stock market valuation and the SEO decision

To test whether market timing influences the decision to conduct an SEO, we examine the issuance versus non-issuance decisions by all industrial firms, and do not restrict attention to those firms that conduct SEOs (as in Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995)). We use logit regressions to test whether higher values of a firm's standardized M/B ratio and most recent 36 month net of market stock return are associated with higher SEO probabilities. We also test for a negative relation between future stock performance and SEO probability, since stock offerings motivated by managers' desire to sell over-valued equity more likely occur near a stock price peak, i.e., when insiders judge that an open "financing window" is soon to close. If, as market timing theories assume, managers can predict stock returns better than investors, then the firm's *ex post* (realized) return will be positively correlated with managers' *ex ante* expected return. And so we use the firm's realized future 36-month excess stock return to test whether managers tend to conduct SEOs when a financing window is soon to close. Our use of realized future stock returns as a proxy for managers' expectation of the firm's share price performance is analogous to Baker, Stein, and Wurgler's (2003, section IV.D) and Huang and Ritter's (2007, table 4) use of future stock returns as an explanatory variable in tests of market timing.

3.1 M/B, prior and future excess stock returns, and the SEO decision

Our logit regressions use 27 years of data (1975-2001) on industrial firms' decisions to conduct or not conduct an SEO. For a given firm in a given year, the dependent variable equals 1 if the firm conducts an SEO in that year, and 0 if it does not. The independent variables are the firm's most recent standardized M/B ratio, its most recent 36-month excess stock return, and its future 36-month excess return. We pool observations for the years 1975-2001,[2] and generate standard errors clustered by both time and firm (per Petersen (2007)) to obtain t-statistics to gauge whether the coefficients on M/B and the pre- and post-period excess stock returns differ significantly from zero. We measure excess stock returns as the raw stock return minus the contemporaneous return on the value-weighted market index, with no firm-specific risk adjustments.

To obtain the M/B and excess returns data, we apply the following algorithm for each year 1975-2001, which for brevity we describe only for 1975. We start with all industrial firms --- issuers and non-issuers --- that meet sampling conditions (1) through (5) from section 2 and that are listed on CRSP at year end 1975. For each firm, we obtain the standardized M/B ratio for the fiscal year end that falls closest to, but no later than, December 31, 1974, and the 36-month excess stock return ending December 1974 and the 36-month excess stock return beginning in January 1976. To be included, a firm must have non-missing stock returns on CRSP for at least seven of the 12 months in 1976, 1977, and 1978, provided the firm remains listed in December 1978. For firms that are delisted before then, we use the excess return beginning with December 31, 1975 and ending with the CRSP delisting return (net of market). We also require non-missing returns for at least seven of the 12 months in 1972, 1973, and 1974 during which the firm is on CRSP for a full calendar year. For firms listed less than the full three years, we calculate the excess return from listing and treat it as a 36-month return. Finally, we require that no more than two

[2] Our logits cover 1975-2001 because they require Compustat data from at least one calendar year prior to each analysis year. Since Nasdaq firms are not on CRSP until 1972, our use of the merged CRSP/Compustat data base makes the 1973 Compustat file the earliest complete data source that we have. Because of cross-firm heterogeneity in Compustat fiscal year-end timing conventions, the 1974 file is the first year with complete pre-SEO data for our logits. Accordingly, while we use all observations over 1973-2001 when possible in the paper, our logit regressions are necessarily restricted to 1975 and later years.

consecutive months have missing returns over the pre- and post-1975 periods.

Panel A of table 3 shows that the probability of an SEO in a given year is significantly positively related to the firm's standardized M/B ratio (t-statistic = 6.19) and its pre-period excess return (t-statistic = 4.66), and negatively related to its future excess stock return (t-statistic = -8.67). Logits that employ each of these explanatory variables in isolation or in pairs yield similarly significant relations (details not provided). In all models that we estimate, the intercept is negative and highly significant, indicating the unconditional probability of an SEO is low. The fitted model therefore mechanically classifies a high percentage of observations correctly (details not shown), but the incremental explanatory power of the market timing variables is low, as indicated by the very low pseudo R-squared. The statistically significant positive M/B and pre-period excess return coefficients and the significantly negative future excess return coefficient all support the market-timing explanation for SEOs.[3]

Panels C and D of table 3 show that the full sample results in panel A continue to hold for the "other payer" and "never paid" dividend classes, and panel B shows that the statistically significant negative impact of future stock returns is preserved for top payers. However, panel B also indicates that the significantly positive coefficients on M/B and pre-period excess stock return disappear when we restrict attention to industrial firms in the top dividend payer group. The estimated coefficient on standardized M/B is now negative, while the positive coefficient on the pre-period stock return is now insignificant at conventional levels. These findings reflect the facts that issuers in the top payer group have a median standardized M/B of only 0.98 (per table 2) and a median pre-period 36-month excess stock return of only 0.40% (excess return not tabulated). Most importantly, they show that a higher stock market valuation does not imply a higher SEO probability for mature firms.

[3] Empirical support for market timing is potentially sensitve to the benchmarks used to measure equity mis-pricing. For example, Wagner (2007) takes issue with M/B as an index of over-valuation and instead uses estimates of discounted EPS and the present value of growth opportunities. He rejects the hypothesis that shares are mis-priced in stock offerings and finds no systematic post-offer returns drifts. We use M/B and prior and future period excess returns in our timing tests because they are the variables used in Baker and Wurgler (2002) and Loughran and Ritter (1995). Our concern here is simply to asses the extent to which variation in prior and future stock returns (and M/B) is associated with a greater likelihood of an SEO, thus our table 3 and 4 analyses are agnostic with respect to the (still unresolved) question of whether SEOs are followed by systematic negative stock return drifts.

3.2 Statistical versus economic significance

Although the statistical results in table 3 indicate that higher equity values are associated with a higher SEO probability, statistical significance need not imply economic significance. In fact, table 4 shows that very large valuation differences have a quantitatively trivial impact on SEO probabilities, based on table 3's full sample coefficient estimates. Panels A, B, and C of table 4 hold the M/B ratio constant at, respectively, one-half the contemporaneous sample median M/B for all industrial firms, at the sample median, and at three times the sample median. The columns reflect different hypothetical levels of prior 36 month excess stock returns, ranging from an hypothesized share price decline of -75.0% to a three-year value gain of +75.0%, net of the overall market return. The rows reflect hypothetical values of future excess stock returns, with the top row hypothesizing a net of market increase of 75.0% and the last row a net of market decline of -75.0%. The numbers within each panel give the SEO probability conditional on a firm's standardized M/B and its pre- and post-offer excess stock returns.

