Public Equity Issues and the Scope for Market Timing

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Abstract: This paper studies the relevance of market timing in public equity issues. Prior research has argued that equity is mispriced in public equity issues and that managers' successful attempts to take advantage of mispricing has persistent effects on firms' capital structure. Using a sample of seasoned equity offerings and initial public offerings by U.S. firms over the period 1970 to 2004, I find evidence to reject these hypotheses. Specifically, I find that equity issuing firms are not mispriced relative to firms with similar risk characteristics. Further, there are no performance spreads between firms with differing ex-ante idiosyncratic opportunities to time the market. Timing opportunities are measured by financial constraints, valuation uncertainty, the informational content of stock prices and price momentum. I also do not find high persistence of changes in capital structure as firms instead actively releverage through increased debt issuance following equity issues. I do however find evidence consistent with equity issues being motivated both by the financing of investment and equity market conditions.

JEL Classification: G14, G32

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Market timing in a corporate finance context has received considerable attention in recent years.[1] On the one hand, studies of initial public offerings (IPOs) (e.g. Ritter (1991)), seasoned equity offerings (SEOs) (e.g. Marsh (1982)), equity repurchases (Ikenberry, Lakonishok, and Vermaelen (1995)) and equity-financed acquisitions (Shleifer and Vishny (2003)) suggest that it is generally possible to sell equity when it is expensive and refrain from issuing or actively buying back equity when it is cheap. More recently, an influential paper by Baker and Wurgler (2002) suggests that the capital structure of firms is the result of repeated successful attempts at market timing. Generally, a significant number of empirical studies is consistent with the view that equity market timing is an essential part of firms' financial policies.

On the other hand, researchers have remained sceptical about whether managers are systematically successful in selling overvalued equity to less informed investors, using superior insider information. Several studies show that evidence consistent with successful market timing can be explained in the absence of irrational investors (Hennessy and Whited (2005)) or even in the absence of managers possessing any insider information (Schultz (2003), Jenter (2005)).

This paper uses a comprehensive sample of 5,300 SEOs and 2,400 IPOs by U.S. firms and data from January 1970 to December 2005 to address two apparent links between market timing, capital structure and firm performance. First, have been argued to successfully time equity issues to coincide with periods of overvaluation. Equity issues therefore would appear to be driven by mispricing. The apparent negative abnormal long-term performance of issuing firms has been interpreted as evidence in support of this view (e.g. Ritter (1991), Loughran and Ritter (1995)). Under this view firms time their equity offerings to market conditions, which are consequently reflected in post-offering capital structures (e.g. Pagano, Panetta, and Zingales (1998)). Second, market timing has been argued to have highly persistent effects on capital structure (Baker and Wurgler (2002)). If this is the case, firms do not undo changes caused by market timing and consequently have loose leverage targets. Market timing under this view is a better explanation of firms' capital structure policy than traditional theories of capital structure.

The goal of this paper is to construct a cleaner test of market timing and its relation to capital structure and firm performance than has previously been possible. To do so the paper directly addresses the two main questions which are at the heart of the market timing hypothesis. First, does market timing determine equity issues and is this driven by the mispricing of equity? Second, does market timing have an impact on capital structure and are these effects persistent?

To answer the first question the paper analyzes whether the characteristics of public equity issues are consistent with market timing motives and inconsistent with alternative motives for raising equity, such as anticipated investment. It uses proxy variables for ex-ante opportunities of individual firms to time the market and links them to the issuing policy of a firm. Assuming that ex ante all firms attempt to time the market, we should observe stronger market timing for the ex ante likely market timers and less market timing for the unlikely market timers. Ex ante timing opportunities are measured by financial constraints, valuation uncertainty, the

[1] The following section provides a short summary of previous theoretical and empirical work. Recent literature reviews are contained in Jenter (2005) and Alti (2006).

informational content of stock prices and stock price momentum. The measures are described in detail in the next section. The paper then verifies the mispricing argument of equity issuance by analyzing long-term returns of issuing firms. Previous research has interpreted abnormal performance of equity issuers as evidence of mispricing at the time of the offering. I verify whether equity issues are mispriced and whether there is empirical support for the view that managers successfully sell overvalued equity or if there is in fact no such evidence.

To answer the second question the paper analyzes capital structure changes in the wake of the public equity issues. One would expect market timing to have at least a short-term impact on capital structure. The more important matter however is whether these effects are persistent or whether firms actively unwind leverage changes caused by equity issuances. Persistent timing effects are difficult to reconcile with traditional determinants of capital structure. Active rebalancing of leverage on the other hand would imply that firms take advantage of current market conditions but in the long term do not have loose leverage targets.

In the first set of results I find that in the short run, equity issuances are motivated both by taking advantage of favourable market conditions and financing of investment opportunities. In the cross-section both IPO and SEO firms take advantage of high valuations caused by increases in equity prices and issue more equity than their long-term capital structure dictates. This is confirmed by firms with higher valuation uncertainty and larger financial slack issuing more equity. The evidence is consistent with the view that firms with the opportunity to time public equity issues to market conditions in fact do so. IPO and SEO firms appear not to be financially constrained prior to the offering. The consequent use of funds however shows that equity issues do fund investment. SEO firms, and to a lesser degree IPO firms, issue equity in anticipation of future imbalances caused by increased investment. While for both firm types issued capital adds to cash balances and to equity repurchases, there is also a strong increase in capital expenditure and acquisitions.

The second set of results shows that SEO and IPO firms however do not exhibit negative abnormal performance following their equity issuances. Factor regression approaches calculated in calendar-time are used to detect abnormal performance within the CAPM, Fama and French three-factor and four-factor models. While IPO firms exhibit neutral or even positive performance and SEO firms exhibit negative abnormal performance in event time, abnormal performance disappears in calendar time. The lack of negative abnormal performance is inconsistent with the hypothesis that firms initially sell overvalued equity. This result not only holds for the cross-section of firms but also holds for subsamples defined by their relative market timing opportunities. For example, hot-market issuers and firms that have experienced strong price run-ups prior to the issue exhibit no abnormal risk-adjusted performance over a five-year period following the offering. Generally, neither likely nor unlikely market-timing issuer subsamples exhibit abnormal performance nor are there performance spreads between subsamples. The results hold independently of how subsamples are formed.

Finally, the third set of results shows that changes in capital structure are not persistent effects. In the fiscal year following the offering a reversal of changes in leverage sets in for SEO

and IPO firms. As a result, the explanatory power of market timing opportunity variables with regard to capital structure declines rapidly. The coefficients that initially explain individual offering characteristics, capital structure changes and post-issue capital structure become insignificant within two years of the offering for IPO firms and within three years for SEO firms. The reversal in capital structure comes through debt issues. The previously large extent of equity issuance disappears almost completely in relative terms. The previously active issuers of equity instead become issuers of debt. After two years this active releveraging renders the initial impact of market timing insignificant in almost all cases for both SEO and IPO firms.

In summary, I find that firms with the opportunity to issue equity under favorable market conditions do so and issue equity to fund investment. Equity issuance does not lead to underperformance of firms suggesting that equity is not mispriced. Moreover even perceived market-timing firms show no different performance from non market-timing firms. Further, immediately following the offerings firms actively undo the changes in leverage caused by the equity inflow. The results therefore also do not support the view that the capital structure of firms is determined by past attempts to time the market.

Two studies are closely related to this paper. Baker and Wurgler (2002) show that a historic weighted average of the market-to-book ratio explains capital structure changes over long time periods, implying a strong effect of market timing on capital structure that is very persistent. While I replicate the results of that study, in this study I do not rely on the market-to-book ratio as a measure of relative pricing but instead directly measure mispricing through stock price performance. I also develop proxy variables to determine the ex ante likelihood of a firm being able to time the market. Alti (2006) uses IPO firms to analyze whether market timing can be attributed to whether the firm goes public in a hot or cold issue market to verify the results of Baker and Wurgler (2002). If issuers regard hot markets as windows of opportunity they should react by issuing more equity than they would in a cold market. The paper finds support for this hypothesis. It shows however that the initial impact on leverage is consequently balanced away by hot-market IPO firms. Although I do not specifically focus on hot versus cold markets in this paper, I show that a similar hot-market effect exists for both IPOs and SEOs, which however is not particularly robust once ex ante market timing opportunities are controlled for.

The paper is also related to Ovtchinnikov (2003), Hovakimian (2004), Mayer and Sussman (2004) Leary and Roberts (2005) and Flannery and Rangan (2006). Ovtchinnikov (2003) analyzes whether aggregate market timing opportunities explain the tradeoff between issuing short and long term debt and equity in SEOs but finds no supporting evidence. Hovakimian (2004) analyzes target capital structures of firms raising external financing and shows that equity issues as opposed to debt issues do not undo accumulated deviations from leverage targets, as issuing firms are underleveraged rather than overleveraged prior to the issue. This is consistent for example with my results of low leverage of SEO and IPO growth firms and financially unconstrained firms issuing more equity. Unlike this study, the paper does not address ex ante timing opportunities and stock price performance. Mayer and Sussman (2004) study how firms finance large investment projects, which due to their size are likely to require external financing.

While their paper does not analyze market timing behavior, their results are consistent with this paper. They show that firms do not exhaust internal resources before turning to external financing, that small firms have a preference for equity financing relative to large firms and that long-term leverage reverts to previous levels after outside financing causes deviations.

Finally, Leary and Roberts (2005) and Flannery and Rangan (2006) analyze partial adjustment of capital structure with regard to target capital structure using the COMPUSTAT cross-section of firms. The papers find that firms revert to target capital structure over time, and that market timing is only a temporary or secondary effect. Both studies however rely on the Baker and Wurgler (2002) historic weighted-average of market-to-book to measure market timing and do not address whether the measure is related to actual mispricing.

The remainder of the paper is structured as follows. The following section outlines the testable propositions. Section 2 provides summary statistics for the sample and describes the methodology. Section 3 analyzes the characteristics of equity issuances, their impact on capital structure and future financing, and long-term firm performance. Section 4 discusses the results, while Section 5 concludes.

1 Market timing of equity issues

Generally, market timing means predicting general market price movements (Fama (1972)). In a corporate finance context market timing is "the practice of issuing shares at high prices and repurchasing at low prices to exploit temporary fluctuations in the costs of equity relative to other forms of capital" (Baker and Wurgler (2002)). A substantial body of previous research suggests that it is generally possible to sell equity when it is expensive and refrain from issuing or actively buy back equity when it is cheap. With regard to equity issuances, firms seem to issue equity when they are overvalued. For example, evidence for IPOs and SEOs shows that equity issuance is concentrated in times of high valuations.[2] Similarly, firms repurchase equity when they are potentially undervalued (Ikenberry, Lakonishok, and Vermaelen (1995)). Further, high valuation firms use equity as inflated acquisition currency (Shleifer and Vishny (2003)). Finally, Graham and Harvey (2001) report that CFOs seem to place considerable weight on market timing corporate financing decisions. In their survey of 392 U.S. and Canadian CFOs, 67 percent of CFOs state that "the amount by which our stock is undervalued or overvalued is an important or very important consideration in issuing equity". A common theme of many studies is that "managers tend to view high valuation firms as overvalued and low valuation firms as undervalued. Consequently they try to take advantage of [perceived] misvaluations through their capital structure and investment decisions" (Jenter (2005)).

However objections have been made to these findings. Previous methodological approaches may be biased towards finding evidence of market timing. For example, long-run underperfor-

[2]Evidence on IPOs is provided, among other, by Ritter (1991), Lerner (1994), Loughran, Ritter, and Rydqvist (1994), Loughran and Ritter (1995) and Pagano, Panetta, and Zingales (1998). Evidence on SEOs is provide for example by Taggart (1977), Marsh (1982), Jung, Kim, and Stulz (1996), Loughran and Ritter (1997) and Hovakimian, Opler, and Titman (2001).

mance of equity issuing firms is the result of insufficient control for risk factors (Eckbo, Masulis, and Norli (2000)), bad-model bias (Fama (1998)) and firm-size effects (Brav, Geczy, and Gompers (2000), Gompers (2003)). More importantly however, several studies show that evidence consistent with successful market timing, particulary historical patterns of market-to-book ratios and long-term abnormal returns, can be explained even in the absence of irrational investors or managers timing the market using insider information. Jenter (2005) provides evidence of both corporate financing decisions taken by managers and their own trading behavior. While he finds that managers in high market-to-book firms sell more shares than those in low market-to-book firms and vice versa, the evidence also shows that these trading strategies yield no abnormal performance. This suggests that managers are not using inside information in their decisions but rather issue equity on behalf of the firm and sell their own shares when price variables such as market-to-book are high. This finding is closely related to the phenomenon of pseudo market timing in Schultz (2003). He shows that long-run underperformance of IPOs can arise out of purely mechanistic managerial behavior. As long as rising share prices result in larger number of IPOs, negative abnormal performance will be observed ex post in event time. This is because firms are more likely to sell equity when they can receive a high price for it. The effect does not rely on managers having superior information or in fact any notion of whether their company is over- or undervalued.[3] Finally, Hennessy and Whited (2005) show that even in the absence of market timing opportunities, market-to-book ratios may influence firm leverage ex post through tax considerations. They therefore argue that the results of Baker and Wurgler (2002) do not necessarily provide evidence of market timing attempts.

One way of addressing the market timing identification problem is to ask the following question: Is the market timing potential that firms have related to the eventual outcomes? If equity issuances are in fact timed to the market we would expect those firms that have large potential for timing also to have a higher probability of success. I use several measures of a firm's scope for market timing to identify likely and unlikely market timing firms ex ante. These measures, which I describe in more detail in the following section, are whether a firm is financially constrained, how much of the value of the firm consists of strongly subjective future growth opportunities, how much private information is incorporated in the stock price of the firm and whether the firm can profit from recent stock price increases.

On the other hand, equity issuance and capital structure decisions could be driven by different motives as well. While one would possibly expect market timing to contribute to capital structure policy in the short-term, the real test is the persistence of these effects. Baker and Wurgler (2002) argue that market timing effects on capital structure are highly persistent. According to their findings, which I replicate, capital structure in year t is explained by market timing attempts dating back to as far as year $t-10$. Their finding is inconsistent with both the pecking order theory and the (static or dynamic) trade-off theory, the two main alternative explanations for capital structure.

[3]In Schultz (2003), IPOs cluster around market peaks ex post. This in turn mechanically leads to significantly negative aftermarket performance. This however requires the implicit assumption of stationarity of the IPO process. Viswanathan and Wei (2005) and Dahlquist and de Jong (2004) address this issue and show that if the number of IPOs is stationary, pseudo market timing is a small-sample problem only.

2 Data and methodology

2.1 Sample construction and characteristics

The initial sample contains all COMPUSTAT firms, that issued equity between 1 January 1970 and 31 December 2002. I consider both IPOs and SEOs. Regarding IPOs, I identify true IPOs from the Securities Data Company (SDC) Platinum database. This sample of IPOs excludes all secondary offerings, unit offers, closed-end funds, financial institutions (SIC codes 6000-6999), ADRs, limited partnerships and offerings with an offer price below USD 5. SDC data are manually corrected for the data errors identified by Jay Ritter.[4] Further, I exclude firms if COMPUSTAT data is not available in the year prior to the IPO. Also, return data must be available on CRSP within 18 months after the IPO.

Regarding SEOs, I select only true secondary offerings from SDC, again excluding unit offers, closed-end funds, ADRs, limited partnerships and penny stocks. Complete COMPUSTAT data must be available both in the year before the offering and in the year of the offering. CRSP data must be available during the month of the offering.

Additionally, in both samples I drop firms with total assets smaller than 10 million US$ (in 2004 dollars). Firms are not required to have complete data for all used variables available on COMPUSTAT every year. A number of IPOs meet all of the above criteria and are classified as original IPOs on SDC but have CRSP data available prior to the IPO. Since these firms are not true IPOs they are dropped. Firms from the IPO sample can enter the SEO sample if they are contained in the SDC database with seasoned offerings. IPOs in this case can enter the SEO sample from five calendar years after the IPO onwards, but not before. All firms are included in the sample until the year they exit COMPUSTAT. COMPUSTAT and CRSP data end in December 2005. While IPOs by definition can only be observed once per firm, many firms in the sample are multiple issuers of seasoned equity. 2,193 (67.9%) firms perform a single seasoned equity offering; 631 (19.5%) firms perform two issues; 198 (6.13%) firms issue three times, 82 (2.5%) firms issue four times, 36 (1.1%) firms issue five times and 90 (2.8%) firms issue six times or more.[5] Over time, SEOs shift from mostly NYSE firms during the 1970s to a high fraction of NASDAQ firms from the 1980s onwards.

Firm-year observation outliers are dropped according to certain restrictions as described below. Variable definitions mostly follow Baker and Wurgler (2002). Book equity E is defined as total assets A (COMPUSTAT item 6) minus total liabilities (item 181) and preferred stock (item 10) plus deferred taxes (item 35) and convertible debt (item 79). If preferred stock is missing it is replaced with the redemption value of preferred stock (item 56). Book debt D is

[4]Documentation of errors in the SDC database and corrections are available on Jay Ritter's website at http://bear.cba.ufl.edu/ritter/SDC%20corrections.pdf.

[5]SDC Platinum's coverage appears to be very similar both in width of coverage, i.e. the number of issuers covered, and the depth of coverage, i.e. the number of issues covered per issuer, as compared to the *Investment Dealer's Digest of Corporate Financing*. Brav, Geczy, and Gompers (2000) (BGG) use the latter source and identify 4,526 offerings made by 2,772 firms from 1975-1992. For the same time period I find raw counts of 4,167 offerings made by 2,478 firms. In BGG, 3.0 percent of firms issue 5 times ore more. In my sample this percentage is comparable at 3.9 percent of firms with 5 or more issues.

defined as total assets minus book equity. Book leverage D/A is defined as book debt divided by total assets. The normalization of book leverage as well as all consequent normalizations is by total assets at the end of the fiscal year. Market equity ME is defined monthly as the number of common shares outstanding times the stock price at the end of the preceding month, both items are from CRSP. As a robustness check I also define a second yearly measure of market equity ME^A as the number of common shares outstanding (item 25) times the share price (item 199), both items are from COMPUSTAT. I do this to check whether differences to previous studies, which have not used CRSP data may be due to differences between COMPUSTAT and CRSP, which are small but frequent. Market leverage M/A is defined as book debt divided by the sum of total assets minus book equity plus market equity. The market-to-book ratio M/B is the sum of total assets minus book equity plus market equity all divided by total assets.

Net debt issuance d/A is the change in book debt from fiscal year $t-1$ to t divided by assets. Book equity equals balance sheet retained earnings plus paid-in share capital. Net equity issuance e/A is therefore defined as the change in book equity minus the change in balance sheet retained earnings (item 36), all divided by assets. Newly retained earnings $\Delta RE/A$ are defined as the change in retained earnings divided by assets. Profitability $EBITDA/A$ is defined as earnings before interest, taxes and depreciation (item 13) divided by assets. Firm size is measured by $SIZE$, the logarithm of net sales (item 12). Tangibility of assets PPE/A is defined as net plant, property and equipment (item 8) over assets. Research and development expense $R\&D/A$ (item 46) is divided by assets and replaced by zero when missing. In the consequent regressions the dummy variable $R\&Dd$ is equal to one if $R\&D/A$ was replaced to zero from missing. Dividend payments Div/E are measured by common dividends (item 21) divided by year-end book equity. $CASH/A$ is defined as cash and short-term investments (item 1) divided by assets.

Firm year observations are dropped if any of the variables M/B, d/A, e/A, $\Delta RE/A$, $EBITDA/A$, D/A, $SIZE$, PPE/A, RD/A, INV/A, DIV/E or $CASH/A$ are missing in any fiscal year. For IPOs observations the variables d/A, e/A and $\Delta RE/A$ can be and M/B must be missing for the IPO year and the preceding year. Observations are dropped where M/B exceeds 10, as in Baker and Wurgler (2002). Observations are also dropped where D/A, d/A, e/A, $\Delta RE/A$, $EBITDA/A$, DIV/E or INV/A exceed 100 percent.

Table 1 reports summary statistics for both samples. Results for IPOs in Panel A show the impact of the offering on the cross-section of firms. Leverage drops from 67.5 percent before the IPO to 37.9 percent in the fiscal year of the IPO and increases slightly over the next years up to 44.5 percent seven years after the offerings. Market-to-book is high at 2.3 after the offering and declines in the following years. The large contribution of equity financing to overall financing is clearly visible from net equity financing e/A which is 41.9 percent in the year of the offering and declines rapidly. Interestingly debt financing d/A is slightly negative in the IPO year and quickly rises to 10.6 percent one year after the offering. The building up of financial slack is visible in cash balances $Cash/A$, which double from 11 percent pre-IPO to 23.2 percent post-IPO.

The summary statistics of SEOs are very similar to IPOs, although less pronounced. As

Panel B reports, SEOs similarly experience a large drop in leverage. Market-to-book is also highest in the year prior to the offering, declining consequently. Cash reserves only increase from 11.1 percent pre-offering to 15.1 percent post-offering. Overall however, the impact of SEOs on capital structure seems to be very similar to that of IPOs.

It is well established that IPOs take place in waves, which are often concentrated within industries. Figure 1 shows the strong fluctuation in the numbers of SEOs and IPOs during the sample period. The figure reports the three-month moving average number of SEOs and IPOs, detrended with the average growth rate of the economy at 0.25 percent per month during that period as in Alti (2006). The strong synchronization of primary and secondary issue markets is striking, particularly after 1985. The correlation coefficient is 0.65 for the whole sample and 0.78 for offerings from 1985 onwards. Lowry (2003), Rajan and Servaes (1997), Pagano, Panetta, and Zingales (1998) and Ritter (1984) as well as most practitioners suggest that industry effects influence individual public issues. It is therefore important to meaningfully capture dynamics at the industry level. Typically, studies use SIC codes at the time of the offering for this purpose, which however do not capture functional or vertical relationships. I instead use the 48 aggregate industries defined by Fama and French (1997). Table A1 shows the resulting industry breakdown by four-digit SIC codes. The sample contains firms from 41 out of 48 industries.

In unreported results I also analyze the distribution of IPOs and SEOs by size and market-to-book at the time of the offering. To do this I match size (market equity) and market-to-book with monthly precision, taking changing fiscal year ends into account.[6] Size and market-to-book breakpoints are formed quarterly by dividing all NYSE stocks into quintiles with equal numbers of firms. The intersection of the breakpoints results in 25 possible portfolio allocations for all IPO and SEO firms, following Brav, Geczy, and Gompers (2000). The results show that 51 percent of the SEO sample are within the two smallest size quintiles and regarding market-to-book, 41 percent are in the highest quintile. Only 22 percent are in the two lowest market-to-book quintiles. For IPOs the concentration in high market-to-book and small size quintiles is even more pronounced, consistent with the results of Brav, Geczy, and Gompers (2000). Both IPO and SEO firms in my sample systematically differ from the cross-section of NYSE firms at the time of the offering in having smaller size and higher market-to-book.

2.2 Measuring market timing opportunity

This section describes the previously outlined ex ante measures of market timing opportunity in more detail. For a firm to successfully time the market the opportunity to do so must arise. I use four approaches to address firm-specific market timing opportunities ex ante as follows.

First, the market timing hypothesis argues that firms issue equity when their equity is overvalued. I use a scaled version of the standard concept *present value of growth opportunities*

[6]Throughout the paper monthly precision is used to match market and accounting data and to take changing fiscal year ends into account. Years relative to the offering therefore do not necessarily contain 12 month period. To be consistent, absolute time periods are referred to by months throughout the paper.

($PVGO$) to measure how susceptible firm value is to overvaluation.[7] The current stock price of a firm P_0 is the capitalized value of its average earnings per share assuming zero growth plus the present value of future growth opportunities:

$$P_0 = \frac{EPS}{R} + PVGO,$$

where R is the firm's capitalization rate. *Relative* $PVGO$ ($RPVGO$) consequently is

$$RPVGO = \frac{E[P] - EPS/R}{E[P]}.$$

The $PVGO$ component is larger for growth stocks and smaller for value stocks. Consider a young, unprofitable, extreme growth firm. It will exhibit a high $PVGO$ relative to its stock price, as new shareholders are predominantly buying cash flows expected from future projects, not from assets in place. In this case information asymmetries between investors and managers are at their greatest and market timing opportunities arise. On the other hand, if firm value entirely depends on assets in place and no future growth opportunities exist, firms will not be subject to informational asymmetries and market timing opportunities do not exist. This is because the value of a firm with a history of positive earnings and little growth phantasies is much less subjective and therefore its value is much less likely to be affected by general market fluctuations. I calculate $PVGO$ using the middle of the original filing price range as the expected offer price $E[P]$. Industry costs of capital R is estimated from a market model at the industry level using the 48 Fama and French (1997) industries and a 25-month window around the offering.

I use two alternative measures of earnings per share (EPS). Earnings before interest and taxes (EBIT) from the fiscal year end preceding (following) the offering (COMPUSTAT item 178) are divided by shares outstanding before (following) the offering (item 25). The second lagged measure may be a better estimate of the $RPVGO$ assumed by investors and managers, as earnings for both SEOs and IPOs decrease substantially following the offerings in my sample, consistent with prior IPO research. The results are not affected by the use of either measure.[8] To eliminate extreme observations caused by large negative earnings ($RPVGO > 1$) and large positive earnings ($RPGVO < 0$) I winsorize both measures at the 1 and 99 percentiles for both IPOs and SEOs. To illustrate the measure, I calculate industry rankings based on average and median RPVGO ratios for the 48 Fama-French industries. The rankings confirm the intuition of the measure. The lowest-ranked industries are utilities, coal mines, tobacco, and shipping. High-

[7] See Brealey, Myers, and Allen (2006), pp.73-76. The $RPVGO$ measure is used for example by Benveniste, Wilhelm, and Yu (2003) to calculate firm-value uncertainty.

[8] I also use EBITDA (item 13) to calculate earnings per share as well as basic earnings per share (item 53) and basic earnings per share excluding extraordinary items (item 58), all from COMPUSTAT. Results are unchanged by this. Similarly I calculate earnings per share using shares outstanding prior to the offering (variable OUT) and shares outstanding after the offering (variable OUTPF) from SDC. However these data are frequently missing or inconsistent. For example, shares outstanding prior to the offering may be larger than shares outstanding after the offering. Alternatively calculating shares outstanding after the offering as shares outstanding prior to the offering plus all shares sold (including any overallotment) in all markets (TOTSHSOVSLD) frequently do not match OUTPF by a wide margin. See also Ljungqvist and Wilhelm (2003) for a discussion of SDC quality issues.

ranked industries are pharmaceuticals, precious metals, medical equipment, business services, entertainment and personal services. Generally, nascent industries score highly on the $RPVGO$ ratio.

Second, under the market timing hypothesis a firm will time equity issues to coincide with market peaks (Baker and Wurgler (2002)). The likelihood of being able to do so depends on financing constraints of the firm. A financially unconstrained firm will be more likely to be able to time its equity issues to coincide with peaks in equity prices. A financially constrained firm on the other hand will be less likely to wait for the optimal point in time for an equity issue. To illustrate this point, consider an equity carve-out as compared with a normal IPO. It is frequently claimed that equity carve-outs do differ from stand-alone IPOs in their greater opportunities for market timing (e.g. Pagano, Panetta, and Zingales (1998) and Tuna (2003)). The rationale is that subsidiaries to be taken public in a carve-out on average can rely on substantially larger financial resources through the internal capital market of the parent firm than a stand-alone IPO and are therefore less capital-constrained. Pagano, Panetta, and Zingales (1998) argue that "it follows that [the parent firm] has greater freedom to time the IPO to take advantage of a favorable market valuation in its particular sector". The same argument applies even more strongly to seasoned equity offerings, which predominantly finance investment from internal funds.

I measure financial constraints by using the Kaplan and Zingales (1997) index, recalculated by Steven Kaplan for the use of publicly available information in Lamont, Polk, and Saa-Requejo (2001). The index takes on larger values with increasing constraints and consists of cash flow to total capital (decreases constraints), market-to-book (increases constraints), book leverage (increases constraints), dividends to total capital (decreases constraints), and cash holdings to capital (decreases constraints). Since the market-to-book ratio is a separate variable in my analysis I construct two version of the KZ index, one with and one without the market-to-book ratio. Cash flow is defined as earnings before extraordinary items (item 18) plus depreciation (item 14) divided by total assets. Market-to-book and book leverage are used as previously defined. Dividends to total capital are common dividends (item 19) over total assets. Cash holdings are defined as cash and marketable securities (item 1) over total assets.[9][10]

Third, it is well documented that equity issues are influenced by the past history of security prices and that equity issues are preceded by price run-ups (e.g. Marsh (1982), Korajczyk, Lucas, and McDonald (1990)). Firms are more likely to be able to time the market if they have recently experienced price increases. This may not require superior information and is in the

[9]Using the coefficients provided in Lamont, Polk, and Saa-Requejo (2001) the full KZ index is $-1.001909 \times$ (cash flow) $- 0.2826389 \times (M/B) + 0.3139$(book leverage) $- 39.368 \times$ (dividends) $- 1.314759 \times$ (cash holdings).

[10]To make sure that my results do not rely on the construction of this particular index I also construct two alternative measures of financial constraints. I create deciles for IPOs and SEOs separately in the fiscal year preceding the offering using interest coverage, defined as EBITDA (item 13) over interest expenses (item 15), cash holdings, cash flow and book leverage. Kaplan and Zingales (1997) find that interest coverage ratios significantly determine financial distress. As book leverage increases financial constraints its ranking is reversed. I add up the decile scores of the four variables and divide the total score by 40. This creates an alternative index variable ranging from 0.1 to 1, with higher scores indicating larger constraints. As a second alternative I repeat this process but exclude book leverage from the index. All results of the analysis derive independently of which variable I use.

spirit of the pseudo-market timing argument by Schultz (2003). Ex ante, a firm is likelier to issue equity close to price peaks after periods of increasing share price. I measure abnormal pre-issue performance by calculating cumulative abnormal returns YT for every firm for the event window from $t-12$ to $t-2$ months, where t is the offering month. Normal returns are estimated from a market model using $t-36$ to $t-13$ month returns.

Fourth, and related to pre-issue performance, the likelihood of successfully timing the market may also depend on the incorporation of private information into the stock price of the firm. Roll (1988) proposes R^2 as a useful measure of investor's private information about a firm. If more firm-specific information is incorporated in the stock price, R^2 will be lower as more information causes more firm-specific return variation. Recent research has focused on the informational content of R^2 (e.g. Durnev, Morck, and Yeung (2004). Hou, Peng, and Xiong (2005) also show that R^2 is negatively related to momentum. Ex ante, a firm therefore is likelier to issue equity when its R^2 is low. At the same time, pre-issuance momentum should be positive, as previously described. If favorable firm-specific information gets incorporated in the share price, a firm will be able to profit from increasing firm value if it is able to time the idiosyncratic component of firm value. I use R-squared from time-series regressions preceding the offering to measure this information effect. The drawback of this measure is that it is only available for SEOs. High R-squared indicates that little firm-specific information is incorporated in the stock price. Following Roll (1988) I regress stock returns on industry returns and market returns. The specification is

$$r_{j,t} = \beta_{j,0} + \beta_{j,m} r_{m,t} + \beta_{j,i} r_{i,t} + \epsilon_{j,t}, \tag{1}$$

for each firm j, where t is the time index, $r_{j,t}$ is the return of firm j, $r_{m,t}$ is a market return and $r_{i,t}$ is an industry return for industry i, to which firm j belongs.The market return is the value weighted CRSP index, industry returns are calculated using value weighted averages of the 48 Fama and French (1997) industries. To avoid spurious correlations between firm returns and industry returns in industries with small numbers of firms, industry returns $r_{i,t}$ are calculated for industry portfolios that exclude all issuing firms as well as firm j for 60 months years after their offering dates. Regressions are estimated using weekly returns from $t-52$ to $t-1$.

It should be noted that these measures clearly do not capture the full extent of market timing opportunities for the cross-section of firms. Also, the proxies are necessarily noisy. The $RPVGO$ measure calculates the net present value of cash flows from assets in place as a perpetuity, which is a strong assumption on the firm level. Also, the industry costs of capital will not necessarily reflect the cost of capital of projects in place. While this introduces noise, a systematic bias is unlikely. Also, SEOs and particularly IPOs may be endogenous events in the sense that the observation of equity issuances itself is conditional on market conditions. This endogeneity is difficult to resolve. Particularly studying the decision of companies to go public has proved to be elusive with the notable exception of Pagano, Panetta, and Zingales (1998). They find that for both stand-alone IPOs and equity carve-outs market conditions matter for the decision to go public. Since this may bias my results towards detection of market timing, a finding of no

long-term effects of market timing would be even stronger.

2.3 Measuring market timing

To measure market timing, one line of research utilizes the tendency of firms to issue equity when their market valuations are high relative to book values or past market values. While earlier studies have relied on past share performance prior to issuances, more recent studies have focused on scaled price variables, i.e. variations of market-to-book. An alternative approach to capture market timing is to analyze risk-adjusted stock price performance for post-issue firms. The observation of negative abnormal performance exhibited by IPO firms post-issue by Ritter (1991) has been confirmed by several studies for IPO as well as for SEOs and is widely interpreted as evidence of market timing.[11] This paper implements both approaches as well as the approach of classifying market timing attempts by whether equity offerings take place in hot or cold markets (Alti (2006)).

2.3.1 Event-time returns and factor regression analysis

There is a continuing debate how to appropriately measure long-term performance of stock prices against various benchmarks and so far, no consensus exists. Indeed, Lyon, Barber, and Tsai (1999) state that the "analysis of long-run abnormal returns is treacherous". The issues to be resolved are measurement of performance and benchmark selection. To address this concern IPO and SEO long-run performance is measured both in event-time using cumulative abnormal returns (CARs) and buy-and-hold abnormal returns (BHARs) and in calendar-time using CAPM, Fama and French (1993) three-factor and Carhart (1997) four-factor rolling portfolio regressions.

Event-time CARs and BHARs are calculated relative to several benchmarks. First I calculate abnormal returns relative to several broad market indices. Then I form dynamic benchmark portfolios by size and market-to-book using NYSE quintile breakpoints and allocate all CRSP firms into the resulting 25 (5×5) portfolios. Portfolios are reformed quarterly and equal weighted returns are calculated for the next three months for every portfolio. This procedure is repeated in January, April, July and October of each year from 1969 to 2005. I excluding all IPO and SEO firms for five years following the offering from the pool of benchmark firms to avoid any new listing bias.[12].

I repeat this procedure forming dynamic benchmark portfolios by size, market-to-book and momentum. In this case I use quartile breakpoints instead of quintiles because a finer separation leaves some portfolios with few stocks during the sample period. Momentum breakpoints are

[11] Negative abnormal stock-price performance following IPOs and SEOs is reported by Ritter (1991), Loughran and Ritter (1995), Ikenberry, Lakonishok, and Vermaelen (1995), Spiess and Affleck-Graves (1995), and Eberhart and Siddique (2002). Schultz (2003) provides an overview of long-term abnormal performance in other countries.

[12] Loughran and Ritter (2000) argue that if issuing firms exhibit long-term underperformance, including issuing firms in benchmark returns will create a downward bias of the benchmark return and therefore a bias against detection of abnormal returns. Consistent with Brav, Geczy, and Gompers (2000) I find in unreported results that the bias is negligible however.

defined by calculating buy-and-hold returns over the preceding 12 months excluding the month before the sorting date, i.e. I follow the procedure suggested by Carhart (1997). Momentum matching is performed monthly, size and market-to-book matching is performed quarterly. Every IPO and SEO observation is assigned to one of the 64 ($4 \times 4 \times 4$) portfolios.

Finally, benchmark returns are also calculated using predictions from a market model estimated with pre-issue data for month $t - 36$ to $t - 13$. Since price momentum portfolios and pre-issue market model estimation requires price data for issuing firms prior to the event, these benchmarks can only be calculated for the sample of SEOs.

In addition to event-time return CARs and BHARs I also calculate abnormal returns in calendar time. It is well known that correlations of returns across events pose a particular problem in studies of long-term returns (Fama (1998)). No full solution to this problem is available when calculating returns in event-time.[13] Mitchell and Stafford (2000) show that significance levels of all returns calculated in event-time are greatly overstated with even moderate cross-sectional correlation. Using abnormal returns calculated in calendar-time avoid the problem of cross-correlation of returns as the time-series variation of the monthly abnormal returns does accurately capture the effects of the correlation of returns across event stocks. Abnormal returns calculated in calendar-time are also robust to the detection of pseudo-market timing in Schultz (2003).

I calculate the monthly return of a portfolio consisting of firms which have previously issued equity in a specified period τ, which here is 60 months. The calendar-time portfolios therefore include varying numbers of firm observations for different months during the sampling period. Using this portfolio return I follow the suggestion of Fama (1998) and estimate the following model for abnormal stock price performance:

$$R_{pt} - R_{ft} = \alpha + \beta(R_{mt} - R_{ft}) + sSMB_t + hHML_t + pPR12_t + \varepsilon_t, \tag{2}$$

where R_{pt} is the raw return on the calendar-time portfolio in month t (i.e. of firms for which month t falls in the time period τ), R_{ft} is the one-year risk-free interest rate, R_{mt} is the value weighted return on a market index composed of all firms trading in month t, SMB_t is the return on a portfolio of small stocks minus the return on a portfolio of large stocks, HML_t is the return on a portfolio of low market-to-book stocks minus the return on a portfolio of high market-to-book stocks and $PR12_t$ is the return on a portfolio of high past return stocks minus the return on a portfolio of low past return stocks. The intercept estimate (α) provides a test

[13] Lyon, Barber, and Tsai (1999) discuss several possible adjustments to the variance-covariance matrix of event returns to account for cross-sectional dependence of firm observations. They find that the adjustments do not eliminate the problem of cross-sectional dependence.

of the null hypothesis that the mean monthly abnormal portfolio return is zero.[14] I use both value and equal weighted portfolio returns in my analysis, with the total market value of equity as weights.[15]

2.3.2 Scaled price variables

Previous research has used the market-to-book ratio as a proxy for mispricing of equity issues (Rajan and Zingales (1995), Pagano, Panetta, and Zingales (1998), Baker and Wurgler (2002) and Kayhan and Titman (2006)). I use the normal market-to-book ratio M/B_t in year t as well as the historic weighted average of market-to-book $M/B_{efwa,t}$ from Baker and Wurgler (2002):

$$M/B_{efwa,t} = \sum_{s=0}^{t} \left[(e/A_s + d/A_s) \,/ \sum_{r=0}^{t} e/A_r + d/A_r \right] M/B_s \tag{3}$$

where e/A and d/A are yearly net equity issues and net debt issues as previously defined. Weights smaller than zero are set to zero and weighted averages of M/B larger than 10 are dropped, following Baker and Wurgler (2002).

2.3.3 Hot-issue markets

Identifying market timing firms as those that go public during hot markets is suggested by Alti (2006). He studies hot versus cold-market IPOs and finds evidence consistent with hot-market IPOs taking advantage of windows of opportunity and issuing significantly more equity than cold-market firms. At the same time, Helwege and Liang (2004) show that hot-market and cold-market IPO firms exhibit almost no discernible differences across a large range of firm characteristics. Further, the hot market effect is robust to a large number of control variables accounting for capital structure decision. Following Alti (2006) I define a hot SEO (IPO) market month as one where the number of SEOs (IPOs) reported on SDC exceeds the sample median. The number of issuances is de-trended by 0.25 percent per month and smoothed by calculating a three-month centered moving average of the de-trended monthly number of issues over the sample period. I use HOT as a dummy variable that equals 1 for SEOs (IPOs) during hot SEO (IPO) markets.

[14] The downside of calendar-time returns is that they do not represent a straightforward investment strategy. Unlike buy-and-hold returns, which measure the return of an investor who buys shares in the secondary market at time s and holds them for the specified period of time τ, calendar-time portfolios measure the return of a portfolio bought at a specified point in time, which is consequently rebalanced to buy IPO firms and sell them after the specified period of time. Also, Loughran and Ritter (2000) argue that calendar-time returns have low power to detect abnormal performance in the first place, because they average across months of "hot" and "cold" issuing activity. Further, Lyon, Barber, and Tsai (1999) argue that calendar-time portfolios often yield misspecified test statistics in nonrandom samples. On the other hand, they show that the portfolios performs well when cross-sectional dependence is severe.