Table 4 posits substantial hypothetical changes in M/B and excess stock returns yet, in every case, the implied change in SEO probability is economically trivial. For example, the SEO probability is 4.3% for a firm with standardized M/B of 1.0, pre-period net of market stock appreciation of 75.0%, and a future excess stock return of -75.0%, which exceeds by only 1.0% the 3.3% probability for a firm with identical M/B and prior stock appreciation, but a future excess return of +75.0%. [The difference is about 1% for all M/Bs in the table.] That is, when a firm's share price is about to collapse, its SEO probability exceeds by only a small amount its SEO probability when it will soon experience a 75% abnormal return. Holding M/B fixed, a swing of 150% in prior period excess returns (from -75.0% to +75.0%) alters the SEO probability by less than 1.0%. When we fix both pre- and post-period stock returns and increase the standardized M/B from 0.5 to 3.0, the SEO probability never increases by more than 1.1% (compare any given cell in panel A to the analogous cell in panel C). In sum, a firm with outstanding market timing opportunities will issue stock with only slightly higher probability than will a firm for which selling stock would entail a serious timing error.

A simple sensitivity analysis of our table 4 results indicates that the market timing variables

continue to have an economically immaterial effect on the probability of an SEO, even with large deviations from table 3's fitted coefficient values, which could arise, e.g., due to sampling error, omitted correlated variables, measurement error in the explanatory variables, etc. Specifically, we re-run the table 4 probability calculations using hypothetical coefficient values (varied one at a time) that are double the magnitude of the fitted values in table 3. [Given that the t-statistics range from 4.66 to 8.67 in absolute value, a doubling of the fitted coefficient represents in all cases a very large change in the coefficient value relative to its standard error.] In each scenario described in the prior paragraph in which we vary the valuation parameters over very broad ranges, most probability differences are less than 2.0% and the largest is 2.5%.

Overall, tables 3 and 4 document three main regularities. First, higher M/Bs, higher prior excess stock returns, and lower future excess returns increase the probability of an SEO in a sample that pools all industrial firms (both issuers and non-issuers) without regard to dividend history. Second, in our regressions the statistically significant influences of M/B and prior period stock performance on the SEO decision disappear when we restrict attention to the mature firms in the top payer group. Third, the magnitudes of the estimated coefficients indicate that any impact of M/B and recent and future excess returns on the SEO decision is economically inconsequential. We interpret the second and, especially, the third regularities as raising significant doubts about whether high M/Bs, large stock price run ups, and prospective share price declines are the main determinants of the SEO decision.

3.3 Most dogs don't bark when market timing theories say they should be barking

Why do our conclusions differ markedly from studies such as Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995), which seem to provide strong evidence that market timing is an important determinant of the SEO decision? The simple answer is that these studies focus exclusively on how the share prices of firms that actually choose to issue stock (3.4% per year for industrial firms, per table 2) behave around the time of the SEO, whereas we examine the full industrial population to gauge the extent to which firms do or do not take advantage of stock market-timing opportunities. Our approach reveals a major problem for market timing theories of all variants --- namely, very few firms with highly

favorable market timing opportunities actually issue stock --- so few, in fact, that their propensity to issue exceeds only trivially that of firms with no such opportunities. The data in table 4 indicate that, e.g., of every 100 firms with a M/B ratio of 3.0, prior excess returns of +75%, and future excess returns of -75%, 95 firms fail to issue stock. Thus market timing is, at best, a seriously incomplete theory and, in any case, cannot possibly be the primary motive why firms issue stock.

4. Cash balances, SEO proceeds, and the need for external capital

We next document that both growth and mature firms tend to conduct SEOs when they currently experience a "cash squeeze." Although most issuers increase capital expenditures (CapEx), that is not the cause of the squeeze, since even with no CapEx increase following the SEO, most issuers would have below normal cash holdings had they attempted to maintain their chosen operating, investment, and non-SEO financing decisions (hereafter their "operating and other financing decisions") using internal funds alone. Since sample firms pervasively require cash when they issue stock, the issue decision cannot solely reflect market timing designed to exploit a high stock price.

4.1 Most issuers would run out of cash without the SEO proceeds

Table 5 indicates that the median issuer's cash to total assets ratio (Cash/TA) increases from 7.2% in the year before the SEO to 13.3% at the end of the SEO year, then falls to 8.8% in the year after the SEO --- nearly three-quarters of the way back to the pre-SEO level. All sample partitions exhibit an SEO-induced increase and an immediate and almost-complete reversion in median Cash/TA, which indicates that issuers in all dividend classes quickly utilize the SEO proceeds (rows 1-3). The typical behavior of Cash/TA around the SEO is more dramatic for firms that have never paid dividends (14.5% to 25.0% to 17.5%) than for the top payers (2.7% to 3.1% to 2.8%) or the other payers (4.5% to 7.1% to 4.6%). [Higher Cash/TA ratios for firms that have never paid dividends is consistent with the Opler et. al. (1999) finding that growth firms tend to have higher cash balances than mature firms.] Qualitatively similar but muted trends characterize Excess Cash/TA --- i.e., the firm's actual Cash/TA minus the

estimated "normal" level required to operate the firm --- in the years surrounding the SEO (rows 4-6).[4]

Although rows 1-6 of table 5 show that issuers typically quickly utilize the SEO proceeds, these Cash/TA trends mask the pivotal role of those proceeds in enabling issuers to implement their operating and other financing decisions. The speed with which issuers typically put the SEO proceeds to work is evident from the fact that the median issuer in the full sample raises $30.4 million in the SEO (row 10) but has only $18.3 million in cash the year after the SEO (row 9), and similar differentials hold for all sample partitions. [The increase in the dollar amount of cash (row 7 versus 9) conforms to the evidence in Kim and Weisbach (2007).] To capture the pivotal importance of the SEO proceeds, we calculate *pro forma* Cash/TA ratios for each issuer in the year after the SEO under the assumption that it did not receive the cash proceeds, but otherwise maintained all other non-SEO investment and financing decisions. This hypothetical exercise holds all other decisions fixed and therefore, e.g., rules out asset sales or other security offerings to replace the SEO proceeds. We also calculate *pro forma* Excess Cash/TA ratios for each issuer by subtracting from *pro forma* Cash/TA an estimate of the firm's "normal" Cash/TA ratio.

Table 5's most striking finding is that, all other decisions fixed, a clear majority of issuers would almost immediately run out of cash had they not received the issue proceeds. The median *pro forma* Cash/TA ratio in the year after the SEO is -4.2% for the full sample, and -1.0%, -4.8%, and -5.3% respectively for the top payer, other payer, and never paid groups (row 11). Median *pro forma* Excess Cash/TA is -11.7% for the full sample, and -5.1%, -10.8%, and -15.4% for the three groups (row 12). Without the SEO proceeds, 62.6% of issuers would have negative Cash/TA in the year after the SEO (row 13) and 81.1% would have sub-normal Cash/TA (row 14). All sample partitions show the same "liquidity squeeze" pattern --- without the SEO proceeds, between 58.4% and 69.3% of issuers would be forced to alter their operating and financial policies to avoid running out of cash, and between 74.6% and 86.0%

[4] "Normal" Cash/TA is calculated by sorting all industrial firms (not only issuers) that meet our section 2 sampling criteria for the year in question into (i) three equal size groups based on total book assets and (ii) three equal size groups based on the ratio of the market to book values of assets (not of equity as in our earlier logit tests). Each observation is then allocated to one of nine groups based on relative size and market to book. Within each of the nine groups, a "normal" Cash/TA ratio is calculated for each two-digit SIC industry as the median ratio among all firms in the industry for the year in question.

would have sub-normal Cash/TA ratios.