[15] Fama (1998) argues in favor of using value-weighted portfolio returns, because they reflect the actual wealth effects experienced by investors and because they reduce bad-model problems introduced by various asset pricing models, which seem to systematically underestimate the performance of small firms. Loughran and Ritter (2000), on the other hand, argue in favor of using equal-weighted portfolios because they precisely do not obscure the mispricing that is more likely to occur with smaller firms.

2.3.4 Control variables

In the consequent analysis I run traditional capital structure regressions to determine the impact of market timing on capital structure. I use the following control variables that have been found to determine capital structure.

Rajan and Zingales (1995) find that the main determinants of capital structure are firm size, tangibility of assets, profitability and market-to-book. Size tends to reduce leverage. It may also lower market-to-book if larger and more mature firms are less likely to have high market valuation to book value. I calculate $SIZE$ as the log of net sales. Higher profitability reduces leverage through retained earnings. It may also increase market-to-book if operationally profitable firms are valued higher by the market. I measure profitability $EBITDA/A$ as previously defined. Tangibility of assets tends to increase leverage as it reduces the costs of financial distress. I measure tangibility PPE/A as previously defined.

Additionally, dividends to book equity Div/E are similarly regarded as a proxy for profitability by Fama and French (2002) and Baker and Wurgler (2002). Regarding investment opportunities, research and development expenses $R\&D/A$ is a proxy for investment opportunities (Fama and French (2002)).

3 Results

3.1 Equity issuance

Equity issuances differ widely in relative size and composition. The sample contains primary offerings, in which new shares are sold as well as mixed offerings, in which both new shares are sold (the primary component) and existing shareholders sell some of their shares (the secondary component). This approach is conservative since in a Myers and Majluf (1984) world insiders sell their shares when they perceive them to be overvalued. Market timing therefore will be stronger for a sample of offerings that contains primary as well as mixed offerings than for a sample containing only primary offerings. Regarding their long-term stock price performance, mixed offerings should perform even worse than primary offerings in the presence of market timing. Including them therefore biases the results even in favor of detecting market timing.[16] Total proceeds from the offering, $Proceeds^T$, are therefore decomposed into primary proceeds $Proceeds^P$ and secondary proceeds $Proceeds^S$.

The amount of equity issued may potentially be influenced by differing firm characteristics between likely and unlikely market timers. To address this concern, I run the following regression

[16] Differences in any case are likely to be small. Brav, Geczy, and Gompers (2000) show that long-term performance of secondary issues is identical whether mixed issues are included or excluded.

which controls for various determinants of equity issuance:

$$\begin{aligned} Y_t = {} & c_0 + c_1 RPVGO_{t=-1} + c_2 IPO + c_3 IPO \times RPVGO_{t=-1} + c_4 YT + c_5 RSQ_{YT} \\ & + c_6 KZ\ Index_{t-1} + c_7 HOT + c_8 M/B_t + c_9 EBITDA/A_{t-1} + c_{10} SIZE_{t-1} \\ & + c_{11} PPE/A_{t-1} + c_{12} R\&D/A_{t-1} + c_{13} R\&D\ d_{t-1} + \varepsilon_t, \end{aligned} \tag{4}$$

where the dependent variable Y_t is one of several measures of the relative size and price of the offering proceeds. Offering proceeds are scaled by year-end total assets of the IPO year. The offering year t is the fiscal year during which the offering takes place. The regression in columns one to three include only SEO observations, columns four to six include both SEO and IPO observations. The variables proxying for market timing opportunities are the relative value of future growth opportunities, pre-offering performance, R^2 of pre-issue time-series regressions of firm returns, and the Kaplan and Zingales (1997) index of financial constraints. Market timing variables are the hot market dummy and the market-to-book ratio. Control variables are profitability, size, tangibility of assets and research and development expense. Previous research has identified these control variables as the main determinants of financing policy (Rajan and Zingales (1995), Fama and French (2002)). To control for industry-induced heterogeneity, all regressions are estimated with industry fixed effects using the Fama and French (1997) 48 industry definitions. $RPVGO_{t-1}$, YT, RSQ_{YT} and HOT are measured at the offering date, M/B is measured at year-end of the offering year and $KZ\ Index$, $EBITDA/A_t$, $SIZE_t$, PPE/A_t, $R\&D/A_t$ and $R\&Dd_t$ are lagged one year. The dummy variable $R\&Dd$ is equal to one if $R\&D/A$ is missing on COMPUSTAT, which is the case in 51 percent of firm-year observations. This controls for the possibility that firms for which R&D expense data is missing could exhibit systematically different characteristics from firms that report R&D expenses of zero.

Table 2 reports the results. The market timing opportunity measures all have a significant impact on equity issuance. In column one for example, a one standard deviation increase in $RPVGO$ is associated with a 0.84 percent increase in total proceeds $Proceeds^P$.[17] Similarly, a one standard deviation increase in YT is associated with a 1.1 percent increase in total proceeds. A one-standard deviation increase in RSQ_{YR} is even associated with a 2.4 percent increase in total proceeds. The impact of hot versus cold markets is similarly positive but not significant for SEOs. The significance of relative future growth opportunities and hot markets is driven by primary proceeds, not by secondary proceeds. Growth-firm insiders do not sell significant amounts of equity in SEOs. The $KZ\ index$ coefficient is positive and highly significant, confirming that the less financially constrained a firm is, the more equity it issues in an SEO. The results for the combined sample of SEOs and IPOs (columns 4-6) are very similar. IPOs issue a much larger fraction of equity however. The interaction term of $RPVGO$ and the IPO dummy does not eliminate the effect of $RPVGO$, confirming that the effect of growth firms is not due to IPOs only.

[17] Comparative statics in this section are calculated multiplying the standard deviation of the independent variable (not reported) with its coefficient. E.g. the standard deviation of $WRPVGO_{t=-1}$ in column one is 3.0946, therefore $0.270 * 3.0946 = 0.836$.

That firms which are likely to time the market are also issuing more equity could be due to two factors. First, firms could issue more equity and second, they could issue at higher prices. Following Alti (2006) I decompose the offering proceeds into two components, a price component and a quantity component:

$$\frac{Proceeds}{Total\ assets} = \frac{Number\ of\ shares\ issued}{Total\ shares\ outstanding} \times \frac{Offer\ price}{Total\ assets\ per\ share} \tag{5}$$

Panel B reports the results for this decomposition of the issued amount for total proceeds and primary proceeds. The results show that the timing character of SEOs mostly derives from selling equity at higher prices, not from selling larger amounts of equity. Growth opportunities, pre-issue stock performance and being financially unconstrained are all positively related the price component and unrelated to the quantity component. The pattern of RSQ_{YT} is slightly different but consistent with this. Its coefficient is positive for the price component of primary proceeds (column 4), while it is strongly negative for both the quantity and the price component of secondary proceeds (not reported).

The hot market dummy has a negative sign for the price component, meaning that hot market SEOs sell shares at significantly lower prices. This shows that the hot-market effect among IPOs documented by Alti (2006) does not similarly extend to SEOs.

Columns 5 to 8 report results for IPOs, which are generally very similar to those of SEOs. Again, firms with larger growth opportunities and financially unconstrained firms issue more equity. The hot market effect of IPOs however is now visible in both quantity and price components. This is entirely consistent with the market timing hypothesis.

In summary, firms with large market timing opportunities issue more equity at higher prices. This effect is more pronounced in hot markets for IPOs, but not for SEOs. Firms issue more equity if they are hard-to-value growth firms, if they are financially unconstrained, if they have experienced positive abnormal stock price performance prior to the issue and if private information has been incorporated into the stock price.

3.2 Announcement effects of equity issuances

To address the question of whether investors perceive equity issuers to be of bad quality, Table 3 reports event-study results for announcement effects for the sample of SEOs. Abnormal returns are calculated using a market model estimated over $t-250$ to $t-10$ trading days before the announcement. Panel A reports single event day returns, Panel B reports CARs for different event windows. Consistent with previous SEO announcement return studies I find an announcement return of -0.83 percent on the day of the announcement and a cumulative abnormal return of -1.58 percent for the $(0,+1)$. Both returns are statistically significant with a p-value smaller than 0.001. To confirm whether investors perceive firms with high market timing potential to be of low quality I divide SEO observations by whether they are during hot or cold markets and ranked by $RPVGO$ quintiles with equal number of SEOs in each decile.

Unreported results show that market reactions to hot-market firms are not different from those for cold-market firms. Significant differences exist between high and low-growth companies. The lowest $RPVGO$ quintile of firms has returns of -0.2 percent, while the highest $RPVGO$ quintile has returns of -1.0 percent, in both cases measured for the [0,+1] event window. Cross-sectional regressions with event returns as the dependent variable further show that tangibility of assets PPE/A always has a positive coefficient, independent of the event window. $RPVGO$ only has a negative coefficient for the [-1,0] and [-1,+1] windows. These results should be treated with caution due to the well-known limitations of event studies. Still, they suggest that differences in announcement returns are small and provide at best weak evidence of quality differences between firms as perceived by investors.

3.3 Long-term performance

Having established that SEO and IPO firms' equity issuances are influenced by market conditions, I address the question of what the consequent long-term stock price performance of these firms is. This is important, since equity issues may be an overoptimistic reaction of managers to rising stock prices or in fact the selling of overvalued equity. If equity issues are not mispriced, then we would not expect to observe underperformance of issuing firms. If market timing however means successfully redistributing wealth from new shareholders to existing shareholders we would expect to observe negative abnormal performance following equity issuances. Indeed, previous results of negative abnormal performance have been interpreted as evidence of market timing of IPOs (e.g. Ritter (1991)).

In a first step I report event-time returns and in a second step calendar-time factor regressions, which circumvent some of the problems associated with event-time returns.

Table 4 reports results for SEOs in Panels A and B and for IPOs in Panels C and D. Panels A and C report CARs, Panels B and D report BHARs, against broad-index benchmarks as well as against quarterly adjusted size and market-to-book benchmark portfolios (25 portfolios) and monthly adjusted size, market-to-book and momentum benchmark portfolios (64 portfolios). Issuer-performance is calculated equal weighted and value weighted over 60 months following the offering, as described in Section 2.3.1. The table highlights several important results.

First, the addition of the 1970-1975 and 1995-2002 periods to the results of Brav, Geczy, and Gompers (2000) generally reduces the performance of SEOs and IPOs. The reduction is larger for IPOs and amplified when using buy-and-hold returns. Compared to the results of Brav et al, for example value weighted raw SEO buy-and-hold returns decline from a minimum of 72.5 percent to just 31.8 percent in my sample (Panel B). Value weighted raw IPO buy-and-hold returns decline from a minimum of 52.6 percent (Brav, Geczy, and Gompers (2000), Table 4, Panel A) to just 6.5 percent in my sample (Panel D). Second, since benchmarks mostly do not experience similar declines when using buy-and-hold returns, abnormal returns similarly turn more negative. I winsorize both issuer returns and benchmark returns at the 5 and 95 percentiles to reduce the influence of outliers, particularly during the hot- and cold-market periods from 1995 to 1999 bias the results. Still, negative performance when using buy-and-hold returns is as

large as -60.9 percent for SEOs (value weighted) and -72.4% for IPOs (equal weighted).

Third, cumulative abnormal returns measured against size, market-to-book and momentum matched benchmarks for SEOs and size and market-to-book matched benchmarks for IPOs are almost identical to the results of Brav, Geczy, and Gompers (2000). Equal weighted cumulative abnormal returns for SEOs are negative at -14.6 percent when size, market-to-book and momentum matched portfolio benchmarks are used and positive for IPOs at 8.4 percent when size and market-to-book matched portfolio benchmarks are used. Similarly, value weighted cumulative abnormal returns are negative at -17.1 percent for SEOs and slightly negative at -4.7 percent for IPOs. This corresponds to a monthly abnormal return for SEOs of minus 26 basis points (equal weighted) or minus 31 basis points (value weighted) and a monthly abnormal return for IPOs of plus 13 basis points (equal weighted) or minus 8 basis points (value weighted). In other words, SEOs seem to slightly underperform firms with similar size, market-to-book and momentum characteristics, while the return of IPOs is identical to firms with similar size and market-to-book characteristics. This is consistent with previous results by Brav and Gompers (1997) and Brav, Geczy, and Gompers (2000). The reason why market-to-book matching eliminates the underperformance of IPOs is that IPO firms are mostly firms with small size and high market-to-book, as shown above. Small size and high market-to-book firms however tend to exhibit low absolute performance, independently of issuing equity.

Fourth, SEO firms experience strong positive momentum before the offering and negative momentum following the offering. In line seven of both Panels A and B I calculate benchmark returns using predictions from a market model estimated with pre-issue data for month $t-36$ to $t-13$. A firm's post-issue returns are therefore benchmarked against a market model estimated using its own pre-issue returns, capturing long-term momentum. As the results for cumulative abnormal returns show in Panel A, benchmark returns almost double from 64.9 percent when using size and market-to-book matching benchmarks portfolios to 128.7 percent when using benchmark returns calculated from the pre-issue market model parameters. Value weighted benchmark returns are still very large at 92.5 percent. Abnormal returns consequently are -73.8 percent (equal weighted) and -43.1 percent (value weighted). Panel B underlines how the compounding when using buy-and-hold returns amplifies extreme returns. Benchmark returns using BHARs are 972.5 percent (equal weighted) and 624.3 percent (value weighted). These results are in line with those of Mitchell and Stafford (2000) of strong pre-issuance SEO performance.

Next, in order to be able to draw inferences I use the alternative approach of factor regressions calculated in calendar-time from Equation (2) to confirm the previous results. The results are reported in Table 5. Panel A reports results for SEOs, Panel B reports results for IPOs.

The intercept estimates (*Alpha*) show whether the CAPM, three-factor Fama and French and four-factor models are able to price the portfolios of issuing firms. Not surprisingly, the CAPM is unable to price the IPO portfolio, with a large negative unexplained return. More surprisingly, SEOs are even priced by the CAPM.

The three-factor model leaves a large negative intercept for the equal weighted SEO portfolio,

and a similarly large negative intercept for the value weighted IPO portfolio. Both the three-factor and the four-factor model show that SEO and IPO portfolios load positively on the SMB factor. Equal weighted SEOs load marginally positively on the HML factor, while IPOs load consistently negatively on the HML factor, the factor loading strongly increases when value weighted returns are used. In other words, SEO stocks behave like small value stocks when equal weighted, and like small growth stocks when value weighted. IPOs behave like small value stocks.

In the four-factor model, factor loadings are similar, while both SEOs and IPOs show large negative factor loads for the $PR12$ factor when equal weighted returns are used and small negative loadings for value weighted returns. Both SEO and IPO stocks covary positively with low momentum stocks. Although SEO firms have high returns prior to the equity issue, as shown in Table 4, following the offering their returns look like the returns of low past return stocks. Post-issue, IPOs similarly behave like past loser stocks. A risk-based interpretation of the negative $PR12$ factor loading would be that SEO and IPO firms are less risky following the offering. An investor overoptimism interpretation would be that $PR12$ is picking up mispricing. In any case, the four-factor model is able to price SEO and IPO portfolios, both equal and value weighted. Estimates of *alpha* are economically small and not significantly different from zero. Abnormal monthly returns for SEOs are -0.040 percent (equal weighted) and -0.139 percent (value weighted), for IPOs they are 0.104 percent (equal weighted) and -0.247 percent (value weighted). Adjusted R^2 from all regressions ranges from a low of 70.1 percent for the CAPM to a high of 87.3 percent for the four-factor model, averaged across all regressions.

In summary, SEO and IPO firms do not exhibit negative abnormal performance following their equity issuances. IPOs exhibit neutral or even positive performance in event time, SEOs exhibit negative performance. In calendar time however abnormal performance disappears. IPO and SEO stock returns covary positively with returns of past loser stocks. The result that equity issuing firms do not exhibit abnormal performance is inconsistent with the hypothesis that equity is overvalued in the transactions. I later address the possibility that subsamples may exhibit different risk characteristics, which factor models are unable to price.

3.4 Alternative motives for equity issues

Having established that market conditions explain equity issuance, but that equity is not mis-priced in these issues, I check whether alternative explanations for the observed patterns exist by following two separate approaches. First, I analyze pre-issuance leverage, post-issue investment, post-issue profitability and pre-and post-issue dividend policy, following a similar approach to Alti (2006). Second, I explicitly address to what uses companies are putting the financing raised in the issue, and how they use financing raised in an equity offering relative to other financing. The analysis reveals that important differences exist between SEOs and IPOs. In the following results are therefore reported separately for the two offering types.

First, it could be that differences in pre-issue leverage drive the results. Firms with high market timing potential could also be firms which are overleveraged prior to the issuance and

aim at reverting this imbalance by issuing equity. Table 6 reports results for SEOs in Panel A and results for IPOs in Panel B. The results reject the hypothesis that growth firms issue equity to offset excess leverage accumulated in pre-issue years. As the first column in Panel A shows, high $RPVGO$ companies are leveraged significantly lower rather than higher prior to the issue. The regression also shows that as expected firms with higher market-to-book have lower leverage pre-issuance. On the other hand, hot market firms and firms which have experienced price run-ups are more highly leveraged. Together with the negative sign of RSQ_{YT} this is consistent with the hypothesis that low-quality firms take advantage of windows of opportunity during which costs of adverse selection are reduced to issue equity and decrease leverage.

Regarding investment, columns two to four show that growth firms show strong investment from year $SEO+1$ onwards. The coefficient of YT is similarly positive. The hot market variable on the other hand has no significant influence. This means that while hot-market SEO raise more equity, as shown in Table 2, this is not followed by actual investment. Also, low RSQ_{YT} firms invest significantly less following the offering. While growth firms therefore invest more following the offering, this does not apply to hot market firms and firms about which more private information is incorporated in the stock price. SEO firm behavior therefore is only partly consistent with market timing behavior, as equity issuance also seems to be driven by consequent investment of growth firms.

The results for profitability in columns five to seven show that as one would expect, growth firms are less profitable. Interestingly, neither YT nor RSQ_{YT} have any effect on profitability, suggesting that the pre-issue stock-price increase is not due to increased profitability. On the other hand hot-market firms are more profitable than cold-market firms, although the effect disappears within two years.

Regarding dividend payments, Alti (2006) argues that dividend payout patterns around hot-market IPOs are evidence of market timing. Although I get a similar effect for the sample of IPOs, my evidence shows that this effect does not extend to SEOs. Among SEOs, dividend payments are significantly higher among hot-market firms prior to the offering, in the offering year and for the next two years. On the other hand they are significantly lower for growth firms. The effects of YT and RSQ_{YT} are negligible. This is not consistent with dividend payments being used to redistribute market timing gains from new shareholders to existing shareholders.

IPO offerings in Panel B show that equity issuing firms are not overleveraged prior to the issue. Growth firms, hot-market firms and high market-to-book firms are not leveraged differently from other firms. Regarding investment, the difference to SEOs is that equity issuance has no impact on investment for IPOs, consistent with market timing. This raises the question of what issuing proceeds are used for in IPOs, which I address next. Regarding dividends, growth firms do not have significantly different payout ratios. They also significantly decrease dividends after the offering. The hot-market coefficient on the other hand is positive, but unreported results show that the hot-market coefficient is positive even prior to the offering, which again is difficult to reconcile with the view that dividends are used to redistribute wealth from new to existing shareholders, as argued by Alti (2006). A simpler explanation is that hot-market firms

use pre-issue dividends and the promise of post-issue dividends to attract investors.

Next, I turn to the immediate impact of equity issues on capital structure and how proceeds are used by firms. Table 7 reports results for SEOs in Panel A and for IPOs in Panel B.

The first variable of interest is the change in leverage induced by the equity issue. In the first column of Panels A and B, the dependent variable is the change in leverage in the offering year:

$$\begin{aligned}\frac{D}{A}_t - \left(\frac{D}{A}\right)_{t-1} &= c_0 + c_1 RPVGO_{t=-1} + c_2 YT + c_3 RSQ_{YT} + c_4 KZ\ Index_{t-1} \\ &+ c_5 HOT + c_6 M/B_t + c_7 EBITDA/A_{t-1} + c_8 SIZE_{t-1} \\ &+ c_9 PPE/A_{t-1} + c_{10} R\&D/A_{t-1} + c_{11} R\&D\ d_{t-1} + c_{12} D/A_{Pre} + \varepsilon_t,\end{aligned} \tag{6}$$

Leverage decrease is increasing in $RPVGO$, growth firms are therefore decreasing their leverage ratios more aggressively in the offerings. The same is true for firms with recent price run-ups and hot-market firms. Again, RSQ_{YT} has a positive coefficient–firms with low R^2 decrease leverage more strongly. The evidence therefore suggests that firms with the opportunity to do so strongly decrease their leverage. Finally, opposed to relative issuance amounts, financial constraints here result in a larger decrease in leverage. While financial constraints therefore are negatively related to equity issuance as a percentage of assets, they are positively related to the reduction in leverage.