The "cash squeeze" documented in table 5 differs fundamentally from the literature's concept of a "financing deficit," which measures the amount of external capital actually raised in a given period and not the amount of cash required to carry out the firm's plans, which is what we estimate here.[5] A firm with ample cash balances that chooses to sell a large amount of stock --- e.g., to exploit a market timing opportunity --- will show a large "financing deficit" in the period that it issues equity. But this firm is in no way strapped for resources to carry out its plans, as would be evident under the measure we report in table 5, which takes cash balances into account in gauging whether a firm truly needs outside funds. In fact, the term "financing deficit" is misleading because it suggests an exogenous need for external capital, whereas the variable it describes is selected by managers. In short, the "financing deficit" is inappropriate for our purposes because it measures the actual, rather than the required capital infusion.

McLaughlin, Safiedddine, and Vasudevan (1996) and Loughran and Ritter (1997) observe material and persistent declines in operating profitability beginning almost immediately after firms conduct SEOs, while Hansen and Crutchley (1990) document negative abnormal earnings in the year of and for several years following offerings of common stock, straight debt, and convertible debt. These declines in reported earnings are consistent with a need for outside capital, but do not convincingly demonstrate such a need because, e.g., they ignore firms' cash balances. In contrast, our table 5 measures incorporate both cash balances and near-term cash inflows. Thus they are capable of showing and actually do show that, for most issuers, raising outside capital was unavoidable if managers were to carry out their operating and other financing decisions.

[5] Frank and Goyal (2003, p. 221) measure the "financing deficit" as the change in long-term debt plus cash raised from stock sales minus cash paid to repurchase shares. Fama and French (2005) measure the "financing deficit" as the one-year change in the book value of total assets minus the change in retained earnings which, through the accounting identity, equals the change in total liabilities (not limited to debt) plus the change in contributed equity capital. Both measures are estimates of the amount of external capital raised in a given period, not the amount of cash required by the firm. Shyam-Sunder and Myers (1999, p. 224) define a "funds flow deficit" which does not increase with the scale of capital infusions, but which nonetheless is problematic because it estimates financing needs on a flow basis while ignoring the firm's stock of cash. A firm with a large current "funds flow deficit" and ample cash balances has no immediate need to raise outside capital, as do our sample firms.

4.2 Capital expenditures and the need to raise external capital

Panel A of table 6 reports that, for the median issuer in the full sample, capital expenditures (CapEx) in the year before the SEO are 24.3% of SEO proceeds (row 1). For all dividend partitions, pre-SEO CapEx is roughly 6-7% of total assets at the median (data not tabulated), but varies widely from 128.4% of SEO proceeds for the median top payer to 13.7% for the median issuer in the never paid dividend group. Thus holding CapEx fixed at the pre-SEO level, the SEO proceeds cover less than one year of outlays for the median top payer and roughly seven years of outlays for the median issuer in the never paid group. However, the rate of increase in CapEx is not constant --- the median issuer in the never paid group increases CapEx by 14.0% of total assets from the year before to the year after the SEO, whereas the median issuer in the top payer and other groups increases CapEx by 1.9% and 7.8% (row 5). As a fraction of SEO proceeds, the median change in CapEx is less disparate --- 34.0% for top payers, 42.5% for other payers, and 24.4% for the never paid group.

The most important finding in table 6 is that most sample firms would have experienced a liquidity squeeze even had they not increased capital expenditures following their SEOs. This finding is documented in panel B, which reports *pro forma* Cash/TA and Excess Cash/TA under the assumptions that each issuer (i) did not increase CapEx in the year of or year after the SEO and instead retained the freed-up resources as cash balances, and (ii) did not receive the SEO proceeds. We find that, had their capital expenditures remained flat at the level of the year before the SEO, 40.3% of issuers would run out of cash and 59.6% would have sub-normal cash balances the year after the SEO (rows 10 and 11). Thus, while the desire to raise cash to fund increased investment influenced most sample firms' decisions to issue stock, it was not the only consideration since a clear majority of issuers would have sub-normal cash balances the year after the SEO even had they not increased capital expenditures.

4.3 Increased debt obligations and the need to raise external capital

Further evidence of the liquidity squeeze experienced by firms that conduct SEOs is presented in table 7, which indicates that 60.4% of issuers increased the absolute level of their debt obligations from the year before to the year after the SEO (panel A, row 1). The fact that most issuers increased their debt

around the time of the SEOs underscores the fact that increased access to capital (as opposed to rebalancing toward lower leverage) was the primary concern of most issuers. Nevertheless, table 7 does offer some hint that leverage rebalancing is important for some issuers, especially the 34.7% of the mature firms in the top payer group that decreased their debt obligations by 50% or more of the SEO proceeds (per row 5). The evidence reported in section 5 below confirms a modest rebalancing effect for a subset of issuers, and also shows that financial distress is a serious concern for the typical mature issuer.

Panel B of table 7 provides a more accurate view (than in table 5 above) of the extent of sample issuers' liquidity squeezes because it recognizes that contemporaneous debt increases help firms meet their near-term cash needs. For this analysis, we calculate *pro forma* Cash/TA and Excess Cash/TA as of the year after the SEO under the assumption that each issuer (i) did not increase its debt obligations, thus cash balances decrease by the amount of the foregone borrowing, and (ii) did not receive the SEO proceeds. Under these new assumptions, 74.2% of issuers would run out of cash by the year after the SEO (row 8) and 87.3% would have below normal cash balances (row 9). For the median issuer, table 7 reports *pro forma* Cash/TA of -16.0% and *pro forma* Excess Cash/TA of -26.3% (row 6 and row 7). Clearly, most issuers would have serious liquidity problems had they not raised external capital.

4.4 Would a dividend omission eliminate the need to raise external capital?

Table 8 documents that the SEO proceeds are almost always much larger than the issuer's most recent annual dividends, indicating that cutting or omitting dividends would only rarely enable a firm to avoid raising external capital. Panel A of the table shows that 70.6% of all issuers paid no dividends in the year before the SEO and, in another 21.2% of the sample, the issuer would have had to omit at least five years of dividends (at its dividend payout rate in the year before the SEO) to generate internally the cash it obtained from the stock offering. Only 1.2% of issuers could by omitting dividends for just one year. Incidentally, there is nothing puzzling about the behavior of most firms that simultaneously pay dividends and sell stock insofar as (i) only 4.1% of SEO issuers that currently pay dividends (= 1.2%/(21.2% +5.4% +1.6% +1.2%) per panel A) could generate the SEO proceeds internally by omitting dividends for one year or less, and (ii) they would run the risk of seeing the per-share SEO proceeds fall

substantially if they omitted dividends before a stock offering.