Next, the change in leverage in (6) is decomposed as

$$\begin{aligned}\frac{D}{A}_t - \left(\frac{D}{A}\right)_{t-1} &= -\left[\left(\frac{E}{A}\right)_t - \left(\frac{E}{A}\right)_{t-1}\right] \\ &= -\left(\frac{e}{A}\right)_t - \left(\frac{\Delta RE}{A}\right)_t - \left[E_{t-1}\left(\frac{1}{A_t} - \frac{1}{A_{t-1}}\right)\right] \\ &= -\left(\frac{e}{A}\right)_t - \left(\frac{\Delta RE}{A}\right)_t + \left[\left(\frac{E}{A}\right)_{t-1}\left(\frac{\Delta Cash + \Delta Non - Cash}{A_t}\right)\right].\end{aligned} \tag{7}$$

The change in leverage is therefore minus net equity issuance minus the change in retained earnings plus the third term, which is the residual change in leverage, decomposed into the change in cash and the change in non-cash assets. Market timing firms would be expected to mostly add to cash, not to non-cash assets. [18] Columns two to five report the results for the three factors, with the last one divided into cash and non-cash components. As expected, equity issuance is positively influenced by $RPVGO$ and YT and negatively influenced by RSQ_{YT}. For example, for SEOs a one standard deviation increase in $RPVGO$ increases net equity issuance by 1.1 percent, a one standard deviation increase in pre-issue returns increases equity issuance by 1.02 percent. The hot market effect again disappears after controlling for these measures of market timing opportunity. For IPOs in Panel B $RPVGO$ similarly has a negative sign.

[18] I also try further splits of the change in assets using data on intangibles and acquisitions from the cash flow statements. Data however are frequently missing, particularly for IPOs.

The hot-market coefficient now is significant. This again suggests that the hot-market effect is important in the IPO market, but not in the SEO market.

The third and fourth columns show that the uses of proceeds are balanced between cash and non-cash assets for SEO firms and mostly cash for IPO firms. SEO growth firms do not add to cash, consistent with the previous evidence that they finance investment with the proceeds. SEO firms with price run-ups however funnel proceeds significantly more into cash. IPO funnel proceeds into cash if they are growth firms and if they go public in hot markets. This is consistent with the market timing hypothesis.

Finally, post-issue leverage confirms the previous findings. For SEOs the significantly positive coefficient of YT from Table 6 disappears, the significantly negative coefficient of RSQ_{YT} decreases further, the positive coefficient of HOT disappears and the significantly negative coefficient of M/B decreases further, while the coefficient of $RPVGO$ remains unchanged. For IPOs the insignificant coefficients of both $RPVGO$ and M/B become significantly negative.

So far the evidence suggests that firms are able to take advantage of market conditions in equity issues, but also that investment opportunities matter, as firms subsequently invest. The effect is more pronounced for SEO than for IPO firms. To more closely identify these two motives I use an alternative approach and analyze both financing sources and uses more directly. To do this I use additional data from cash flow statements and follow the COMPUSTAT definitions of sources and uses of funds. The goal is to identify whether the financing raised in the offering results in cash flow changes following the offering, that are attributable to investment activity rather than purely financial uses. I consider nine different variables, which are the change in assets as a benchmark and eight possible uses of funds–capital expenditure, increase in investments, acquisitions, changes in cash holdings, dividends, debt reductions, equity repurchases or other uses. The empirical specification is as follows:

$$Y_t = c_0 + c_1 \left(Proceeds^P / A_{t=-1}\right) + c_2(Residual\ sources/A_{t=-1}) + c_3 SIZE_{t-1} + \epsilon_t,$$

where the dependent variable Y_t is the cumulative change in assets from pre-offering to post-offering year t scaled by pre-offering assets, i.e. $Y_t = (A_t - A_{t=-1})/A_{t=-1}$ or capital expenditures (COMPUSTAT item 128), increase in investment (item 113), acquisitions (item 129), changes in cash holdings (item 274), dividends (item 127), debt reductions (item 114), equity repurchases (item 115) and other uses (item 218) summarized from year 0 to post-offering year t and scaled by assets, i.e. $Y_t = \sum_{i=0}^{t} y_t / A_{t=-1}$. As before, $Proceeds^P$ are primary issue proceeds from SDC. *Residual sources* include all financing sources of the firm except the equity issued in the IPO or SEO.[19] This specification allows to separately analyze how different possible uses of funds react to equity issues and other sources of funding available to the firm and is similar to those of Kim and Weisbach (2006). *Residual sources* are summarized from year 0 to post-offering year t, i.e.

[19]Total sources of funds (item 112) are frequently missing on COMPUSTAT, even if individual subitems are not missing or do not match the sum of individual items (items 107 through 111, 218). I replace total sources of funds with the sum of individual fund sources in these cases.

$Residual\ sources = \sum_{i=0}^{t} Total\ sources\ of\ funds - Proceeds^p$.

The results are reported in Table 8. The table reports marginal effects dy/dx calculated at the sample median rather than regression coefficients. Marginal effects are useful in this setting as they can be easily interpreted. They show how an increase of one unit in the independent variable affects the dependent variable under the linear model. To illustrate reading the table, in the offering year one dollar of issued equity (primary capital) increases a firm's cash holdings by 38.6 cents in SEOs and by 64 cents in IPOs. The table documents three main results. First, the evidence for both SEOs and IPOs shows that the most important uses of issued equity are increased spending on capital expenditure, acquisitions and equity repurchases. Over a four-year period, one dollar of issued equity results in 36 cents spent on capital expenditure, 30 cents spent on acquisitions and 15 cents spent on equity repurchases for SEOs. For IPOs spending increases by 16 cents for capital expenditure, 18 cents for acquisitions and 9 cents for equity repurchases. Second, companies keep a significant proportion of issued equity in cash, and while noisy this proportion still declines over time. Third, the reaction for all variables is not immediate, i.e. firms do not immediately spend the proceeds but rather over an extended time period of several years. Taken together, the evidence suggests that firms use the issuing proceeds partly for investment and keep them partly in cash. The evidence therefore confirms the results of Table 7, namely that firms indeed subsequently increase investment but not in a one-for-one relationship.

To summarize, SEO growth firms are leveraged significantly lower prior to the issuance, while IPOs become that way through the issue. Although dividends disappear for IPOs from year $IPO + 1$ onwards, dividend patterns of both SEOs and IPOs do not suggest that wealth is redistributed from new shareholders to existing shareholders through a dividend mechanism. Offering proceeds are funneled partly into cash for IPOs and SEOs and partly into consequent investment in real assets and acquisitions. The evidence is consistent with both investment financing and utilizing favourable market conditions being motives for the equity issuance.

3.5 Long-term effects on capital structure and external financing

Next, I turn to the long-term capital structure effects of equity issuances. Since one would expect market timing to have at least a short-term impact on capital structure, the more relevant question is whether the effects are persistent.

In Table 9 I follow the approach of Baker and Wurgler (2002) and regress the cumulative change in leverage, i.e. contemporaneous leverage minus pre-offering leverage, on several control variables, while controlling for pre-offering leverage D/A_{Pre}. The specification is

$$\begin{aligned}\frac{D}{A}_t - \left(\frac{D}{A}\right)_{Pre} &= c_0 + c_1 RPVGO_{t=-1} + c_2 YT + c_3 RSQ_{YT} + c_4 KZ\ Index_{t-1} \\ &+ c_5 HOT + c_6 M/B_t + c_7 EBITDA/A_{t-1} + c_8 SIZE_{t-1} \\ &+ c_9 PPE/A_{t-1} + c_{10} R\&D/A_{t-1} + c_{11} R\&D\ d_{t-1} + c_{12} D/A_{Pre} + \varepsilon_t.\end{aligned} \tag{8}$$

If there is a long-term effect of market timing, the cumulative change in leverage should continue to reflect the differences in leverage caused by market timing as reported in the previous tables. The results however show that this is not the case.

In Panel A the dependent variable is the cumulative change in leverage $D/A_t - (D/A)_{Pre}$ for one year and three years following the offering. Recall from Table 7, where the dependent variable is the change in leverage $D/A_t - (D/A)_{Pre}$ in year zero, i.e. during the offering year, the coefficients for $RPVGO$ as -0.18, for YT as -0.62, for RSQ_{YT} as 0.45, for $KZ\ Index$ as -0.75 and HOT as insignificant. One year after the offering the coefficients have moved in the direction of decreased market timing impact. For example, $RPVGO$ increases to -0.13, YT increases to 0.54, while HOT even becomes significantly positive. Further, while some of the market timing opportunity measures remain significant in year $t+2$ (not reported), the table shows that in year $t+3$ with the exception of RSQ_{YT} all coefficients have further diminished and are no longer significantly different from zero.[20] In other words, leverage differences have dissipated.

One concern is that this effect may be influenced on the one hand by the interaction between $KZ\ Index$ and $D/A_{Pre-SEO}$ and on the other hand by the market-to-book ratio. Columns three and four therefore report estimation results without these two variables. The $RPVGO$ coefficient increases due to the correlation with M/B but becomes insignificant from year $t+2$ onwards. RSQ_{YT} becomes significant as it picks up the effect of M/B due to their correlation. Recall that the coefficient of RSQ_{YT} was strongly positive for the change in leverage from year $SEO-1$ to the SEO year. One year later it is significantly negative at -0.25 and the coefficient further decreases until year $SEO+3$ to -0.323. SEO firms with high pre-issue R^2 are more highly leveraged pre-issue and significantly lower leveraged post-issue. However, as I show later on, even this effect is not persistent in the long-run.

Columns five to eight report results for IPOs. The coefficient of $RPVGO$ becomes insignificant from year $IPO+2$ onwards. The hot-market coefficient already turns insignificant in year $IPO+1$. The financial constraints coefficient is insignificant from year $IPO+2$ onwards. Overall, the evidence shows that the market timing effects on cumulative changes in leverage disappear within two years for IPOs and within three years for SEOs.

Why does the impact on capital structure disappear? The evidence suggests that firms are rebalancing their capital structure. If that is the case, the crucial element is whether the change comes through the net effect of equity or through the net effect of debt.

Table 10 analyzes the long-term issuance policy of firms. As Panel A shows for SEOs, the strong decrease in leverage in the offering year is followed by an even larger increase in leverage over the next three years for high $RPVGO$ firms. From year $SEO+1$ onwards, $RPVGO$ has a positive coefficient. Similarly, the reduction in leverage experienced by high RSQ_{YT} firms turns into an increase from year $SEO+2$ onwards. Hot-market firms also increase leverage from year $SEO+1$ onwards. Financially constrained firms decrease leverage in the offering, but the coefficient changes sign in year $SEO+1$ and firms increase leverage. Finally, the negative

[20] The coefficient of RSQ_{YT} is insignificant from year $SEO+5$ onwards.

coefficient of YT is only significant in the SEO year and does not turn positive later. All of this suggests that firms actively releverage for two years following the offering.

The evidence for IPOs in Panel B again is similar and the reversal of capital structure is even more pronounced. Growth firms strongly increase leverage in year $IPO + 1$. Beyond year one there is no effect. Similarly, hot-market firms releverage in the year following the offering, but not beyond.

Next, columns six to thirteen in Panel A and five to ten in Panel B show that the reversal in capital structure comes through debt issues. Regarding equity issues the pattern is as follows. Growth firms that issue large amounts of equity in the SEO cease equity issuance almost completely from year $SEO + 1$ onwards. The strongly positive coefficient from the SEO year disappears. Firms with recent price increases show an even more pronounced pattern, equity issues in year $SEO + 2$ are even significantly negative. RSQ_{YT} is very similar and financially constrained firms similarly cease to issue equity in year $SEO + 1$, although they resume issuance in year $SEO + 2$. Hot-market firms, which showed no significantly positive equity issuance in the SEO year in Table 7, show a significantly negative coefficient in years $SEO + 1$ and $SEO + 2$, meaning that companies are actively reducing outstanding equity.

The usefulness of these measures in explaining capital structure as compared to contemporaneous market-to-book is obvious. The market-to-book coefficient is significantly positive in all years and does not diminish in size. High market-to-book firms therefore consistently issue equity, which makes M/B less useful in explaining equity issue motives.

The pattern for debt issues is almost exactly reversed, i.e. after the SEO year firms undo the impact on capital structure by issuing debt. Growth firms, which do not issue any debt in the SEO year, issue significant amounts of debt in year $SEO + 1$. A similarly strong reaction is visible for hot-market and financially distressed firms. No active rebalancing on the other hand is observed for firms with price run-ups and firms with high pre-issue R^2. Low R^2 only leads to significantly lower debt issuance in the offering year, but no consequent rebalancing. In other words, low R^2 firms substitute equity for debt in the SEO year but do not undo the resulting change in capital structure.

For IPOs in Panel B, results again are very similar and even more pronounced. Equity issuance for high $RPVGO$ firms, which was highly significant in the offering year, disappears and the $RPVGO$ coefficient becomes insignificantly negative in year $IPO + 1$. Similarly, the previously highly significant hot market effect of equity issuance disappears from year $IPO + 1$ onwards. Financially constrained firms, just like high market-to-book firms, consistently issue equity, independent of the relative IPO year.

Further, high $RPVGO$ firms issue highly significant amounts of debt in year $IPO + 1$. The same is true for hot-market firms. Subsequently there is no effect on debt issuance.

In summary, the evidence shows that the impact of market timing rapidly unwinds in both SEOs and IPOs. While companies issue large amounts of equity in the offering year, equity issuance almost completely subsides in relative terms afterwards. The previous equity issuers become debt issuers in the year following the offering. After two years this active releveraging

renders the initial impact of market timing insignificant in almost all cases both for SEOs and IPOs.

4 Discussion

This section compares the results of the preceding analysis with those of Baker and Wurgler (2002) and replicates their results. I then show that my results of no abnormal performance of equity issuers similarly hold when dividing firms into subsamples by their initial market timing behavior. This confirms that equity issuance is not due to mispricing. After that I report the results of several robustness tests. Finally, I discuss whether the results regarding capital structure that do not support the market timing theory are instead consistent with the pecking order and the trade-off theory.

4.1 Comparative persistence of capital structure effects

The previous section shows that market timing effects have a short-run impact on capital structure. In the long-run however firms actively rebalance their capital structure and timing effects dissipate. Also, issuing firms do not subsequently underperform the market. The active rebalancing of leverage contrasts with the findings of Baker and Wurgler (2002). To demonstrate the different interpretations I replicate their design and add my market timing opportunity proxies while controlling for pre-issue leverage.

Table 11 reports results of cross-sectional regressions of the following form:

$$\begin{aligned}(D/A)_t - (D/A)_{Pre} = {} & c_0 + c_1 RPVGO_{t=-1} + c_2 YT + c_3 RSQ_{YT} + c_4 KZIndex_{t=-1} \\ & + c_5 HOT + c_6 M/B_{efwa,t-1} + c_7 M/B_{t-1} + c_8 EBITDA/A_{t-1} \\ & + c_9 SIZE + c_{10} PPE/A_{t-1} + c_{11} R\&D/A_{t-1} + c_{12} R\&Dd_{t-1} \\ & + c_{13} D/A_{Pre} + \epsilon_t,\end{aligned} \tag{9}$$

where $MB_{efwa,t-1}$ is the historic weighted average of market-to-book from Equation (3). Results are shown for relative offering years one to ten. The results illustrate the very different conclusions. The opportunity measures, which explain market timing behavior initially lose significance over time and do not explain capital structure past the offerings as firms actively rebalance their leverage through debt issues. Five years after the SEO or IPO they have no explanatory power.[21] The historic market-to-book measure however is highly significant from the post-offering year onwards for both IPOs and SEOs. As in Baker and Wurgler, the coefficient

[21] Note however that for SEOs, the coefficients for YT and $KZIndex$ become significant after ten years, while being insignificant before. The reason for this seems to be a survival effect however, not a market timing effect.

actually increases over time and renders contemporaneous M/B_{t-1} insignificant.[22] The effect is clearly visible even in univariate results for the SEO sample. Figure 2 plots R^2 of univariate regressions of the form

$$D/A_t = c_0 + c_1 X + \varepsilon_t, \tag{10}$$

where X in the left graph is alternatively $RPVGO_{t=-1}$, HOT, RSQ_{YT}, YT and $KZIndex$. In the right graph X is $EBITDA/A_{t-1}$, M/B_{t-1} and $M/B_{efwa,t-1}$. The explanatory power of the different variables for firm leverage declines over time, with the exception of $M/B_{efwa,t-1}$. The low persistence of market timing effects on leverage and the cumulative change in leverage makes it unlikely that M/B_{efwa} truly captures the impact of historic market timing attempts. If capital structure was as persistent as suggested by the highly significant coefficient of M/B_{efwa} even ten years after the offering, it should be picked up by the other proxy variables as well. One explanation for this is that the persistent effect of the historic market-to-book measure may not be due to its correlation with leverage. Kayhan and Titman (2006) suggest that it is in fact the persistence of both capital structure and M/B_{efwa} that drives the results, but not the covariance of the two measures. Also, Hennessy and Whited (2005) develop a model in which the explanatory power of M/B_{efwa} can be derived from a tax optimization policy in the presence of market timing considerations.

4.2 Long-term performance of subsamples

The previous section show that issuers do not exhibit abnormal negative performance over five years following the offering. This is inconsistent with the view that equity is overpriced at the time of the offering. I show in the following that this result not only holds for the cross-section, but also for subsamples of firms. If mispricing was the true explanation of firm behavior then one would expect mispricing to be detectable for the cross-section of firms. Since I show above that this not the case, one further step is to test whether differences exist between subsamples defined by their market timing characteristics. One would at least expect a performance spread between the most extreme market timing firms and those firms that do not time that market at all or very little.

Table 12 reports four-factor model results for subsamples formed by growth versus value firms, low-volume issuers versus high-volume issuers, hot-market firms versus cold-market firms, high versus low pre-issue R^2 firms, high versus low pre-issue performance firms and financially constrained versus non-financially constrained firms.

The results show that the results are robust to even this classification of firms. In 35 out of 40 regressions *Alpha* is not significantly different from zero. In four cases it is marginally significant, one of which is attributable to the lowest $RPVGO$ quintile of SEOs, which are

[22] The inclusion of $M/B_{efwa,t-1}$ does not influence the results for the $RPVGO_{t=-1}$ coefficient, but does strongly influence the M/B_{t-1} coefficient. Excluding $M/B_{efwa,t-1}$ from the regression renders contemporaneous M/B_{t-1} significant. Significance of $RPVGO$ is unchanged, i.e. its coefficient still becomes insignificant from year $IPO+1$ and $SEO+2$ onwards.

unlikely market timers. The three cases in which likely market timer subsamples underperform are value-weighted hot-market IPOs with a negative return of 89 basis points per month, value-weighted highest $RPVGO$ quintile IPOs with a negative return of of 75 basis points and financially constrained IPOs, both equal- and value-weighted. Equal-weighted returns for hot-market IPOs and the highest $RPVGO$ quintile however are not significantly different from zero. Only financially constrained IPOs exhibit consistently negative abnormal performance, which on the other hand is consistent with previous findings for firms in financial distress (Fama and French (1993).)

Finally, I test whether there are significant spreads between subsamples by estimating pooled regressions of the respective subsamples with a dummy variable MT for market timing firms and its interactions terms with MKT_t, SMB_t, HML_t and $PR12_t$ as follows:

$$\begin{aligned} R_{pt} - R_{ft} = \alpha + \beta(R_{mt} - R_{ft}) + sSMB_t + hHML_t + pPR12_t \\ + d_1 MT + d_2 MT \times (R_{mt} - R_{ft}) + d_3 MT \times SMB_t \\ + d_4 MT \times HML_t + d_5 MT \times PR12_t + \varepsilon_t, \end{aligned} \tag{11}$$

where MT is a dummy variable that equals 1 for the observations in the likely market timing category and 0 otherwise. This results in six pooled samples for SEOs (high versus low $RPVGO$, high versus low $Proceeds^t/A$, hot versus cold market firms, high versus low $KZIndex$, high versus low RSQ_{YT} and high versus low YT) and four pooled samples for IPOs (high versus low $RPVGO$, high versus low $Proceeds^t/A$, hot versus cold market firms and high versus low $KZIndex$). $Alpha$ is now an estimate of abnormal performance of the base case (unlikely market timers) and d_1 is an estimate of the differential performance of likely market timers as defined by the various characteristics. Again, results are calculated separately for equal weighted and value weighted returns, resulting in 20 regression models. The results are not reported to conserve space. They show that in four out of the 20 specifications d_1 is significant, i.e. likely market timers' performance is significantly different. In one of these cases likely market timers actually perform significantly better than unlikely market timers (equal weighted high-volume IPOs). In the remaining three cases market timers perform worse (value weighted high $RPVGO$ IPOs, equal weighted financially constrained IPOs and value weighted financially constrained SEOs). The difference however becomes insignificant in the corresponding equal or value weighted regression. The evidence therefore confirms that no consistently significant performance spreads between likely and unlikely market timing firms exist, neither for SEOs nor for IPOs.