A full 85.5% of sample issuers could not have freed up sufficient internal resources to match the offer proceeds even had they never paid dividends prior to the stock offering (per panel B of table 8). Thus, consistent with evidence presented earlier, our sample of issuers contains not only many stereotypical growth firms that have not initiated dividends, but a substantial number of firms in transition from growth to maturity that have paid only modest dividends to date. However, a substantial minority (14.5%, per the last three rows in panel B) of SEOs are conducted by firms whose cumulative dividends-to-date exceed the SEO proceeds, and their historical dividend payments are often five or ten times (or more) the amount of cash raised in the SEO. Had these firms previously followed conservative dividend policies that enabled them to accumulate large cash balances, they could possibly have avoided issuing stock. Such cash stockpiling by mature firms is empirically rare and the most plausible explanation is that large cash balances foster agency costs, as we have argued elsewhere (Stulz (1990), DeAngelo, DeAngelo, and Stulz (2006, section 7), and DeAngelo and DeAngelo (2007)).

Panel C of table 8 re-examines the Cash/TA findings reported in rows 11-14 of table 5 under the assumption that each issuer paid no dividends in the year of and the year after the SEO, and used the retained cash to increase its cash balances. For the full sample, the median issuer would still have negative cash holdings (*pro forma* Cash/TA of -3.0%, per row 1 of panel C) and sub-normal cash holdings (*pro forma* Excess Cash/TA of –10.6%, per row 2). Moreover, 57.6% of issuers would have negative Cash/TA (row 3) and 78.5% would have below normal Cash/TA (row 4) under this assumption. Thus, retaining the cash rather than paying dividends in the year of and after the SEO would help some firms address their immediate cash needs, but such hypothetical retention would still leave 57.6% of issuers with no cash (and, as we argue above, because of the dividend omission facing less advantageous offer terms as they continue to need outside capital to make up the shortfall).

A dividend omission would free up more cash for issuers ranked in the top 500 based on their cumulative dividends, and so avoiding an omission plausibly contributed to the SEO decisions of some issuers in the top payer group. Row 1 of panel C in table 8 shows that, if top payers omitted dividends

and did not receive the SEO proceeds, median *pro forma* Cash/TA is 2.3% instead of -1.0% (per table 5) and 28.2% of issuers instead of 58.4% would have negative cash balances. Even had they eliminated dividends, 67.7% of issuers would still have sub-normal cash holdings, with a median *pro forma* Excess Cash/TA of -2.1%. The median issuer in the top payer group paid dividends for 32 years before the SEO (data not reported in table 8), and extant evidence indicates that long-standing payers are especially reluctant to omit dividends (DeAngelo and DeAngelo (1990)). On the other hand, 15.9% of the issuers in the top payer group had already eliminated dividends by the year before the SEO (data not reported in table 8), a finding that is both indicative of a serious liquidity squeeze and a precursor to our section 5 evidence that mature firms that issue stock tend to be financially troubled.

4.5 Selling stock despite abnormally high cash balances

While a substantial majority of issuers faced a "liquidity squeeze" around the time of the SEO (per tables 5-8), a non-trivial minority issued stock when their cash balances substantially exceeded normal levels. In 387 cases (9.0% of our sample), the issuer's *pro forma* Excess Cash/TA exceeds 0.10 in the year after the SEO. These firms could avoid the stock issue, carry out their full set of operating and other financing decisions at least through the year after the SEO, and still have Cash/TA ratios that are 10% or more above normal. The median issuer in this group has actual Cash/TA of 48.1% and Excess Cash/TA of 30.3% (inclusive of SEO proceeds) in the year after the SEO. The notably high cash positions of issuers in this group fit the cash stockpiling predicted under the "pure" market timing theories posited by Ritter (1991), Loughran and Ritter (1995, 1997) and Baker and Wurgler (2002). In 39.0% of these cases (151 of 387), the SEO occurred during 1995-2000, a period often cited as one in which many firms could and did sell stock to overly optimistic investors. Thus, while pure market timing cannot explain the preponderance of our findings, some of our evidence is compatible with the prediction that firms with no near-term need for cash sometimes do issue stock.

5. Leverage, leverage rebalancing, and financial distress

We next investigate the extent to which firms conduct SEOs to rebalance leverage and/or to

reduce the probability of financial distress. Fama and French (2002), Flannery and Rangan (2006), and Kayhan and Titman (2007) find that firms tend to rebalance leverage toward a target optimum, although the adjustment process is slow, typically taking some three to seven years or more. Leary and Roberts (2005, p. 2610) find that, although firms generally tend to rebalance toward a target leverage ratio, equity issuances are a prominent exception, thus they are anomalous for the trade-off theory of capital structure. Hovakimian, Opler, and Titman (2001) also report evidence of rebalancing, but conclude that the evidence is markedly weaker when the capital structure change includes an equity issuance. Hovakimian (2004) reports some signs of systematic leverage rebalancing, but not for firms that issue equity.

We document that (i) issuers that have never paid dividends typically have low leverage before the SEO, (ii) all sample partitions typically experience small leverage changes pre- and post-SEO, (iii) any systematic leverage rebalancing effect is small, and (iv) mature firms that conduct SEOs tend to have Altman Z-scores indicative of a serious risk of financial distress. The first three findings indicate that leverage rebalancing is not a first-order determinant of the SEO decision, although it may be an ancillary consideration for a subset of issuers. The fourth finding provides further support for our earlier inference that a "liquidity squeeze" underlies the decision to conduct an SEO.

Table 9 reports that, in the year before the SEO, the median top payer has a market-based ratio of total debt to total assets (TotD/MVA) of 0.270 and a book leverage ratio (TotD/TA) of 0.311, other payers have slightly lower leverage (median TotD/MVA = 0.191 and TotD/TA = 0.290) and issuers that have never paid dividends have markedly lower leverage (median TotD/MVA = 0.057 and TotD/TA = 0.158). [The rankings remain the same when we employ market and book leverage ratios with numerators based on either long-term debt or total liabilities and denominators based on either total assets or total capital, details not reported.] The very low market leverage ratios of issuers that have never paid dividends strongly support the conclusions of Frank and Goyal (2003) and Fama and French (2005) that external equity is not the financing vehicle of "last resort," as predicted by Myers and Majluf's (1984) pecking order model.

Rows 3 and 4 of table 9 show that the SEO proceeds are simply insufficient by themselves to

effect a major leverage reduction for many issuers. Per row 3, long-term debt (LTD) constitutes between 80% and 90% of total debt for the median issuer in each group and, per row 4, the scale of LTD looms large or small relative to the SEO proceeds depending on the group. For the top payers, LTD is 5.27 times the issue proceeds at the median, which implies that most of the firm's debt would remain outstanding even if all cash raised in the SEO were used to pay off debt, so that the resultant leverage reduction would not be large. Although the median issuer in the never paid group could pay off its LTD and have 84% of the issue proceeds left over (per row 4), the resultant leverage reduction would also be modest since issuers in this group typically have low leverage to begin with (per rows 1 and 2 of the table). The median issuer in the other payer group could come close to paying off its LTD with the issue proceeds but, as we discuss below, typically chooses not to do so.

Issuers show little sign of systematic exogenous leverage increases over the five years before the SEO that might motivate them to issue equity in order to rebalance leverage. For the top payers, the median pre-SEO changes in market and book leverage are only 0.019 and 0.029, while the corresponding changes for the other payers are either smaller or negative (0.008 or -0.022), and both changes are negative for the never paid group (-0.003 and -0.001). These small leverage changes are consistent with Korajczyk, Lucas, and McDonald's (1990) finding that issuers' leverage does not increase significantly in the two years before an SEO. In our sample, the median post-SEO leverage change is a reduction but, for reasons discussed above, the typical median reduction is not large, ranging from -0.005 to -0.055, depending on the group and particular leverage measure (row 6 of table 9). Masulis and Korwar (1986, p. 97) report comparably modest SEO-induced leverage changes for offerings conducted over 1963-1980.

To formally test for leverage rebalancing, we fit a cross-sectional regression in which the dependent variable is the leverage change in the year of the SEO and the explanatory variable is the leverage change over the prior five years. Because so many SEOs are conducted by firms that have been listed for just a short time (per table 2), the tests in row 7 of table 9 are based on significantly reduced sample sizes, especially for issuers that have never paid dividends. Specifically, we lose 73.9% of the observations in the never paid group, 35.3% of the observations for the other payers, and 6.6% of those

for the top payers. Given the generally low *ex ante* leverage for the never paid group (per row 1 of table 9), leverage rebalancing simply cannot be an important motive for most of these firms, and so our tests are biased in favor of finding rebalancing when no such motive is pervasively at work. The significantly negative slope coefficients of -0.222, -0.114, and -0.158 (row 7 of table 9) indicate that the SEO-related leverage change typically offsets between 10% and 20% of the leverage change over the prior five years. Because of the sample selection bias, we interpret these negative coefficients as at best suggestive of a rebalancing motive for some issuers.

Finally, table 9 reports additional evidence that supplements the cash squeeze evidence in section 4 for the mature issuers in our sample. Row 8 of the table indicates that in the year before the SEO the median issuer in the top payer group has an Altman Z-score of 2.53, which falls below the 2.99 cut-off that identifies firms for which distress is a genuine risk, but above the 1.80 cut-off that identifies firms that will likely fail (Altman (1968)). In contrast, the median Z-scores are a respectable 3.83 and 5.15 for the other payer and never paid dividends groups, although a non-trivial minority of both groups has Z-scores that indicate mild or serious financial difficulties (see rows 9 and 10 for details). Relative to the other payer and never paid groups, a markedly higher proportion of issuers in the top payer group have Z-scores below 2.99 immediately before the SEO (62.7% versus 32.4% and 43.9% per row 9) and below 1.80 (30.4% versus 12.7% and 18.2% per row 10). The fact that many top payers exhibit attributes of mildly or seriously distressed firms in the year before the SEO suggests that these firms' stock sales are motivated at least in part by the necessity to obtain some financial breathing room as managers attempt to rectify the firm's fundamental problems.

6. Conclusion

Why do firms issue stock? The answer is not that firms issue stock because they are largely growth firms with attractive investment opportunities and a concomitant need for cash, rather mature and growth firms conduct SEOs with nearly the same probability. Nor do firms issue stock primarily to rebalance leverage, since most issuers increase their debt around the time of the SEO, and their leverage

ratios typically neither increase markedly pre-SEO nor decline significantly post-SEO. Nor do firms conduct SEOs primarily to exploit a market-timing opportunity that manifests because share prices have appreciated substantially and can reasonably be expected to fall. While the probability of an SEO is positively related to a firm's current market-to-book ratio and recent excess stock return, and negatively related to its future excess return, the magnitudes of these relations are economically trivial, so that substantial increases in stock market valuation and impending large share price declines have little impact on the probability that a firm conducts an SEO. Moreover, most firms with quintessential "market timer" characteristics fail to issue stock, and a non-trivial number that lack those characteristics do issue.

Firms issue stock, according to our evidence, primarily to meet a near-term fundamentals-based need for cash --- i.e., to fund investment outlays, to satisfy debt service obligations, to avoid a dividend reduction, etc. --- and not simply because managers face an "open financing window" that now enables them to raise cash at attractive terms. The fact that most firms issue stock when they face an impending liquidity squeeze is inconsistent with a pure market timing theory of financing decisions. If managers did issue stock purely to time the market, most issuers would stockpile the bulk of the offer proceeds. In our sample, however, without the proceeds from their stock sales a clear majority of issuers would run out of cash by the year after the SEO and four-fifths would have below normal cash positions. Since stockpiling of SEO proceeds is the exception and an immediate liquidity squeeze is the rule, pure market timing is simply not descriptive for our sample issuers.

Our findings do not rule out market timing as a secondary factor for firms that have a fundamental need for capital since, e.g., many firms can accelerate or delay raising capital for some months. Managers can also choose to issue debt or equity, depending on the market prices of each relative to their intrinsic values and their expectations about how those relations might change.[6] Nor does

[6] Marsh (1982), Bayless and Chaplinsky (1991), Jung, Kim, and Stulz (1996), Dittmar and Thakor (2007), Huang and Ritter (2007), and Henderson, Jegadeesh, and Weisbach (2006) provide evidence that the choice between issuing debt and equity is influenced by stock market pricing. Jung, Kim, and Stulz's evidence is inconsistent with timing motivated by a desire to exploit stock market inefficiency, whereas Huang and Ritter find that more negative future stock returns increase the probability of issuing equity instead of debt. See also Ritter (2003) and Eckbo, Masulis, and Norli (2007) for discussions of the SEO evidence on market timing.

our evidence preclude the possibility that firms sometimes take advantage of unusually attractive stock prices to fund investments that they would not otherwise undertake. In any case, since SEOs typically follow large stock price increases, market timing is likely a contributing factor in the decision to issue stock. This paper's main "carry-away" is therefore close in spirit to Blanchard, Rhee, and Summers (1993) who interpret their investment policy data as providing only a limited role for market valuation, given fundamentals. Our findings that many firms with quintessential "market timer" characteristics do not issue stock and that most firms that do issue stock experience a contemporaneous "liquidity squeeze" indicate that market timing is at best an ancillary consideration, while a near-term fundamentals-based need for cash is the foundational motive that best explains why firms issue stock.