In summary, there is no consistent evidence of abnormal performance of equity issuers, even when split into subsamples by their market timing characteristics.

4.3 Additional robustness tests

First, I re-examine the results in Tables 3 and 4. They show that market timing opportunity has a significant impact on equity issuance in both SEOs and IPOs. The results are driven by primary proceeds and by higher prices at which firms issue. One concern is that the price effect could be driven by the fact that intangible assets play a larger role in firms that issue more equity. Indirectly this is shown through the positive coefficients of $RPVGO$ and M/B, which are likely to capture this effect, however imperfectly. An alternative approach is to use the relative amount of secondary proceeds as a percentage of total proceeds in estimation of equation (4). If market timing is the motivation for equity issuance, the market timing opportunity measures should continue to explain equity issuance. I therefore re-estimate equation (4), using $Proceeds^S/Proceeds^T$ as the dependent variable. $Proceeds^S/Proceeds^T$ is low on average at 10.2 percent for SEOs and 14.9 percent for IPOs. The results indeed are almost identical and do not differ between the SEO sample and the combined SEO and IPO sample. The coefficients for $RPVGO$ and YT are significantly positive, the coefficient of $KZIndex$ is negative but not significant and the coefficient for RSQ_{YT} is significantly negative. Therefore market timing opportunity variables have exactly the same pattern as in Tables 3 and 4. The only difference is the coefficient for the hot-market dummy, which is significantly negative, whereas it was significantly positive before. Consistent with my previous results, this again shows that the hot-market effect in my sample is more ambiguous than in Alti (2006).

Next, Table A2 in the appendix reports results for re-estimating equation (8) with the i) cumulative change in leverage, ii) net equity issues and iii) net debt issues as the dependent variables. This replicates the results of Tables 9 and 10. In Panels A and C SEO-year and IPO-year fixed effects are included as additional control variables. Because of the small number of IPOs in some years five-year interval dummy variables are used in the case of IPOs. The results are consistent with the results previously reported in Tables 9 and 10. In Panels B and D balanced SEO and IPO panels are used, i.e. the sample is conditional on survival of the firm. Again, the results are consistent with the results previously reported.

Finally, one concern is how comparable the results are to the population of non-issuers. Table A3 contrasts the SEO firm sample with a random firm sample drawn from the matched CRSP and COMPUSTAT firm universe. For this every SEO sample firm is matched by its offer date with all firms active on CRSP on that date. Benchmark firms satisfy the requirements of not having performed an IPO or SEO within the prior 60 months, not performing an SEO for the next 12 months and having price history available on CRSP for 36 months prior to the matched offer date. From the available benchmark firms two firms are randomly drawn for every SEO firm. For these firms the market timing opportunity measures RSQ_{YT} and YT are calculated. RSQ_{YT} is calculated as the time-series R^2 from equation (1) using weekly returns from $t-52$ to $t-1$ relative to the matched offer date. For YT cumulative abnormal returns are calculated using monthly returns for the event window from $t-12$ to $t-2$ and normal returns are estimated from a market model using returns from $t-36$ to $t-13$.

The univariate results in Columns one and two and the multivariate results from a Probit

regression in Columns three to five show that firms are likelier to announce an SEO after recent price increases and if R^2 is higher. Price run-ups therefore generally predict SEOs, while low R^2 does not. Price run-ups therefore positively predict both within-variation of equity issuance and variation between issuers and non-issuers. R^2 on the other hand predicts positive within-variation of equity issuance and negative variation between issuers and non-issuers. Market-to-book, profitability, R&D expenses and asset tangibility similarly raise the likelihood of an SEO. Interestingly, the negative but very small effect of leverage disappears after controlling for industry and offer-year fixed effects, indicating that SEO firms are not leveraged differently from non-SEO firms.

4.4 Alternative capital structure theories

The results of the capital structure analysis do not support the view that the capital structure of firms is determined by past attempts to time the market. Are the results regarding capital structure instead consistent with the pecking order and the trade-off theory? While the aim of the paper is primarily to test the market timing hypothesis, the evidence should also be interpreted in light of the main alternative explanations of capital structure.

Under the pecking order (Myers and Majluf (1984) and Myers (1984)), firms are financially constrained due to asymmetric information between investors and managers and require external financing to fund investment. If firms are required to raise equity to finance investment projects, new shareholders will demand compensation for potentially investing in a bad firm, which may render even positive-NPV projects unattractive. Underinvestment can be avoided if debt is issued instead of equity, since as opposed to equity, debt does not suffer from mispricing. Firms should therefore only resort to outside financing after exhausting their internal sources and their debt capacity. I find however that with high uncertainty about future growth opportunities issue more equity. Also, leverage ratios of growth firms appear to be too low rather than too high prior to the issue. Finally, firms are not financially constrained when issuing equity. In fact I show that equity issuance is decreasing when financial constraints increase. The evidence therefore does not support a pecking order view of firms raising external financing as a last resort to finance investment.

The trade-off theory on the other hand argues that capital structure is determined by the costs and benefits of debt versus equity and firms tend to follow an optimal target capital structure that minimizes a firm's costs of capital (Myers (1977) and Bradley, Jarrell, and Kim (1984)). More realistic dynamic trade-off models with adjustment costs have provided a rational for temporary deviations from optimal leverage targets (e.g. Fischer, Heinkel, and Zechner (1989), Strebulaev (2006)). My results are generally consistent with a dynamic trade-off model. The results suggest that firms balance away the impact of equity issuances, i.e. decreased leverage is actively rebalanced with higher debt issues following the offerings. Also consistent with the trade-off theory, I find that unprofitable (growth) firms seem to rely primarily on equity financing, while (value) companies with safer assets and larger positive income seem to prefer larger leverage ratios. While this is consistent with a trade-off view of capital structure, in which

firms undo deviations from target leverage ratios, the theory would have to explain the initial deviations as well. The results therefore suggest a dynamic trade-off model of capital structure, in which firms consider market timing as a short-term factor.

5 Conclusion

This paper analyzes the relevance of market timing for public equity issues with regard to changes in capital structure, consequent financing policy and firm performance. It shows that equity issuing firms do not exhibit long-term abnormal performance relative to non-issuing firms. While this in itself is an important result, the evidence also shows that there are no performance spreads between firms with differing ex-ante idiosyncratic opportunities to time the market. Finally the paper addresses the persistence of the impact of market timing on capital structure. Contrary to previous interpretations the evidence shows that following the offering year, firms actively rebalance the leverage changes. Companies revert their issuance policy and equity issuing firms become debt issuing firms. This active rebalancing causes the impact on leverage to dissipate.

The results of the paper are consistent with previous evidence that deviations from a target capital structure caused by taking advantage of favorable market conditions are only temporary. As the capital structure tests of the paper are primarily designed to confirm or reject the predictions of the market timing theory, it is beyond the scope of the paper to explicitly test alternative theories of capital structure. Still, the rebalancing evidence is easiest to reconcile with a dynamic trade-off model, that includes market timing as a short term factor.

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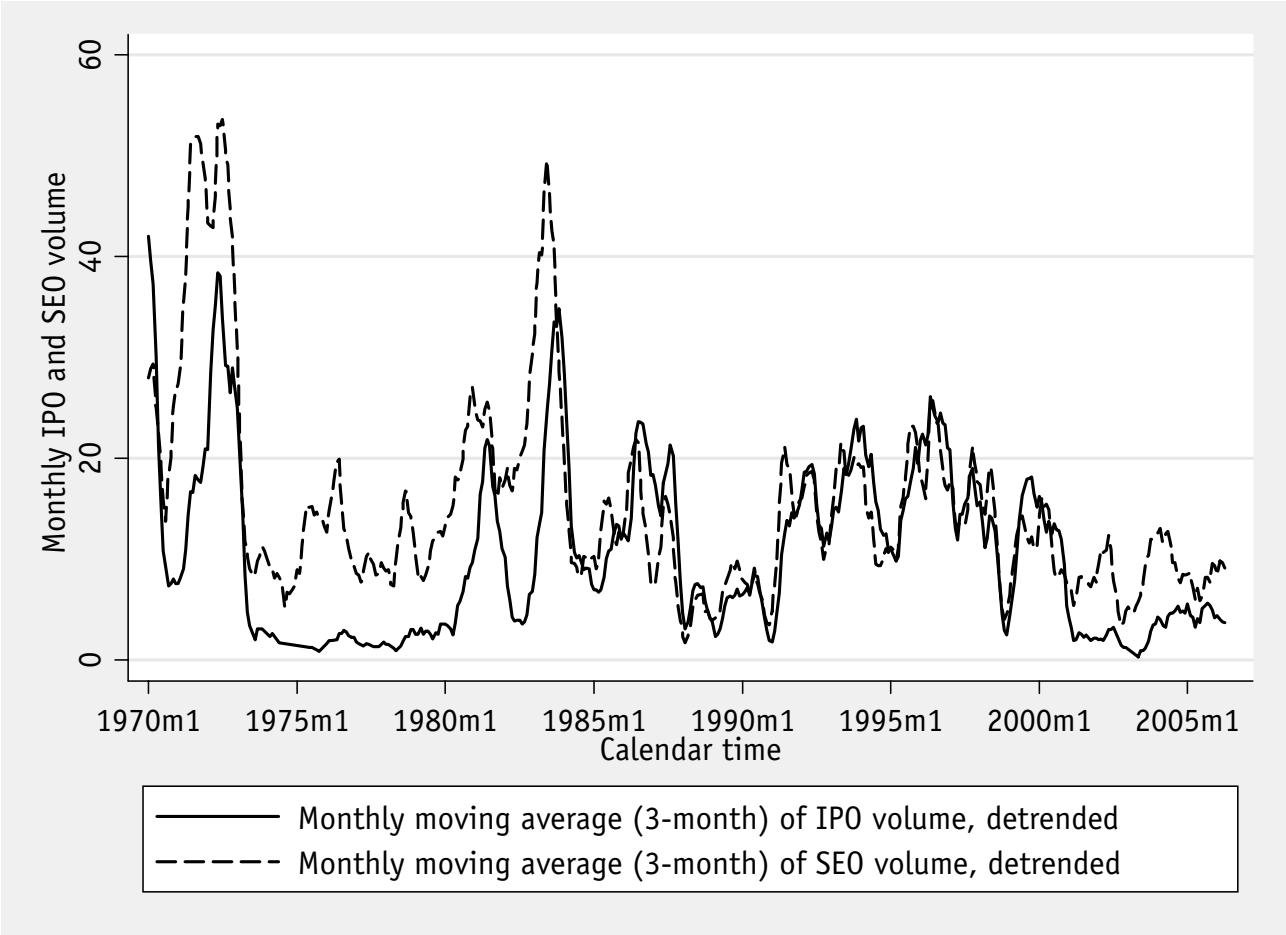

Figure 1 Time Series of Monthly Average Volume of Equity Issues 1970-2006

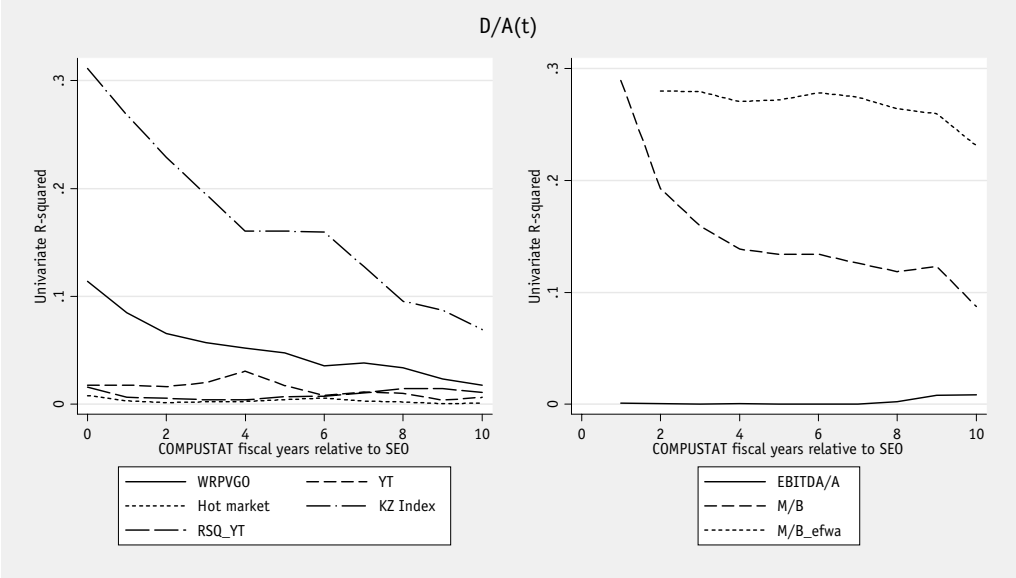

Figure 2 Explanatory Power of Determinants of Leverage in SEO firms

The figure plots R^2 from univariate regressions of the form

$$D / A_t = c_0 + c_1 X + \varepsilon_t ,$$

where X in the left graph is the relative value of future growth opportunities ($WRPVGO_{t=-1}$), the hot-market dummy (HOT), R^2 from time-series regressions over *t-52* to *t-1* weeks pre-issue (RSQ_{YT}), abnormal returns from t-12 to t-1 months pre-issue (YT) and the Kaplan and Zingales index of financial constraints (*KZ Index*). In the right graph X is lagged earnings over assets ($EBITDA/A_{t-1}$), lagged market-to-book (M/B_{t-1}) and the lagged Baker and Wurgler historic weighted average of market-to-book ($MB_{efwa,-t}$).

Table 1 Sample Summary Statistics

This table reports descriptive statistics for the whole sample in IPO time. The sample consists of IPOs between 1 January 1970 and 31 December 2002 from SDC. The sample excludes secondary offerings, unit offers, closed-end funds, financial institutions (SIC codes 6000-6999), ADRs, limited partnerships, offerings with an offer below 5 US$ and firms with assets smaller than 10 million US$ (in 2004 dollars) at the end of the IPO fiscal year. SDC entries are manually corrected for data errors as explained in the text. Firms must have COMPUSTAT data available for the pre-IPO fiscal year. IPO time is defined relative to the IPO year, which is the fiscal year during which the IPO takes place. Firm-specific fiscal year ends and fiscal year changes are accounted for. With the exception of M/B and SIZE all variables are reported in percentage terms. D/A is book debt to assets (book leverage). M/B is assets minus book equity plus market equity all divided by assets, where book equity is defined as total assets minus total liabilities and preferred stock plus deferred tax and convertible debt. d/A is the residual change in assets divided by assets. e/A is the change in book equity minus the change in balance sheet retained earnings divided by assets. ΔRE/A is the change in retained earnings divided by assets. EBITDA/A is earnings before interest, taxes and depreciation divided by assets. SIZE is the log of net sales. PPE/A is net property, plant and equipment divided by assets. R&D/A are research and development expenses over assets. Inv/A is capital expenditures over assets. Div/E is dividends on common shares over book equity. Cash/A is cash and short-term investments over assets.

Panel A: Initial public offerings

Year	N		*D/A*	*M/B*	*d/A*	*e/A*	*ΔRE/A*	*EBITDA/A*	*SIZE*	*PPE/A*	*R&D/A*	*Inv/A*	*Div/E*	*Cash/A*
IPO-1	2,439	Mean	67.45					19.80	3.66	28.59	5.24	10.56	3.91	11.03
		Median	70.86					19.31	3.59	21.68	0.00	6.68	0.00	4.51
		SD	(20.83)					(17.97)	(1.49)	(22.64)	(10.88)	(11.66)	(12.94)	(15.37)
IPO	2439	Mean	37.86	2.32	-0.69	41.85	3.18	15.24	4.06	25.34	3.08	10.25	2.90	23.24
		Median	35.02	1.90	0.30	39.96	5.00	15.89	4.01	18.02	0.00	6.18	0.00	15.17
		SD	(19.88)	(1.42)	(19.77)	(21.25)	(10.92)	(11.52)	(1.38)	(21.62)	(5.72)	(11.24)	(9.96)	(22.99)
IPO+1	2268	Mean	40.69	1.91	10.57	7.37	1.22	11.36	4.33	27.60	3.82	10.30	0.29	17.96
		Median	38.55	1.51	7.18	1.43	4.65	13.29	4.33	21.14	0.00	6.99	0.00	9.24
		SD	(21.34)	(1.26)	(16.93)	(14.19)	(16.83)	(14.98)	(1.39)	(21.89)	(7.47)	(10.18)	(1.18)	(20.3)
IPO+2	2065	Mean	42.10	1.79	7.08	6.22	-1.11	9.81	4.50	28.23	4.10	8.55	0.37	16.57
		Median	40.21	1.38	5.15	1.13	3.32	12.28	4.53	21.21	0.00	5.85	0.00	7.86
		SD	(22.)	(1.24)	(16.87)	(14.38)	(19.98)	(16.01)	(1.46)	(22.17)	(8.12)	(8.75)	(2.52)	(19.83)
IPO+3	1816	Mean	43.21	1.66	4.98	4.72	-1.00	9.82	4.65	28.23	4.14	7.37	0.33	15.14
		Median	42.06	1.27	3.79	0.96	3.03	12.14	4.68	21.68	0.00	5.04	0.00	6.58
		SD	(22.12)	(1.13)	(19.17)	(12.41)	(17.81)	(14.98)	(1.42)	(21.82)	(8.15)	(7.66)	(1.34)	(18.36)
IPO+5	1378	Mean	43.09	1.56	2.44	4.01	-1.79	9.85	4.85	28.17	4.28	6.77	0.42	15.08
		Median	42.05	1.21	2.38	0.66	2.32	11.48	4.92	22.20	0.00	4.65	0.00	6.92
		SD	(21.89)	(1.08)	(15.89)	(12.78)	(18.22)	(14.89)	(1.51)	(21.73)	(8.14)	(6.93)	(1.89)	(18.15)
IPO+7	1052	Mean	44.53	1.55	1.52	2.84	-1.40	10.33	5.05	28.39	4.34	6.51	0.60	14.88
		Median	43.43	1.18	1.90	0.57	2.76	11.72	5.10	22.59	0.00	4.57	0.00	7.62
		SD	(21.83)	(1.1)	(19.73)	(11.3)	(20.8)	(14.81)	(1.51)	(21.83)	(8.51)	(6.74)	(2.9)	(17.52)