Table 1

Issue proceeds in 4,291 seasoned equity offerings (SEOs) by CRSP/Compustat industrial firms over 1973-2001: SEOs sorted into deciles ranked by issue proceeds

The 10% of sample SEOs with the largest dollar proceeds are in decile 10, the 10% of SEOs with the next largest proceeds are in decile 9, etc. To put SEO proceeds on a comparable dollar basis, the cash received by each issuer is translated to year 2001 dollars using the Consumer Price Index. The final column gives the percent of SEOs by issuers that had paid dividends as of the year prior to the SEO (according to Compustat).

Decile rank of SEO proceeds to issuer	Mean offer proceeds ($ Millions)	Total proceeds for decile ($ Billions)	Percent of total proceeds for all SEOs	Cumulative percent of total proceeds for all SEOs	Percent of SEOs by firms that had previously paid dividends
10	$414.6	$177.9	48.6%	48.6%	56.2%
9	132.8	57.0	15.6%	64.2%	48.3%
8	87.8	37.7	10.3%	74.5%	42.7%
7	62.9	27.0	7.4%	81.9%	44.3%
6	47.8	20.5	5.6%	87.5%	37.8%
5	36.5	15.7	4.3%	91.8%	37.8%
4	27.6	11.9	3.2%	95.0%	35.9%
3	20.6	8.8	2.4%	97.5%	37.1%
2	14.2	6.1	1.7%	99.1%	35.0%
1	7.5	3.2	0.9%	100.0%	38.8%
All SEOs	$85.2	$365.7	100.0%	100.0%	41.4%

Table 2

Probability that a firm conducts an SEO, number of SEOs, and issue proceeds for 4,291 SEOs over 1973-2001: All industrial firms on CRSP/Compustat, partitioned by dividend history

The probability that a firm conducts an SEO in a given year is the number of firm-year observations (over 1973-2001) with an SEO conducted by firms that satisfy our CRSP/Compustat sampling conditions, divided by the total number of firm-year observations over all sample years. Firm-year observations are sorted into the groups reported in the table based on the firm's dividend history as of the year in question. Cumulative dividends are those reported by Compustat for all years up through and including the year in question, with each year's dividend compounded forward using the Consumer Price Index. [This calculation assumes that the firm would have earned a zero after-tax real rate of return had it retained rather than distributed its earlier dividends.] The current non-payers group includes both former dividend payers and those that have never paid dividends. Issue proceeds is the sum over all SEOs of the cash raised (by the firm, not by stockholders who sold shares) in each offering, translated to year 2001 dollars using the Consumer Price Index. The standardized market-to-book ratio is the issuing firm's M/B for the fiscal year end closest in time, but prior to the SEO, divided by the median M/B in that year for all industrial firms.

	Probability of an SEO in a given year	Number of SEOs	Percent of total SEOs	Issue proceeds ($ Billions)	Percent of total issue proceeds	Median number of years listed	Median standardized M/B ratio
All industrial firms in all years	3.4%	4,291	100.0%	$365.7	100.0%	5.1	1.71
Have paid dividends	2.8%	1,775	41.4%	192.0	52.5%	12.5	1.34
Never paid dividends	4.1%	2,516	58.6%	173.7	47.5%	3.0	2.06
Ranked in top 500 based on cumulative dividends (top payers)	2.3%	333	7.8%	98.9	27.1%	42.3	0.98
Ranked below top 500 based on cumulative dividends (other payers)	3.0%	1,442	33.6%	93.1	25.5%	10.2	1.45
Current dividend payers	2.8%	1,260	29.4%	142.6	39.0%	12.9	1.35
Current non-payers	3.8%	3,031	70.6%	223.0	61.0%	3.6	1.91
Former dividend payers	2.8%	515	12.0%	49.4	13.5%	11.1	1.29

Table 3

Logit analysis of the SEO decision in a given year as a function of the firm's most recent standardized market-to-book (M/B) ratio and excess stock returns over the prior and subsequent three years: CRSP/Compustat industrial firms over 1975-2001

The reported coefficients are from a logit model that pools all firm-year observations over 1975-2001 for all CRSP/Compustat industrial firms with non-missing stock return and M/B data. We calculate t-statistics using standard errors based on the two-way (firm and year) clustering method in Petersen (2007). The dependent variable equals one if the firm conducts an SEO in the year in question and zero otherwise. The explanatory variables are (i) the standardized M/B ratio, (ii) the excess stock return over the 36 months ending immediately before the year in question, and (iii) the excess return over the 36 month interval starting with the closing price of the year in question. The excess return is the firm's actual stock return minus the contemporaneous return on the value-weighted market index. The standardized M/B ratio employs the market and book values of equity as of the end of the fiscal year closest in time to, but not later than, the beginning of the calendar year in question. Values greater than 10 are set equal to 10, and our findings are unchanged when standardized M/B is truncated at 15. "Top dividend payers" are among the 500 industrial firms with the highest cumulative dividends as of the year in question, whereas "other dividend payers" have cumulative dividends below the top 500.

	Intercept	Standardized market to book (M/B) ratio	Excess stock return over 36 months before year in question	Excess stock return over 36 months after year in question	Pseudo R^2
A. All firms					
Mean	-3.420	0.105	0.088	-0.192	0.01
(t-statistic)	(-31.49)	(6.19)	(4.66)	(-8.67)	
B. Top dividend payers					
Mean	-3.557	-0.108	0.009	-0.457	0.00
(t-statistic)	(-13.16)	(-1.16)	(0.09)	(-4.27)	
C. Other dividend payers					
Mean	-3.631	0.169	0.102	-0.300	0.01
(t-statistic)	(-25.73)	(7.92)	(4.48)	(-4.89)	
D. Never paid dividends					
Mean	-3.165	0.077	0.080	-0.110	0.01
(t-statistic)	(-32.62)	(4.08)	(3.79)	(-3.23)	

Table 4

Probability of an SEO in a given year as a function of the firm's most recent standardized market-to-book (M/B) ratio and its excess stock returns over the prior and subsequent 36 months

The probabilities of an SEO in a given year are based on the parameter estimates for the first logit model in table 3. Panel A takes the firm's standardized M/B ratio to be 0.5 (one-half the median M/B for all industrial firms), panel B takes it to be 1.0 (equal to the median for all industrials), and panel C takes it to be 3.0 (equal to three times the median for all industrials). The rows in each panel report SEO probabilities for different values of the excess (net of market) stock return over the 36 months before the year in question. The columns report SEO probabilities for different values of the excess stock return over the 36 months following the year in question.

A. Standardized M/B ratio of 0.5

Excess return over 36 months before year in question	Excess stock return over 36 months after year in question						
	-75%	-50%	-25%	0%	+25%	+50%	+75%
+75%	4.1%	3.9%	3.7%	3.6%	3.4%	3.2%	3.1%
+50%	4.0%	3.8%	3.6%	3.5%	3.3%	3.2%	3.0%
+25%	3.9%	3.7%	3.6%	3.4%	3.2%	3.1%	3.0%
0%	3.8%	3.7%	3.5%	3.3%	3.2%	3.0%	2.9%
-25%	3.7%	3.6%	3.4%	3.3%	3.1%	3.0%	2.8%
-50%	3.7%	3.5%	3.3%	3.2%	3.0%	2.9%	2.8%
-75%	3.6%	3.4%	3.3%	3.1%	3.0%	2.8%	2.7%

B. Standardized M/B ratio of 1.0

+75%	4.3%	4.1%	3.9%	3.7%	3.6%	3.4%	3.3%
+50%	4.2%	4.0%	3.8%	3.7%	3.5%	3.3%	3.2%
+25%	4.1%	3.9%	3.8%	3.6%	3.4%	3.3%	3.1%
0%	4.0%	3.8%	3.7%	3.5%	3.3%	3.2%	3.1%
-25%	3.9%	3.8%	3.6%	3.4%	3.3%	3.1%	3.0%
-50%	3.9%	3.7%	3.5%	3.4%	3.2%	3.1%	2.9%
-75%	3.8%	3.6%	3.4%	3.3%	3.1%	3.0%	2.9%

C. Standardized M/B ratio of 3.0

+75%	5.2%	5.0%	4.8%	4.6%	4.4%	4.2%	4.0%
+50%	5.1%	4.9%	4.7%	4.5%	4.3%	4.1%	3.9%
+25%	5.0%	4.8%	4.6%	4.4%	4.2%	4.0%	3.8%
0%	4.9%	4.7%	4.5%	4.3%	4.1%	3.9%	3.7%
-25%	4.8%	4.6%	4.4%	4.2%	4.0%	3.8%	3.7%
-50%	4.7%	4.5%	4.3%	4.1%	3.9%	3.8%	3.6%
-75%	4.6%	4.4%	4.2%	4.0%	3.8%	3.7%	3.5%

Table 5

Actual and *pro forma* ratios of cash to total assets (Cash/TA) if the firm did not receive the cash proceeds from the SEO: 4,291 SEOs by CRSP/Compustat industrial firms, partitioned by issuer's dividend history

Pro forma values of Cash and Total Assets (TA) are the values these variables would have if the firm had not received the SEO proceeds and all operating and other financing decisions remained unchanged. The year before and year of the SEO refer respectively to the fiscal year ends immediately before and immediately after the SEO. The year after the SEO refers to the end of the first full fiscal year after the offering. Excess Cash/TA equals actual Cash/TA minus "normal" Cash/TA where the latter benchmark is calculated for a given year by sorting all industrial firms into (i) three equal size groups based on total book assets and (ii) three equal size groups based on market to book values (of assets). Each observation is then allocated to one of nine groups based on relative size and market to book. Within each of the nine groups, a "normal" Cash/TA ratio is calculated for each two-digit SIC industry as the median ratio among all firms in the industry for the year in question. The figures for Cash reported in rows 7-9 are denominated in dollars as of the calendar year in question. To preserve comparability with the row 7-9 figures, the SEO proceeds figures in row 10 have not been converted to 2001 dollars, as was done with the SEO proceeds figures reported in earlier tables.

	All issuers	Top payers	Other payers	Never paid
1. Median Cash/TA in year before SEO	7.2%	2.7%	4.5%	14.5%
2. Median Cash/TA in year of SEO	13.3%	3.1%	7.1%	25.0%
3. Median Cash/TA in year after SEO	8.8%	2.8%	4.6%	17.5%
4. Median Excess Cash/TA in year before SEO	-0.1%	-0.6%	-0.7%	0.0%
5. Median Excess Cash/TA in year of SEO	1.4%	-0.4%	0.0%	5.6%
6. Median Excess Cash/TA in year after SEO	0.0%	-0.6%	-0.2%	2.1%
7. Median Cash ($millions) in year before SEO	8.3	55.0	6.0	8.2
8. Median Cash ($millions) in year of SEO	20.2	72.7	12.6	22.7
9. Median Cash ($millions) in year after SEO	18.3	69.3	10.9	20.2
10. Median SEO proceeds ($millions)	30.4	96.3	25.0	29.6
11. Median *pro forma* Cash/TA in year after the SEO	-4.2%	-1.0%	-4.8%	-5.3%
12. Median *pro forma* Excess Cash/TA in year after the SEO	-11.7%	-5.1%	-10.8%	-15.4%
13. % with *pro forma* Cash/TA < 0 in year after the SEO	62.6%	58.4%	69.3%	59.3%
14. % with *pro forma* Excess Cash/TA < 0 in year after the SEO	81.1%	74.6%	86.0%	77.7%

Table 6

Capital expenditures (CapEx) in years surrounding seasoned equity offerings (SEOs) and hypothetical impact on the ratio of cash to total assets (Cash/TA) if the firm did not receive SEO proceeds and did not increase its CapEx in the year of and year after SEO: 4,291 SEOs by CRSP/Compustat industrial firms, partitioned by issuer's dividend history

The year before and year of the SEO refer respectively to the fiscal year ends immediately before and immediately after the SEO in question. The year after the SEO refers to the end of the first full fiscal year after the offering. *Pro forma* values of Cash and Total Assets (TA) in the year after the SEO are adjusted to the values that they would hypothetically take if (i) the firm did not receive the SEO proceeds and (ii) any increases in capital expenditures in the year of and year after the SEO were not made and were instead allocated to cash balances.

	All issuers	Top payers	Other payers	Never paid
A. Capital expenditures in years surrounding SEO				
1. Median [CapEx in year before SEO]/SEO proceeds	24.3%	128.4%	39.6%	13.7%
2. Median [CapEx in year of SEO]/SEO proceeds	38.8%	148.3%	58.3%	25.7%
3. Median [CapEx in year after SEO]/SEO proceeds	51.3%	165.9%	74.0%	32.8%
4. Median [two-year change in CapEx]/SEO proceeds	30.5%	34.0%	42.5%	24.4%
5. Median [two-year change in CapEx]/TA in year before SEO	10.0%	1.9%	7.8%	14.0%
6. Median % change in CapEx (year before to year after SEO)	40.8%	11.8%	34.9%	55.2%
7. % with CapEx increase (year before to year after SEO)	81.4%	67.5%	83.0%	82.4%
B. Cash holdings given no SEO proceeds received and no CapEx increases made in year of and after SEO				
8. Median *pro forma* Cash/TA in year after SEO	4.1%	2.4%	2.8%	6.6%
9. Median *pro forma* Excess Cash/TA in year after SEO	-3.7%	-2.1%	-3.4%	-5.2%
10. % with *pro forma* Cash/TA < 0 in year after SEO	40.3%	34.4%	42.2%	39.1%
11. % with *pro forma* Excess Cash/TA < 0 in year after SEO	59.6%	61.8%	60.8%	58.1%

Table 7

Change in the absolute level of debt outstanding in years surrounding seasoned equity offerings (SEOs) and hypothetical impact on the ratio of cash to total assets (Cash/TA) in the year after the SEO if the firm did not receive SEO proceeds and did not increase its borrowing: 4,291 SEOs by CRSP/Compustat industrial firms, partitioned by issuer's dividend history

The year before and year of the SEO refer respectively to the fiscal year ends immediately before and immediately after the SEO in question. The year after the SEO refers to the end of the first full fiscal year after the offering. *Pro forma* values of Cash and Total Assets (TA) in the year after the SEO are adjusted to the values that they would hypothetically take if (i) the firm did not receive the SEO proceeds and (ii) any actual increase in the dollar level of debt as of the year after the SEO was not available to the firm.