Panel B: Seasoned equity offerings														
Year	N		*D/A*	*M/B*	*d/A*	*e/A*	*ΔRE/A*	*EBITDA/A*	*SIZE*	*PPE/A*	*R&D/A*	*Inv/A*	*Div/E*	*Cash/A*
SEO-1	4,852	Mean	51.80	1.87	9.71	8.45	1.57	12.04	5.08	44.71	3.59	10.51	2.35	11.06
		Median	55.12	1.31	7.52	2.67	2.42	12.49	5.09	37.76	0.00	8.28	0.00	3.43
		SD	(19.3)	(1.4)	(15.77)	(15.85)	(12.37)	(13.31)	(1.83)	(29.69)	(9.27)	(9.5)	(3.4)	(17.53)
SEO	5,304	Mean	44.40	1.79	5.02	20.58	1.87	11.63	5.34	42.97	2.68	10.15	2.19	15.14
		Median	46.96	1.34	4.24	14.46	2.54	12.08	5.36	35.21	0.00	7.96	0.00	5.27
		SD	(20.27)	(1.23)	(13.88)	(18.9)	(10.81)	(10.88)	(1.76)	(30.03)	(6.63)	(9.26)	(3.26)	(20.36)
SEO+1	5,083	Mean	46.29	1.55	7.08	5.61	-0.03	10.32	5.56	44.60	3.04	10.10	2.32	12.11
		Median	49.59	1.17	5.56	2.15	1.76	11.61	5.62	38.06	0.00	8.11	0.00	3.69
		SD	(20.07)	(1.06)	(16.43)	(15.84)	(13.74)	(12.68)	(1.72)	(29.6)	(8.08)	(8.52)	(3.1)	(17.85)
SEO+2	4,756	Mean	47.20	1.44	5.33	4.86	-0.80	9.83	5.72	45.75	3.09	8.96	2.45	11.03
		Median	50.94	1.10	4.36	1.95	1.42	11.32	5.79	40.12	0.00	7.18	0.46	3.27
		SD	(19.84)	(.97)	(13.64)	(11.7)	(14.49)	(13.25)	(1.71)	(29.46)	(8.49)	(7.66)	(3.28)	(16.9)
SEO+3	4,358	Mean	47.99	1.38	3.87	4.07	-1.24	9.89	5.83	46.76	3.08	8.22	2.56	10.24
		Median	51.88	1.05	3.59	1.64	1.25	11.29	5.89	41.99	0.00	6.70	0.67	3.02
		SD	(19.49)	(.93)	(23.27)	(10.88)	(15.49)	(12.52)	(1.68)	(29.45)	(8.58)	(6.79)	(3.49)	(15.95)
SEO+5	3,636	Mean	49.21	1.32	2.53	3.32	-1.01	10.41	6.08	48.34	2.76	7.63	2.80	9.23
		Median	52.56	1.03	2.70	1.31	1.29	11.60	6.16	45.32	0.00	6.14	1.18	2.90
		SD	(18.91)	(.89)	(14.4)	(10.98)	(14.19)	(11.84)	(1.66)	(29.11)	(7.89)	(6.48)	(3.45)	(14.81)
SEO+7	3,050	Mean	50.32	1.31	1.40	2.97	-0.94	10.75	6.28	49.44	2.57	7.19	3.07	8.60
		Median	52.95	1.02	2.23	1.16	1.22	11.75	6.37	48.68	0.00	5.82	1.80	2.72
		SD	(18.4)	(.89)	(35.37)	(10.05)	(15.96)	(12.11)	(1.66)	(28.66)	(7.58)	(5.93)	(3.57)	(13.79)

Table 2 Equity Issuance Characteristics

This table reports cross-sectional regressions results for the combined sample of SEOs and IPOs. The specifications are of the form

$$Y_t = c_0 + c_1 RPVGO_{t=-1} + c_2 IPO + c_3 IPO \times RPVGO_{t=-1} + c_4 YT + c_5 RSQ_{YT} + c_6 KZ\,\text{Index}_{t=-1} + c_7 HOT + c_8 M/B_t + c_9 EBITDA/A_{t-1} + c_{10} SIZE_{t-1} + c_{11} PPE/A_{t-1} + c_{12} R\&D/A_{t-1} + c_{13} R\&Dd + \varepsilon_t,$$

where Y_t is the dependent variable indicated in the column title and *t=0* is the fiscal year of the SEO or IPO. *Proceeds*^{T} are total offering proceeds, *Proceeds*^{P} are primary proceeds, *Proceeds*^{S} are secondary proceeds. The scaling variable for proceeds is total assets at the end of the offering fiscal year. The dummy variable IPO equals one for IPO observations and zero otherwise. In Panel B the proceeds variables are decomposed as $\frac{Proceeds}{Total\ assets} = \frac{Number\ of\ shares\ issued}{Total\ shares\ outstanding} \times \frac{Middle\ of\ filing\ range\ price}{Total\ assets\ per\ share}$, where *Quantity* $P^T/A_{t=}0$ is the first component and *Price* $P/A_{t=0}$ is the second component. All variables are expressed in percentage terms with the exception of *Price* $P/A_{t=0}$. All regressions are estimated with industry fixed effects using Fama and French (1997) 48 industry definitions. The regressions contain an unreported constant. Robust standard errors are reported in brackets. *, **, and *** denote the parameter is significantly different from 0 at the 10%, 5%, and 1% level, respectively.

Panel A: Offering proceeds

	$Proceeds^T/A_{t=0}$	$Proceeds^P/A_{t=0}$	$Proceeds^S/A_{t=0}$	$Proceeds^T/A_{t=0}$	$Proceeds^P/A_{t=0}$	$Proceeds^S/A_{t=0}$
$RPVGO_{t=-1}$	0.243***	0.125***	0.050*	0.232***	0.104***	0.066**
	[0.046]	[0.033]	[0.030]	[0.048]	[0.035]	[0.029]
IPO	-	-	-	17.010***	13.453***	1.377***
	-	-	-	[0.655]	[0.513]	[0.355]
$IPO*RPVGO_{t=-1}$	-	-	-	0.071	0.133**	-0.062
	-	-	-	[0.079]	[0.059]	[0.047]
YT	0.910**	0.642**	0.286*	-	-	-
	[0.454]	[0.326]	[0.149]	-	-	-
RSQ_{YT}	-1.252***	-0.558***	-0.448***	-	-	-
	[0.137]	[0.097]	[0.090]	-	-	-
$KZ\ Index_{t=-1}$	-1.345***	-0.870***	-0.342*	-1.527***	-1.142***	-0.225
	[0.288]	[0.218]	[0.191]	[0.295]	[0.247]	[0.206]
HOT	0.486	0.493*	-0.108	1.577***	1.256***	0.052
	[0.374]	[0.284]	[0.242]	[0.407]	[0.315]	[0.238]
M/B_t	4.988***	2.663***	1.717***	5.271***	2.737***	1.721***
	[0.325]	[0.220]	[0.245]	[0.286]	[0.196]	[0.207]
$EBITDA/A_{t-1}$	-0.015	-0.136***	0.118***	0.104***	-0.080***	0.172***
	[0.028]	[0.022]	[0.016]	[0.023]	[0.017]	[0.013]
$SIZE_{t-1}$	-4.097***	-3.374***	-0.584***	-4.780***	-3.988***	-0.670***
	[0.132]	[0.099]	[0.071]	[0.130]	[0.104]	[0.063]
PPE/A_{t-1}	-0.129***	-0.085***	-0.035***	-0.127***	-0.090***	-0.028***
	[0.012]	[0.009]	[0.009]	[0.012]	[0.009]	[0.007]
$R\&D/A_{t-1}$	0.139***	0.145***	0.011	0.230***	0.151***	0.074***
	[0.050]	[0.042]	[0.027]	[0.041]	[0.030]	[0.023]
$R\&D\ Dummy_{t-1}$	1.219**	0.194	0.656*	-0.153	-0.332	-0.109
	[0.575]	[0.403]	[0.367]	[0.626]	[0.491]	[0.335]
N	5291	5291	5291	7676	7676	7676
Adj. R^2	0.619	0.645	0.177	0.6	0.582	0.202
RMSE	13.149	9.468	8.276	17.923	13.625	10.028
F-stat	146.898	145.118	19.119	266.344	251.73	34.486

Panel B: Decomposition of offering proceeds								
	Seasoned equity offerings				Initial public offerings			
	$Proceeds^T/A_{t=0}$		$Proceeds^P/A_{t=0}$		$Proceeds^T/A_{t=0}$		$Proceeds^P/A_{t=0}$	
	Quantity	Price	Quantity	Price	Quantity	Price	Quantity	Price
$RPVGO_{t=-1}$	-116.873	0.239***	-101.148	0.170***	-0.028	0.095***	-0.047	0.085***
	[119.971]	[0.025]	[104.272]	[0.024]	[0.044]	[0.019]	[0.039]	[0.017]
YT	10.189	0.369**	9.981	0.220*	-	-	-	-
	[11.927]	[0.144]	[11.682]	[0.115]	-	-	-	-
RSQ_{YT}	-94.789	0.003	-77.204	0.225***	-	-	-	-
	[135.221]	[0.094]	[118.908]	[0.084]	-	-	-	-
$KZ\ Index_{t=-1}$	-28.855	-1.914***	-28.681	-1.357***	0.207	-0.552***	0.135	-0.466***
	[29.289]	[0.246]	[28.887]	[0.241]	[0.139]	[0.087]	[0.115]	[0.093]
HOT	371.914	-0.945***	329.28	-0.727***	1.311*	1.756***	1.258**	1.355***
	[327.799]	[0.256]	[285.766]	[0.245]	[0.712]	[0.465]	[0.574]	[0.451]
M/B_t	20.598	7.315***	15.662	5.184***	-1.530***	3.143***	-1.719***	1.950***
	[40.680]	[0.248]	[36.123]	[0.249]	[0.184]	[0.196]	[0.146]	[0.177]
$EBITDA/A_{t-1}$	-5.934	-0.068***	-5.373	-0.130***	0.041**	0.027*	-0.047***	-0.046***
	[5.068]	[0.019]	[4.447]	[0.018]	[0.017]	[0.016]	[0.014]	[0.014]
$SIZE_{t-1}$	89.091	-0.274***	79.386	-0.227***	-1.264***	-1.343***	-1.469***	-1.300***
	[79.206]	[0.076]	[69.207]	[0.071]	[0.206]	[0.140]	[0.175]	[0.135]
PPE/A_{t-1}	-1.091	-0.045***	-0.975	-0.021***	-0.012	-0.029***	-0.007	-0.029***
	[1.123]	[0.007]	[1.009]	[0.007]	[0.015]	[0.009]	[0.013]	[0.009]
$R\&D/A_{t-1}$	1.809	0.128***	1.516	0.139***	-0.015	0.092***	-0.052**	0.054**
	[2.492]	[0.044]	[2.183]	[0.040]	[0.031]	[0.024]	[0.023]	[0.025]
$R\&D\ Dummy_{t-1}$	102.133	0.852**	91.717	0.215	-0.549	-0.687*	0.394	-0.101
	[84.217]	[0.368]	[74.623]	[0.323]	[0.715]	[0.368]	[0.577]	[0.356]
N	5288	5288	5288	5288	2356	2356	2356	2356
$Adj.\ R^2$	0.013	0.679	0.013	0.598	0.079	0.439	0.125	0.329
$RMSE$	7064.942	8.514	6269.077	7.871	12.826	8.036	10.12	7.554
F-stat	0.05	179.783	0.048	109.256	6.117	30.258	8.288	18.836

Table 3 Announcement Event Returns of Seasoned Equity Offerings

Event-study abnormal stock returns for SEO announcements. Abnormal returns are adjusted by a market model estimated over the 250 trading days ending 10 days before the announcement with the value-weighted CRSP daily index as the market index. Cumulative announcement period returns in Panel B are defined as the cumulative abnormal returns over the respective event windows. The *t*-statistics and *z*-statistics are tests whether the abnormal returns and cumulative abnormal returns are significantly different from zero. *t*-statistics are adjusted for serial correlation.

Panel A: Abnormal event day returns

Day	*N*	Percent negative	Abnormal return in %		*t*-statistic	*p*-value	*z*-statistic	*p*-value
			Mean	Median				
-5	5,342	53.8	0.05	-0.12	0.74	0.228	0.01	0.504
-4	5,342	54.8	-0.11	-0.16	-1.20	0.115	-0.97	0.166
-3	5,342	55.6	-0.13	-0.17	-2.30	0.011	-1.46	0.072
-2	5,343	55.8	-0.16	-0.19	-3.63	0.000	-1.91	0.029
-1	5,342	55.6	-0.09	-0.18	-2.36	0.009	-1.47	0.072
0	5,341	61.8	-0.83	-0.47	-17.50	0.000	-8.07	0.000
1	5,340	62.0	-0.75	-0.49	-16.81	0.000	-8.50	0.000
2	5,341	55.6	-0.10	-0.18	-3.46	0.000	-1.84	0.034
3	5,342	55.5	-0.10	-0.16	-2.90	0.002	-1.61	0.055
4	5,341	54.1	-0.04	-0.15	-1.12	0.131	-0.85	0.197
5	5,341	54.3	0.05	-0.13	-0.71	0.240	-0.63	0.265

Panel B: Cumulative abnormal event window returns

Event window	*N*	Percent negative	Abnormal return in %		*t*-statistic	*p*-value	*z*-statistic	*p*-value
			Mean	Median				
(-1,+1)	5,342	66.0	-1.67	-1.22	-22.07	0.000	-10.42	0.000
(-1,0)	5,342	61.1	-0.92	-0.64	-14.75	0.000	-6.75	0.000
(0,+1)	5,342	66.4	-1.58	-1.15	-24.48	0.000	-11.72	0.000
(-3,+3)	5,343	65.2	-2.16	-1.59	-20.42	0.000	-9.39	0.000
(-5,+5)	5,343	63.2	-2.21	-1.66	-17.43	0.000	-8.23	0.000

Table 4 Long-Run Event-Time Performance of Public Equity Offerings

This table reports the event-time long-run performance for the sample of SEOs in Panels A and B and for IPOs in Panels C and D. Issuer performance is calculated equal-weighted and value-weighted over 60 months following the offering. The table reports the comparative performance of several benchmarks and calculates abnormal returns of issuers relative to the benchmarks. Panels A and C report cumulative returns for issuers and benchmarks and cumulative abnormal returns of issuers, Panels B and D report buy-and-hold returns for issuers and benchmarks and buy-and-hold abnormal returns of issuers.. In each panel, the first four rows report results using the S&P 500, NASDAQ Composite, CRSP value weighted and CRSP equal weighted indices as benchmarks. The fifth and sixth rows use size and market-to-book and price momentum matched portfolios as benchmarks, which are calculated as follows. NYSE firms are used to create size quartile breakpoints. These size quartiles are further split into market-to-book quartiles, using NYSE market-to-book quartile breakpoints. All NYSE, AMEX and NASDAQ firms are consequently sorted into the resulting 16 (4x4) size and market-to-book portfolios. Within each portfolio additional quartile breakpoints are calculated, based on prior year returns excluding the previous month following Carhart (1997). Equal-weighted portfolio average returns are calculated for the resulting 64 portfolios. Momentum breakpoints are recalculated monthly, market-to-book and size breakpoints are recalculated quarterly. Buy-and-hold returns are calculated by compounding monthly returns for 60 months. Cumulative returns are calculated by summing monthly returns for 60 months. If the issuing firm delists before the 60th month returns are calculated up to the last available month. Abnormal returns are the difference between issuer 60 month cumulative or buy-and-hold returns and benchmark returns. All IPO and SEO firms are excluded from the calculation of benchmarks for 60 months following their equity issuance.

Benchmarks	Equal weighted				Value weighted			
	No. obs.	Issuer	Bench-mark	Abnormal return	No. obs.	Issuer	Bench-mark	Abnormal return
Panel A: Sesoned equity offerings, cumulative abnormal returns (CARs)								
S&P 500	5,304	54.6%	48.3%	6.4%	5,300	49.4%	37.2%	12.2%
NASDAQ Composite	5,304	54.6%	66.2%	-11.6%	5,300	49.4%	55.2%	-5.8%
CRSP Value weighted	5,304	54.6%	63.6%	-9.0%	5,300	49.4%	50.0%	-0.6%
CRSP Equal weighted	5,304	54.6%	73.6%	-19.0%	5,300	49.4%	67.5%	-18.0%
Size and market-to-book (5x5)	5,302	54.6%	64.9%	-10.3%	5,298	49.4%	64.2%	-14.8%
Size, market-to-book, momentum (4x4x4)	5,299	54.6%	69.2%	-14.6%	5,295	49.4%	66.5%	-17.1%
Pre-issue market model parameters	5,134	55.0%	128.7%	-73.8%	5,134	49.3%	92.5%	-43.1%
Panel B: Seasoned equity offerings, buy-and-hold abnormal returns (BHARs)								
S&P 500	5,304	41.3%	59.0%	-17.7%	5,300	31.8%	46.0%	-14.2%
NASDAQ Composite	5,304	41.3%	84.2%	-42.9%	5,300	31.8%	67.8%	-36.1%
CRSP Value weighted	5,304	41.3%	85.3%	-43.9%	5,300	31.8%	66.8%	-35.1%
CRSP Equal weighted	5,304	41.3%	96.7%	-55.4%	5,300	31.8%	85.8%	-54.1%
Size and market-to-book (5x5)	4,960	43.2%	88.2%	-45.0%	4,957	34.1%	89.0%	-54.9%
Size, market-to-book, momentum (4x4x4)	3,481	50.7%	111.0%	-60.2%	3,478	33.0%	93.8%	-60.9%
Pre-issue market model parameters	5,134	41.3%	972.5%	-931.2%	5,134	31.3%	624.3%	-593.0%
Panel C: Initial public offerings, cumulative abnormal returns (CARs)								
S&P 500	2,439	48.0%	54.8%	-6.9%	2,411	39.4%	38.7%	0.7%
NASDAQ Composite	2,439	48.0%	67.3%	-19.3%	2,411	39.4%	51.9%	-12.5%
CRSP Value weighted	2,439	48.0%	67.6%	-19.6%	2,411	39.4%	49.3%	-9.9%
CRSP Equal weighted	2,439	48.0%	69.8%	-21.8%	2,411	39.4%	61.6%	-22.2%
Size and market-to-book (5x5)	2,435	48.1%	39.7%	8.4%	2,407	39.4%	44.1%	-4.7%
Panel D: Initial public offerings, buy-and-hold abnormal returns (BHARs)								
S&P 500	2,439	19.8%	68.9%	-49.1%	2,411	6.5%	48.7%	-42.2%
NASDAQ Composite	2,439	19.8%	84.8%	-65.0%	2,411	6.5%	62.7%	-56.2%
CRSP Value weighted	2,439	19.8%	92.2%	-72.4%	2,411	6.5%	65.8%	-59.3%
CRSP Equal weighted	2,439	19.8%	89.9%	-70.1%	2,411	6.5%	74.9%	-68.4%
Size and market-to-book (5x5)	1,859	20.7%	43.9%	-23.2%	1,839	11.3%	52.7%	-41.4%

Table 5 Long-Term Calendar-Time Performance of Public Equity Offerings

This table reports calendar-time factor regression for the full sample of SEOs and IPOs. SEO (IPO) rolling portfolios are formed monthly by including all SEO (IPO) firms that issued equity within the previous 60 months. The dependent variable is the equal or value weighted average rolling portfolio return in excess of the risk-free rate. RMRF is the value-weight return on all NYSE, AMEX, and NASDAQ stocks minus the one-month Treasury bill rate. SMB is the monthly excess return of a portfolio of small firms versus a portfolio of big firms. HML is the monthly excess return of a portfolio of high book-to-market firms versus a portfolio of low book-to-market firms. These three factors follow Fama and French (1993). PR12 is the excess return of a portfolio of past winners versus a portfolio of past losers based on the previous 12 month returns excluding the preceding month as in Carhart (1997). Newey-West standard errors adjusted for heteroskedasticity and autocorrelation of up to five lags are reported in brackets. *, **, and *** denote the parameter is significantly different from 0 at the 10%, 5%, and 1% level, respectively.