	All issuers	Top payers	Other payers	Never paid
A. Absolute change in debt (year before to year after SEO)				
1. % of issuers with debt increase	60.4%	53.8%	62.9%	60.0%
2. % with no change in debt	5.4%	0.0%	2.5%	7.9%
3. % with debt decrease less than 25% of SEO proceeds	17.4%	6.3%	12.3%	22.0%
4. % with debt decrease of between 25% and 50% of SEO proceeds	4.9%	5.2%	6.3%	4.1%
5. % with debt decrease equal to 50% or more of SEO proceeds	11.9%	34.7%	16.0%	6.2%
B. Cash holdings in year after SEO given no SEO proceeds received and no debt increase				
6. Median *pro forma* Cash/TA in year after SEO	-16.0%	-4.4%	-15.8%	-20.4%
7. Median *pro forma* Excess Cash/TA in year after SEO	-26.3%	-9.5%	-23.2%	-32.8%
8. % with *pro forma* Cash/TA < 0 in year after SEO	74.2%	75.9%	81.0%	69.9%
9. % with *pro forma* Excess Cash/TA < 0 in year after SEO	87.3%	89.0%	92.0%	84.3%

Table 8

Dollar magnitude of dividends relative to cash proceeds in seasoned equity offerings (SEOs) and hypothetical impact of omitting dividends on the ratio of cash to total assets (Cash/TA) if the firm did not receive SEO proceeds: 4,291 SEOs by CRSP/Compustat industrials over 1973-2001

Cumulative dividends are all dividends paid by the issuer (as reported by Compustat) for all years up through and including the year before the SEO, with each year's dividend compounded forward using the Consumer Price Index. This calculation assumes that the firm would have earned a zero after tax real return had it retained rather than distributed all earlier dividends. In panel C, the *pro forma* Cash/TA ratio is calculated assuming that each firm paid zero dividends in the year of and year after the SEO and held the retained resources as cash balances. The *pro forma* Excess Cash/TA ratio subtracts the estimated normal level of Cash/TA for the firm from its *pro forma* Cash/TA. The never paid designation in panel C refers to issuers that had not paid dividends as of the year before the SEO. The dividend-adjusted figures for the never paid group in panel C differ slightly from those for the same group in table 5 because of the small amount of dividends paid by these firms in the year of or year after the SEO.

	Number of SEOs	Percent of sample	Cumulative percent
A. Dividends the year before the SEO			
Exactly 0.0	3,031	70.6%	70.6%
Between 0% and 20% of SEO proceeds	911	21.2%	91.8%
Between 20% and 50% of SEO proceeds	233	5.4%	97.2%
Between 50% and 100% of SEO proceeds	67	1.6%	98.8%
100% or more of SEO proceeds	49	1.2%	100.0%
B. Cumulative dividends to date			
Exactly 0.0	2,516	58.6%	58.6%
Between 0% and 20% of SEO proceeds	664	15.5%	74.1%
Between 20% and 50% of SEO proceeds	283	6.6%	80.7%
Between 50% and 100% of SEO proceeds	206	4.8%	85.5%
Between 100% and 500% of SEO proceeds	370	8.6%	94.1%
Between 500% and 1000% of SEO proceeds	117	2.7%	96.8%
1000% or more of SEO proceeds	135	3.2%	100.0%

C. Cash holdings given no SEO proceeds received and no dividends paid in year of and after SEO

	All issuers	Top payers	Other payers	Never paid
1. Median *pro forma* Cash/TA in year after SEO	-3.0%	2.3%	-3.1%	-5.3%
2. Median *pro forma* Excess Cash/TA in year after SEO	-10.6%	-2.1%	-9.1%	-15.1%
3. % with *pro forma* Cash/TA < 0 in year after SEO	57.6%	28.2%	61.7%	59.1%
4. % with *pro forma* Excess Cash/TA < 0 in year after SEO	78.5%	67.7%	82.7%	77.6%

Table 9

Pre-SEO leverage, leverage changes before and after SEOs, cross-sectional test for leverage rebalancing, and pre-SEO Altman Z-scores: 4,291 SEOs by CRSP/Compustat industrial firms, partitioned by the issuer's dividend history

Market leverage is total debt/total assets, with the market value of equity substituted for the book value of equity. Book leverage is total debt/total assets. In the cross-sectional leverage rebalancing regressions, the dependent variable is the change in leverage from the fiscal-year end immediately before the SEO to the fiscal year-end immediately after the SEO and the explanatory variable is the change in leverage over the five years prior to the SEO (and an intercept term). For brevity, we report only the results for market based leverage, but similar results obtain for book-based leverage (and for leverage measures based on long-term debt or total liabilities instead of total debt and for total capital instead of total assets). All other measures yield t-statistics on "pre-SEO leverage change" that are significant at high levels and coefficient estimates that fall in the range -0.067 to -0.222 --- i.e., all other approaches yield results that are qualitatively identical to those tabulated below. Top payers are firms ranked in the top 500 of all industrials based on cumulative dividends as of the year before the SEO. Other payers are those ranked below the top 500.

	Top payers	Other payers	Never paid dividends
1. Market leverage the year before the SEO (TotD/MVA)	0.270	0.191	0.057
2 Book leverage the year before the SEO (TotD/TA)	0.311	0.290	0.158
3. Median pre-SEO Long-Term Debt/Total Debt (LTD/TotD)	0.897	0.896	0.813
4. Median pre-SEO LTD/issue proceeds	5.27	1.25	0.16
5. Median change over the five years before the SEO:			
TotD/MVA	0.019	-0.022	-0.003
TotD/TA	0.029	0.008	-0.001
6. Median change from the year before to immediately after the SEO:			
TotD/MVA	-0.034	-0.035	-0.005
TotD/TA	-0.030	-0.055	-0.029
7. Cross-sectional leverage rebalancing tests (Tot/MVA)			
Intercept	-0.021	-0.058	-0.046
(t-statistic)	(-4.92)	(-18.24)	(-12.60)
Pre-SEO leverage change	-0.222	-0.114	-0.158
(t-statistic)	(-6.77)	(-6.20)	(-7.91)
Adjusted R-squared	0.13	0.04	0.09
% non-missing observations	93.4%	64.7%	26.1%
8. Median Altman Z-score in the year before the SEO	2.53	3.83	5.15
9. % of issuers with Z-score < 2.99	62.7%	32.4%	43.9%
10. % of issuers with Z-score < 1.80	30.4%	12.7%	18.2%

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