Panel A: Calendar-time return factor regressions for seasoned equity offerings						
	Equal weighted			Value weighted		
	CAPM	FF	Carhart	CAPM	FF	Carhart
Alpha (%)	-0.2013	-0.2981**	-0.0397	-0.1928	-0.1585	-0.1393
	[0.1612]	[0.1161]	[0.1040]	[0.1363]	[0.1535]	[0.1381]
MKT	1.1376***	1.0575***	1.0305***	1.0099***	0.9491***	0.9471***
	[0.0388]	[0.0394]	[0.0318]	[0.0426]	[0.0377]	[0.0385]
SMB		0.7190***	0.7482***		0.2315***	0.2337***
		[0.0575]	[0.0464]		[0.0508]	[0.0489]
HML		0.0949*	0.0354		-0.0693	-0.0738
		[0.0511]	[0.0462]		[0.0784]	[0.0737]
PR12			-0.2540***			-0.0189
			[0.0298]			[0.0523]
N	419	419	419	419	419	419
Adjusted R^2 (%)	74.6	88.7	91.8	76.4	78.9	78.8
Panel B: Calendar-time return factor regressions for initial public offerings						
	Equal weighted			Value weighted		
	CAPM	FF	Carhart	CAPM	FF	Carhart
Alpha (%)	-0.4463*	-0.2438	0.1039	-0.6608***	-0.2639*	-0.2471
	[0.2600]	[0.1770]	[0.1909]	[0.2350]	[0.1424]	[0.1504]
MKT	1.2675***	1.1318***	1.0976***	1.4115***	1.1549***	1.1533***
	[0.0525]	[0.0443]	[0.0413]	[0.0509]	[0.0343]	[0.0344]
SMB		0.9498***	0.9761***		0.6568***	0.6581***
		[0.1093]	[0.0826]		[0.0630]	[0.0625]
HML		-0.0292	-0.113		-0.4552***	-0.4592***
		[0.0790]	[0.0766]		[0.0683]	[0.0683]
PR12			-0.3371***			-0.0163
			[0.0864]			[0.0491]
N	395	395	395	395	395	395
Adjusted R^2 (%)	64.7	85.2	88.9	73.8	89.8	89.8

Table 6 Pre-Issuance Leverage and Post-Issuance Investment, Profitability and Dividends

This table reports cross-sectional regressions results for SEOs in Panel A and for IPOs in Panel B. The specifications are of the form

$$Y_t = c_0 + c_1 RPVGO_{t=-1} + c_2 YT + c_3 RSQ_{YT} + c_4 KZ\ \text{Index}_{t=-1} + c_5 HOT + c_6 M/B_t + c_7 EBITDA/A_{t-1} + c_8 SIZE_{t-1} + c_9 PPE/A_{t-1} + c_{10} R\&D/A_{t-1} + c_{11} R\&Dd + \varepsilon_t,$$

where Y_t is the dependent variable indicated in the column title. Regressions in Panel B do not contain the variables *YT* and RSQ_{YT}. All regressions are estimated with industry fixed effects and contain a constant (not reported). Robust standard errors are reported in brackets. *, **, and *** denote the parameter is significantly different from 0 at the 10%, 5%, and 1% level, respectively.

Panel A: Seasoned equity offerings

Dependent variable	D/A_t	Inv/A_t	Inv/A_t	Inv/A_t	$EBITDA/A_1$	$EBITDA/A_t$	$EBITDA/A_1$	Div/E_t	Div/E_t	Div/E_t	Div/E_t
Relative SEO year	*SEO-1*	*SEO*	*SEO+1*	*SEO+2*	*SEO*	*SEO+1*	*SEO+2*	*SEO-1*	*SEO*	*SEO+1*	*SEO+2*
$RPVGO_{t=-1}$	-0.507***	0.045	0.099***	0.095***	-0.221***	-0.141***	-0.137***	-0.021**	-0.033***	-0.046***	-0.052***
	[0.060]	[0.030]	[0.027]	[0.023]	[0.034]	[0.036]	[0.035]	[0.009]	[0.010]	[0.008]	[0.009]
YT	0.514**	-0.111	0.213***	0.156***	0.185	-0.035	-0.117	-0.081*	-0.046*	-0.046*	-0.058
	[0.203]	[0.128]	[0.051]	[0.049]	[0.148]	[0.154]	[0.187]	[0.044]	[0.024]	[0.024]	[0.038]
RSQ_{YT}	-1.385***	0.319***	0.260***	0.047	-0.029	0.157	-0.034	0.058**	0.097***	0.079***	0.071**
	[0.171]	[0.082]	[0.073]	[0.071]	[0.090]	[0.103]	[0.118]	[0.026]	[0.026]	[0.023]	[0.030]
$KZ\ Index_{t=-1}$	-	0.028	0.052	0.183	-	-	-	-	-	-	-
	-	[0.126]	[0.123]	[0.112]	-	-	-	-	-	-	-
HOT	1.238**	0.002	0.238	0.294	0.774***	0.887***	0.415	0.351***	0.244***	0.340***	0.363***
	[0.495]	[0.229]	[0.205]	[0.184]	[0.283]	[0.336]	[0.371]	[0.079]	[0.083]	[0.057]	[0.071]
M/B_t	-2.712***	0.276***	0.769***	0.549***	1.694***	2.695***	2.773***	0.087	-0.041**	-0.024	0.014
	[0.265]	[0.103]	[0.115]	[0.109]	[0.195]	[0.259]	[0.428]	[0.062]	[0.020]	[0.028]	[0.037]
$EBITDA/A_{t-1}$	-0.180***	0.103***	0.178***	0.158***	-	-	-	0.020***	0.005**	0.018***	0.014***
	[0.027]	[0.015]	[0.015]	[0.013]	-	-	-	[0.004]	[0.002]	[0.004]	[0.003]
$SIZE_{t-1}$	2.211***	-1.132***	-1.159***	-0.759***	0.870***	1.425***	1.456***	0.300***	0.307***	0.219***	0.218***
	[0.155]	[0.078]	[0.075]	[0.069]	[0.094]	[0.118]	[0.129]	[0.025]	[0.034]	[0.022]	[0.025]
PPE/A_{t-1}	0.091***	0.196***	0.193***	0.168***	0.072***	0.100***	0.098***	0.019***	0.021***	0.024***	0.022***
	[0.015]	[0.009]	[0.009]	[0.008]	[0.008]	[0.010]	[0.010]	[0.002]	[0.002]	[0.002]	[0.002]
$R\&D/A_{t-1}$	-0.225***	-0.001	0.072***	0.092***	-0.540***	-0.935***	-0.947***	0.005	0.005	0.007	0.005
	[0.055]	[0.015]	[0.023]	[0.018]	[0.044]	[0.080]	[0.083]	[0.004]	[0.003]	[0.005]	[0.004]
$R\&D\ d_{-1}$	0.954	-0.144	-0.255	-0.026	-1.149***	-1.007**	-1.937***	-0.095	-0.096	-0.032	-0.156
	[0.698]	[0.314]	[0.305]	[0.285]	[0.380]	[0.431]	[0.488]	[0.120]	[0.085]	[0.086]	[0.114]
N	5291	5291	5070	4715	5291	5070	4715	4606	5291	5070	4715
Adj. R^2	0.356	0.387	0.412	0.402	0.371	0.366	0.369	0.500	0.551	0.629	0.557
RMSE	15.68	7.296	6.567	5.954	8.668	10.15	10.498	2.365	2.194	1.9	2.197
F-stat	67.239	53.762	47.499	45.401	29.755	31.818	26.993	225.532	288.268	283.655	257.146

Panel B: Initial public offerings

Dependent variable	*DA*	*Inv/A_t*	*Inv/A_t*	*Inv/A_t*	*EBITDA/A_t*	*EBITDA/A_t*	*EBITDA/A_t*	*Div/E_t*	*Div/E_t*	*Div/E_t*
Relative IPO year	*IPO -1*	*IPO*	*IPO +1*	*IPO +2*	*IPO*	*IPO +1*	*IPO +2*	*IPO*	*IPO +1*	*IPO +2*
$RPVGO_{t=-1}$	0.031	0.033	0.013	0.013	-0.093***	-0.100***	-0.027	-0.019	-0.010**	-0.015**
	[0.028]	[0.028]	[0.027]	[0.027]	[0.028]	[0.034]	[0.044]	[0.043]	[0.005]	[0.006]
KZ Index$_{t=-1}$	-	0.140*	0.042	0.109	-	-	-	-	-	-
	-	[0.080]	[0.078]	[0.079]	-	-	-	-	-	-
HOT	0.281	0.306	0.417	0.489	-1.056*	-0.402	-0.977	1.242**	-0.150*	-0.124
	[0.495]	[0.495]	[0.421]	[0.420]	[0.613]	[0.887]	[0.784]	[0.498]	[0.081]	[0.132]
M/B_t	0.168	0.2	0.503***	0.617***	2.357***	3.838***	4.122***	0.826***	0.027	0.009
	[0.128]	[0.130]	[0.129]	[0.128]	[0.207]	[0.333]	[0.411]	[0.209]	[0.021]	[0.050]
$EBITDA/A_{t-1}$	0.048***	0.053***	0.090***	0.079***	-	-	-	0.038***	0.009***	0.010***
	[0.011]	[0.012]	[0.021]	[0.011]	-	-	-	[0.011]	[0.002]	[0.003]
$SIZE_{t-1}$	-1.278***	-1.288***	-1.409***	-0.472***	1.797***	2.723***	3.369***	0.748***	0.087***	0.017
	[0.144]	[0.144]	[0.149]	[0.131]	[0.182]	[0.236]	[0.325]	[0.145]	[0.022]	[0.066]
PPE/A_{t-1}	0.258***	0.257***	0.257***	0.204***	0.062***	0.139***	0.155***	0.006	0.001	-0.003
	[0.014]	[0.014]	[0.014]	[0.013]	[0.012]	[0.015]	[0.018]	[0.011]	[0.002]	[0.003]
$R\&D/A_{t-1}$	-0.049***	-0.046***	-0.042	-0.02	-0.185***	-0.502***	-0.502***	-0.011	-0.003	-0.01
	[0.018]	[0.018]	[0.028]	[0.020]	[0.033]	[0.097]	[0.097]	[0.021]	[0.003]	[0.008]
$R\&Dd_{t-1}$	0.434	0.462	0.095	-0.057	0.334	-0.162	-0.146	0.278	0.07	0.256*
	[0.484]	[0.485]	[0.413]	[0.409]	[0.560]	[0.761]	[0.899]	[0.482]	[0.074]	[0.151]
N	2359	2358	2194	1977	2359	2194	1977	2359	2194	1977
Adj. R^2	0.424	0.424	0.417	0.397	0.235	0.244	0.272	0.093	0.089	0.025
RMSE	8.613	8.611	7.815	6.811	10.193	13.255	13.838	9.271	1.12	2.402
F-stat	24.41	23.922	22.208	16.907	12.848	13.726	12.417	3.098	3.233	2.821

Table 7 Uses of Proceeds and Capital Structure Impact

This table reports cross-sectional regressions results for SEOs in Panel A and for IPOs in Panel B. The specifications are of the form

$$Y_t = c_0 + c_1 RPVGO_{t=-1} + c_2 YT + c_3 RSQ_{YT} + c_4 KZ\ Index_{t=-1} + c_5 HOT + c_6 M/B_t + c_7 EBITDA/A_{t-1} + c_8 SIZE_{t-1} + c_9 PPE/A_{t-1} + c_{10} R\&D/A_{t-1} + c_{11} R\&Dd_{t-1} + c_{12} D/A_{Pre} + \varepsilon_t,$$

where Y_t is the dependent variable indicated in the column title. Regressions in Panel B do not contain the variables *YT* and RSQ_{YT}. All regressions are estimated with industry fixed effects and contain a constant (not reported). Robust standard errors are reported in brackets. *, **, and *** denote the parameter is significantly different from 0 at the 10%, 5%, and 1% level, respectively.

	D/A_t-D/A_{t-1}	e/A_t	Δ Cash $/A_t(E/A)_{t-1}$	Δ Non-Cash$_t$ $/(E/A)_{t-1}$	Δ RE$/A_t$	D/A_t	D/A_t
Panel A: Seasoned equity offerings							
$RPVGO_{t=-1}$	-0.182***	0.298***	0	0.147***	0.031	-0.182***	-0.181***
	[0.040]	[0.046]	[0.000]	[0.041]	[0.031]	[0.040]	[0.040]
YT	-0.622**	0.819**	0.007**	0.029	0.566*	-0.622**	-0.628**
	[0.306]	[0.396]	[0.003]	[0.121]	[0.329]	[0.306]	[0.309]
RSQ_{YT}	0.450***	-0.502***	0	0.019	0.023	0.450***	0.460***
	[0.098]	[0.123]	[0.001]	[0.110]	[0.101]	[0.098]	[0.098]
$KZ\ Index_{t=-1}$	-0.747***	1.174***	0	0.910*	0.494*	-0.747***	-
	[0.267]	[0.444]	[0.003]	[0.490]	[0.285]	[0.267]	-
HOT	-0.37	0.081	0.001	0.27	0.685**	-0.37	-0.336
	[0.300]	[0.352]	[0.002]	[0.308]	[0.321]	[0.300]	[0.300]
M/B_t	-1.917***	3.356***	0.017***	0.345**	0.637***	-1.917***	-1.895***
	[0.168]	[0.232]	[0.002]	[0.172]	[0.181]	[0.168]	[0.168]
$EBITDA/A_{t-1}$	-0.163***	-0.162***	0	0.115***	0.429***	-0.163***	-0.156***
	[0.018]	[0.023]	[0.000]	[0.021]	[0.027]	[0.018]	[0.018]
$SIZE_{t-1}$	1.712***	-3.262***	-0.008***	-0.792***	-0.013	1.712***	1.739***
	[0.104]	[0.134]	[0.001]	[0.108]	[0.082]	[0.104]	[0.104]
PPE/A_{t-1}	0.026***	-0.094***	-0.000***	-0.052***	-0.007	0.026***	0.026***
	[0.010]	[0.011]	[0.000]	[0.009]	[0.007]	[0.010]	[0.010]
$R\&D/A_{t-1}$	-0.069**	0.218***	0.001***	-0.083**	-0.092**	-0.069**	-0.067**
	[0.030]	[0.038]	[0.000]	[0.033]	[0.038]	[0.030]	[0.030]
$R\&D\ Dummy_{t-1}$	0.887**	0.675	-0.006**	2.459***	0.281	0.887**	0.892**
	[0.444]	[0.505]	[0.003]	[0.439]	[0.379]	[0.444]	[0.444]
D/A_{Pre}	-0.332***	-0.116***	-0.002***	-0.287***	-0.012	0.668***	0.639***
	[0.015]	[0.021]	[0.000]	[0.023]	[0.018]	[0.015]	[0.011]
N	5291	5291	5291	5291	5291	5291	5291
Adj. R^2	0.371	0.638	0.492	0.313	0.377	0.782	0.781
RMSE	9.519	11.414	0.076	9.37	8.578	9.519	9.527
F-stat	47.913	149.49	49.203	40.045	38.955	529.09	539.399
Panel B: Initial public offerings							
$RPVGO_{t=-1}$	-0.250***	0.188***	0.000*	-0.008	0.092**	-0.250***	-0.249***
	[0.053]	[0.056]	[0.000]	[0.023]	[0.039]	[0.053]	[0.053]
$KZ\ Index_{t=-1}$	-0.279*	-1.222***	-0.001	0.012	1.376***	-0.279*	-
	[0.154]	[0.211]	[0.001]	[0.100]	[0.145]	[0.154]	-
HOT	-1.043	4.186***	0.009*	0.778*	-1.494***	-1.043	-0.964
	[0.876]	[1.014]	[0.005]	[0.427]	[0.543]	[0.876]	[0.875]
M/B_t	-2.784***	3.415***	0.009***	0.2	0.482**	-2.784***	-2.735***
	[0.243]	[0.290]	[0.002]	[0.136]	[0.192]	[0.243]	[0.243]
$EBITDA/A_{t-1}$	-0.137***	-0.116***	0	0.017	0.276***	-0.137***	-0.129***
	[0.019]	[0.026]	[0.000]	[0.015]	[0.019]	[0.019]	[0.019]
$SIZE_{t-1}$	3.052***	-5.280***	-0.012***	-1.013***	-0.02	3.052***	3.067***
	[0.249]	[0.273]	[0.001]	[0.134]	[0.173]	[0.249]	[0.250]
PPE/A_{t-1}	0.056***	-0.093***	-0.000***	-0.016*	-0.020*	0.056***	0.055***
	[0.018]	[0.021]	[0.000]	[0.008]	[0.011]	[0.018]	[0.018]
$R\&D/A_{t-1}$	-0.256***	0.242***	0.002***	-0.083***	0.120**	-0.256***	-0.252***
	[0.032]	[0.065]	[0.000]	[0.027]	[0.051]	[0.032]	[0.032]
$R\&D\ d._{-1}$	-0.073	0.127	0.005	0.318	0.73	-0.073	-0.016
	[0.793]	[0.997]	[0.005]	[0.424]	[0.596]	[0.793]	[0.791]
D/A_{Pre}	-0.642***	0.153***	-0.003***	-0.222***	-0.003	0.358***	0.344***
	[0.018]	[0.023]	[0.000]	[0.013]	[0.016]	[0.018]	[0.016]
N	2358	2358	2358	2358	2358	2358	2359
Adj. R^2	0.496	0.399	0.576	0.34	0.251	0.488	0.488
RMSE	14.358	16.585	0.072	7.214	9.433	14.358	14.361
F-stat	54.548	35.937	31.217	13.807	14.037	55.864	56.814

Table 8 Sources and Uses of Funds for Seasoned Equity Offerings and Initial Public Offerings

The table reports cross-sectional regressions for independent variables change in assets, capital expenditures (capex), increase in investment, acquisitions, cash changes, cash dividends, debt reductions, equity repurchases and other uses:

$$Y_t = c_0 + c_1(Proceeds^{P}/A_{t=-1}) + c_2(Residual\ sources / A_{t=-1}) + c_3 SIZE_t + \varepsilon_t,$$

where residual sources are all financing sources except primary offering proceeds. Cash flow variables conform to COMPUSTAT definitions. All dependent and independent variables are scaled by assets in year *t*=-1. Changes in dependent variables are summarized over the indicated time period, i.e. $Y_t = \Sigma_{i=0}^{t} y_t / A_{t=-1}$. Coefficients for SIZE are omitted for brevity. Marginal effects *dy/dx* are the implied changes in the dependent variables when increasing primary capital or residual sources by one unit at the sample median. p-value Diff is the significance level of a t-test of equal coefficients for primary capital and residual financing. All regressions are estimated with industry fixed effects and contain a constant (not reported). Standard errors are robust to heteroskedasticity. *, **, and *** denote the parameter is significantly different from 0 at the 10%, 5%, and 1% level, respectively.

		Seasoned equity offerings				*p*-value	Initial public offerings				*p*-value
Use of funds	Time period	Primary capital		Residual financing		Diff	Primary capital		Residual financing		Diff
		dy/dx	*se*	*dy/dx*	*se*		*dy/dx*	*se*	*dy/dx*	*se*	
ΔAssets	[0]	1.203	0.041***	0.633	0.107***	0.000	1.447	0.150***	0.618	0.210***	0.021
Capex	[0]	0.029	0.011***	0.061	0.007***	0.015	-0.066	0.081	0.190	0.120	0.205
Investment	[0]	0.108	0.058*	0.369	0.109***	0.068	0.002	0.026	0.069	0.038*	0.305
Acquisitions	[0]	0.046	0.019**	0.088	0.027***	0.248	0.018	0.023	-0.022	0.032	0.463
ΔCash	[0]	0.386	0.063***	0.019	0.007***	0.000	0.640	0.053***	0.180	0.075**	0.000
Dividends	[0]	-0.001	0.001	0.002	0.001	0.084	0.017	0.009*	-0.024	0.013*	0.069
Debt reduction	[0]	-0.032	0.011***	0.191	0.029***	0.000	-0.074	0.016***	0.109	0.023***	0.000
Equ. Repur.	[0]	0.008	0.005*	0.000	0.001	0.112	0.014	0.012	-0.020	0.016	0.225
Other uses	[0]	-0.004	0.003	0.013	0.008*	0.070	0.006	0.014	-0.008	0.020	0.672
ΣΔAssets	[0;1]	1.365	0.083***	0.569	0.045***	0.000	0.361	0.068***	0.856	0.094***	0.002
ΣCapex	[0;1]	0.089	0.040**	0.099	0.016***	0.840	0.022	0.012*	0.135	0.017***	0.000
ΣInvestment	[0;1]	0.399	0.142***	0.174	0.038***	0.138	0.098	0.030***	0.180	0.044***	0.263
ΣAcquisitions	[0;1]	0.143	0.047***	0.145	0.020***	0.968	-0.058	0.020***	0.111	0.027***	0.000
ΣΔCash	[0;1]	0.159	0.093*	0.074	0.019***	0.402	0.216	0.024***	0.167	0.035***	0.403
ΣDividends	[0;1]	-0.003	0.002	0.000	0.001	0.372	0.001	0.001	-0.001	0.002	0.537
ΣDebt reduction	[0;1]	-0.190	0.031***	0.269	0.028***	0.000	-0.132	0.019***	0.189	0.027***	0.000
ΣEqu. Repur.	[0;1]	0.039	0.018**	-0.003	0.002*	0.029	0.015	0.006***	-0.007	0.007	0.090
ΣOther uses	[0;1]	-0.015	0.006**	0.018	0.006***	0.003	-0.005	0.002***	0.007	0.002***	0.001
ΣΔAssets	[0;2]	1.324	0.163***	0.664	0.054***	0.000	1.509	0.178***	1.007	0.072***	0.016
ΣCapex	[0;2]	0.101	0.063	0.136	0.020***	0.630	0.179	0.052***	0.170	0.023***	0.879
ΣInvestment	[0;2]	0.523	0.196***	0.205	0.043***	0.108	0.295	0.108***	0.145	0.042***	0.226
ΣAcquisitions	[0;2]	0.151	0.055***	0.153	0.025***	0.969	0.074	0.089	0.155	0.042***	0.475
ΣΔCash	[0;2]	0.161	0.033***	0.040	0.013***	0.002	0.299	0.097***	0.177	0.029***	0.233
ΣDividends	[0;2]	-0.006	0.002***	0.000	0.001	0.002	0.021	0.009**	0.000	0.001	0.017
ΣDebt reduction	[0;2]	-0.345	0.049***	0.309	0.028***	0.000	-0.197	0.051***	0.198	0.028***	0.000
ΣEqu. Repur.	[0;2]	0.056	0.014***	0.004	0.002*	0.000	0.047	0.026*	0.002	0.003	0.066
ΣOther uses	[0;2]	-0.030	0.007***	0.017	0.004***	0.000	0.142	0.143	0.022	0.013*	0.360
ΣΔAssets	[0;3]	1.673	0.393***	0.574	0.082***	0.012	1.644	0.359***	1.067	0.081***	0.138
ΣCapex	[0;3]	0.247	0.108**	0.121	0.027***	0.298	0.292	0.082***	0.199	0.026***	0.359
ΣInvestment	[0;3]	0.244	0.259	0.350	0.083***	0.729	0.247	0.223	0.170	0.077**	0.780
ΣAcquisitions	[0;3]	0.216	0.069***	0.125	0.025***	0.270	-0.005	0.120	0.177	0.042***	0.225
ΣΔCash	[0;3]	0.242	0.050***	0.031	0.007***	0.000	0.225	0.068***	0.168	0.066**	0.623
ΣDividends	[0;3]	-0.007	0.002***	0.000	0.001	0.003	0.025	0.011**	0.000	0.001	0.029
ΣDebt reduction	[0;3]	-0.340	0.109***	0.285	0.048***	0.000	-0.176	0.075**	0.160	0.035***	0.000
ΣEqu. Repur.	[0;3]	0.105	0.018***	0.008	0.005	0.000	0.106	0.082	0.003	0.003	0.213
ΣOther uses	[0;3]	-0.095	0.062	0.047	0.035	0.140	0.184	0.185	0.011	0.007	0.343
ΣΔAssets	[0;4]	0.948	1.092	1.376	0.638**	0.788	2.311	0.610***	1.006	0.082***	0.039
ΣCapex	[0;4]	0.359	0.159**	0.105	0.027***	0.135	0.543	0.160***	0.196	0.037***	0.054
ΣInvestment	[0;4]	-0.285	0.310	0.527	0.082***	0.024	-0.068	0.319	0.250	0.081***	0.394
ΣAcquisitions	[0;4]	0.299	0.072***	0.087	0.019***	0.008	0.180	0.170	0.163	0.046***	0.935
ΣΔCash	[0;4]	0.306	0.058***	0.036	0.009***	0.000	0.439	0.139***	0.098	0.037***	0.025
ΣDividends	[0;4]	-0.009	0.004**	0.000	0.000	0.009	0.022	0.012*	0.001	0.001	0.117
ΣDebt reduction	[0;4]	-0.180	0.150	0.202	0.048***	0.043	-0.160	0.145	0.169	0.037***	0.048
ΣEqu. Repur.	[0;4]	0.151	0.041***	0.005	0.003*	0.001	0.094	0.118	0.034	0.019*	0.632
ΣOther uses	[0;4]	-0.145	0.114	0.057	0.046	0.204	-0.053	0.331	0.074	0.065	0.739

Table 9 The Persistence of Capital Structure

This table reports cross-sectional regressions results for SEOs and IPOs. The specifications are of the form

$$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{Pre} = c_0 + c_1 RPVGO_{t=-1} + c_2 YT + c_3 RSQ_{YT} + c_4 KZ\ Index_{t=-1} + c_5 HOT + c_6 M/B_t + c_7 EBITDA/A_{t-1} + c_8 SIZE_{t-1} + c_9 PPE/A_{t-1} + c_{10} R\&D/A_{t-1} + c_{11} R\&Dd_{t-1} + c_{12} D/A_{Pre} + \varepsilon_t.$$

D/A_{Pre} is pre-offering book leverage. D/A_t-$D/A_{Pre\text{-}SEO}$ and D/A_t-$D/A_{Pre\text{-}IPO}$ is the cumulative change in book leverage from the pre-offering year to year relative to the offering indicated in the column title. All regressions are estimated with industry fixed effects and contain a constant (not reported). Robust standard errors are reported in brackets. *, **, and *** denote the parameter is significantly different from 0 at the 10%, 5%, and 1% level, respectively.

	Seasoned equity offerings: Cumulative change in leverage D/A_t-$D/A_{Pre\text{-}SEO}$				Initial public offerings: Cumulative change in leverage D/A_t-$D/A_{Pre\text{-}IPO}$			
Relative year	*SEO+1*	*SEO+3*	*SEO+1*	*SEO+3*	*IPO+1*	*IPO+3*	*IPO+1*	*IPO+3*
$RPVGO_{t=-1}$	-0.125***	0.01	-0.200***	-0.005	-0.165***	-0.062	-0.205***	-0.067
	[0.048]	[0.056]	[0.049]	[0.057]	[0.055]	[0.058]	[0.057]	[0.060]
YT	-0.542*	-0.508	-0.578	-0.385	-	-	-	-
	[0.307]	[0.403]	[0.354]	[0.429]	-	-	-	-
RSQ_{YT}	-0.193	-0.376**	-0.251**	-0.323**	-	-	-	-
	[0.125]	[0.161]	[0.127]	[0.163]	-	-	-	-
$KZ\ Index_{t=-1}$	0.015	0.195	-	-	-0.493**	-0.341	-	-
	[0.278]	[0.376]	-	-	[0.203]	[0.211]	-	-
HOT	0.874**	0.414	0.837**	0.459	0.381	1.133	0.336	1.222
	[0.366]	[0.470]	[0.373]	[0.471]	[0.975]	[1.287]	[0.994]	[1.303]
M/B_t	-2.355***	-2.274***	-	-	-3.101***	-2.552***	-	-
	[0.207]	[0.319]	-	-	[0.274]	[0.434]	-	-
$EBITDA/A_{t-1}$	-0.373***	-0.322***	-0.427***	-0.379***	-0.326***	-0.333***	-0.417***	-0.402***
	[0.027]	[0.041]	[0.026]	[0.041]	[0.037]	[0.040]	[0.036]	[0.038]
$SIZE_{t-1}$	1.789***	1.920***	1.973***	1.950***	2.818***	2.609***	3.230***	2.756***
	[0.128]	[0.162]	[0.129]	[0.163]	[0.291]	[0.370]	[0.296]	[0.368]
PPE/A_{t-1}	0.086***	0.067***	0.114***	0.082***	0.177***	0.172***	0.215***	0.186***
	[0.012]	[0.016]	[0.012]	[0.016]	[0.023]	[0.027]	[0.023]	[0.027]
$R\&D/A_{t-1}$	0.005	-0.058	-0.104*	-0.170***	-0.265***	-0.149	-0.382***	-0.245**
	[0.062]	[0.070]	[0.062]	[0.065]	[0.079]	[0.094]	[0.076]	[0.096]
$R\&D\ d_{t-1}$	1.258**	0.756	1.378**	0.747	0.756	2.692**	0.881	2.839**
	[0.564]	[0.731]	[0.576]	[0.739]	[0.968]	[1.242]	[0.998]	[1.269]
D/A_{Pre}	-0.434***	-0.533***	-0.407***	-0.513***	-0.646***	-0.650***	-0.669***	-0.663***
	[0.018]	[0.023]	[0.014]	[0.017]	[0.021]	[0.026]	[0.019]	[0.023]
N	5070	4299	5070	4299	2194	1742	2194	1742
Adj. R^2	0.341	0.323	0.317	0.311	0.459	0.401	0.429	0.386
RMSE	11.531	13.329	11.737	13.44	16.182	17.862	16.619	18.073
F-stat	33.503	25.335	30.348	24.373	44.186	25.921	39.985	25.07

Table 10 Changes in Leverage, Net Equity Issues and Net Debt Issues

This table reports cross-sectional regressions results for SEOs in Panel A and for IPOs in Panel B. The specifications are of the form

$$Y_t = c_0 + c_1 RPVGO_{t=-1} + c_2 YT + c_3 RSQUARED + c_4 KZIndex_{t=-1} + c_5 HOT + c_6 M/B_{t-1}$$
$$+ c_7 EBITDA/A_{t-1} + c_8 SIZE_{t-1} + c_9 PPE/A_{t-1} + c_{10} R\&D/A_{t-1} + c_{11} R\&Dd_{t-1} + c_{12} D/A_{Pre} + \varepsilon_t,$$

where Y_t is the dependent variable indicated in the column title. Regressions in Panel B do not contain the variables *RSQUARED* and *YT*. All regressions are estimated with industry fixed effects and contain a constant (not reported). Robust standard errors are reported in brackets. *, **, and *** denote the parameter is significantly different from 0 at the 10%, 5%, and 1% level, respectively.

Panel A: Seasoned equity offerings

Dependent variable	Change in leverage D/A_t-D/A_{t-1}					Net equity issues e/A_t				Net debt issues d/A_t			
Relative year	*SEO*	*SEO+1*	*SEO+2*	*SEO+3*	*SEO+4*	*SEO*	*SEO+1*	*SEO+2*	*SEO+3*	*SEO*	*SEO+1*	*SEO+2*	*SEO+3*
$RPVGO_{t=-1}$	-0.242***	0.126***	0.088**	0.137***	0.036	0.497***	-0.006	-0.054	-0.048	0.043	0.150**	0.028	0.112
	[0.044]	[0.040]	[0.036]	[0.037]	[0.040]	[0.050]	[0.043]	[0.037]	[0.036]	[0.069]	[0.067]	[0.059]	[0.077]
YT	-0.707*	-0.023	0.159*	0.028	-0.093	1.036*	0.215	-0.361***	0.101	-0.098	-0.02	0.085	0.329*
	[0.372]	[0.089]	[0.086]	[0.105]	[0.083]	[0.544]	[0.186]	[0.136]	[0.121]	[0.154]	[0.127]	[0.126]	[0.188]
RSQ_{YT}	0.419***	-0.440***	-0.137	0.038	0.005	-0.470***	0.203	0.072	0.15	0.508***	-0.219	-0.089	0.082
	[0.100]	[0.099]	[0.100]	[0.101]	[0.109]	[0.122]	[0.250]	[0.124]	[0.114]	[0.147]	[0.241]	[0.146]	[0.142]
$KZ\ Index_{t=-1}$	-0.783***	0.676***	-0.451	0.187	-0.088	1.609***	-0.087	0.667***	0.434**	0.098	0.884**	0.109	0.580*
	[0.268]	[0.204]	[0.303]	[0.178]	[0.203]	[0.479]	[0.658]	[0.250]	[0.214]	[0.346]	[0.397]	[0.451]	[0.333]
HOT	-0.47	1.236***	0.707**	-0.525*	-0.264	0.201	-1.205***	-0.637*	0.297	-0.02	1.493***	0.847*	-0.012
	[0.306]	[0.286]	[0.291]	[0.306]	[0.314]	[0.350]	[0.398]	[0.334]	[0.351]	[0.434]	[0.458]	[0.455]	[0.441]
M/B_t	-1.057***	-0.628***	-0.486**	-0.389	-0.915***	3.662***	2.443***	2.999***	2.925***	0.530***	0.213	0.919***	1.356***
	[0.142]	[0.150]	[0.194]	[0.251]	[0.251]	[0.208]	[0.271]	[0.313]	[0.385]	[0.153]	[0.205]	[0.294]	[0.287]
$EBITDA/A_{t-1}$	-0.178***	-0.105***	-0.064**	-0.054**	-0.033	-0.147***	-0.068**	-0.099***	-0.129***	-0.047**	0.110***	0.151***	0.125***
	[0.018]	[0.022]	[0.026]	[0.025]	[0.026]	[0.022]	[0.035]	[0.032]	[0.031]	[0.021]	[0.037]	[0.032]	[0.029]
$SIZE_{t-1}$	1.717***	-0.269***	-0.196*	-0.285**	-0.136	-2.998***	-0.572***	-0.387***	-0.181	-0.001	-0.637***	-0.507***	-0.171
	[0.105]	[0.098]	[0.108]	[0.115]	[0.109]	[0.133]	[0.207]	[0.119]	[0.119]	[0.155]	[0.219]	[0.156]	[0.170]
PPE/A_{t-1}	0.029***	0.002	-0.027***	-0.002	-0.004	-0.078***	-0.013	0.029***	0.029***	-0.012	0.007	0	0.030**
	[0.010]	[0.010]	[0.010]	[0.010]	[0.011]	[0.011]	[0.020]	[0.011]	[0.010]	[0.015]	[0.021]	[0.016]	[0.014]
$R\&D/A_{t-1}$	-0.103***	0.008	0.068	-0.092	-0.061	0.216***	0.284***	0.217***	0.305***	-0.044	0.039	0.079	0.013
	[0.029]	[0.052]	[0.054]	[0.061]	[0.055]	[0.037]	[0.066]	[0.066]	[0.084]	[0.028]	[0.078]	[0.106]	[0.075]
$R\&D\ d_{t-0}$	0.882**	0.6	0.241	-0.559	0.231	0.667	1.611**	1.922***	1.562***	2.489***	1.894**	0.451	-0.262
	[0.450]	[0.436]	[0.458]	[0.472]	[0.497]	[0.493]	[0.634]	[0.466]	[0.476]	[0.648]	[0.755]	[0.709]	[0.673]
$D/A_{Pre\text{-}SEO}$	-0.326***	-0.108***	-0.030*	-0.057***	-0.036***	-0.115***	0.049	-0.017	0.005	-0.112***	-0.03	-0.003	-0.033*
	[0.015]	[0.014]	[0.016]	[0.013]	[0.014]	[0.022]	[0.031]	[0.017]	[0.014]	[0.020]	[0.025]	[0.024]	[0.020]
N	5288	5069	4715	4300	3930	5288	5069	4715	4300	5288	5069	4715	4300
Adj. R^2	0.356	0.088	0.059	0.043	0.031	0.654	0.09	0.164	0.205	0.058	0.035	0.045	0.039
RMSE	9.633	9.009	8.821	8.632	8.529	11.169	15.203	10.545	9.557	13.553	16.24	13.408	12.914
F-stat	45.222	14.552	8.118	3.915	2.236	164.269	8.576	7.007	6.356	5.459	4.663	3.903	2.997

Panel B: Initial public offerings										
Dependent variable	Change in leverage D/A_t-D/A_{t-1}				Net equity issues e/A_t			Net debt issues d/A_t		
Relative year	*IPO+1*	*IPO+2*	*IPO+3*	*IPO+4*	*IPO+1*	*IPO+2*	*IPO+3*	*IPO+1*	*IPO+2*	*IPO+3*
$RPVGO_{t=-1}$	2.008***	0.425	0.334	-0.044	-0.193	0.329	0.505	1.634***	0.164	0.594
	[0.308]	[0.351]	[0.320]	[0.334]	[0.362]	[0.350]	[0.319]	[0.473]	[0.486]	[0.516]
$KZ\ Index_{t=-1}$	-0.123	0.05	-0.101	0.113	0.404***	0.409***	0.326***	0.052	0.318*	0.124
	[0.150]	[0.129]	[0.158]	[0.107]	[0.122]	[0.123]	[0.120]	[0.179]	[0.169]	[0.204]
HOT	1.082*	0.594	0.169	-0.196	0.287	0.91	-1.937**	2.413**	0.912	-0.645
	[0.630]	[0.799]	[0.794]	[0.747]	[0.820]	[0.870]	[0.808]	[0.936]	[1.028]	[1.031]
M/B_t	-0.433**	-0.549**	0.023	-0.218	2.677***	2.891***	2.753***	-0.05	0.526*	1.347***
	[0.199]	[0.257]	[0.266]	[0.255]	[0.290]	[0.391]	[0.342]	[0.239]	[0.279]	[0.400]
$EBITDA/A_{t-1}$	-0.080***	-0.033	-0.031	-0.025	-0.161***	-0.089**	-0.110***	0.079*	0.187***	0.191***
	[0.029]	[0.034]	[0.028]	[0.030]	[0.040]	[0.037]	[0.030]	[0.043]	[0.044]	[0.055]
$SIZE_{t-1}$	-0.929***	-0.760***	-0.682**	-0.184	-0.061	0.028	0.221	-0.569*	-0.375	-0.394
	[0.206]	[0.232]	[0.268]	[0.241]	[0.224]	[0.247]	[0.287]	[0.314]	[0.322]	[0.478]
PPE/A_{t-1}	0.007	0.007	-0.019	0.006	0.015	0.016	0.036**	0.070***	0.047**	-0.018
	[0.016]	[0.016]	[0.016]	[0.016]	[0.017]	[0.017]	[0.016]	[0.022]	[0.023]	[0.027]
$R\&D/A_{t-1}$	-0.038	0.009	0.033	-0.011	0.207**	0.191**	0.093	-0.012	0.034	0.07
	[0.059]	[0.069]	[0.057]	[0.107]	[0.088]	[0.090]	[0.069]	[0.070]	[0.076]	[0.080]
$R\&D\ d_{t-0}$	0.449	0.303	0.02	-0.476	1.249*	1.445*	1.982***	1.13	0.441	1.608
	[0.684]	[0.800]	[0.784]	[0.897]	[0.750]	[0.833]	[0.768]	[1.051]	[1.081]	[1.218]
$D/A_{Pre\text{-}IPO}$	-0.004	0.028*	0.005	-0.009	0.025	-0.013	0.007	0.079***	0.052**	-0.007
	[0.015]	[0.016]	[0.016]	[0.016]	[0.018]	[0.018]	[0.017]	[0.019]	[0.021]	[0.025]
N	2247	2021	1776	1554	2247	2021	1776	2247	2021	1776
Adj. R^2	0.078	0.048	0.034	0.027	0.118	0.101	0.115	0.077	0.064	0.053
RMSE	11.933	12.07	11.663	10.973	13.505	13.422	11.521	16.433	16.485	18.508
F-stat	4.665	2.505	1.243	1.248	5.199	5.229	4.745	5.025	2.796	2.881

Table 11 Capital Structure and Historical Weighted Average Market-to-Book Ratios

Cross-sectional regressions with the following specifications:

$$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{Pre} = c_0 + c_1 RPVGO_{t=-1} + c_2 YT + c_3 RSQ_{YT} + c_4 KZ\ Index_{t=-1} + c_5 HOT + c_6 M/B_{efwa,t-1}$$
$$+ c_7 M/B_{t-1} + c_8 EBITDA/A_{t-1} + c_9 SIZE_{t-1} + c_{10} PPE/A_{t-1} + c_{11} R\&D/A_{t-1} + c_{12} R\&Dd_{t-1} + c_{13} D/A_{Pre} + \varepsilon$$

where the dependent variable is book leverage. $RPVGO_{t=-1}$, RSQ_{YT}, $KZ\ Index_{t=-1}$ and D/A_{Pre} are measured in the pre-offering year. $M/B_{efwa,t-1}$ is calculated as in Baker and Wurgler (2002). All regressions are estimated with industry fixed effects and contain a constant (not reported). Robust standard errors are reported in brackets. *, **, and *** denote the parameter is significantly different from 0 at the 10%, 5%, and 1% level, respectively.

	Seasoned equity offerings				Initial public offerings			
Relative offering year	*SEO + 1*	*SEO + 3*	*SEO + 5*	*SEO + 10*	*IPO + 1*	*IPO + 3*	*IPO + 5*	*IPO + 10*
$RPVGO_{t=-1}$	-0.125***	0.08	0.046	0.09	-0.165***	-0.018	-0.018	-0.035
	[0.048]	[0.056]	[0.061]	[0.076]	[0.055]	[0.057]	[0.075]	[0.102]
YT	-0.542*	-0.431	-0.407	-1.517**	-	-	-	-
	[0.307]	[0.343]	[0.271]	[0.697]	-	-	-	-
RSQ_{YT}	-0.193	-0.287*	-0.136	0.088	-	-	-	-
	[0.125]	[0.158]	[0.180]	[0.237]	-	-	-	-
$KZ\ Index_{t=-1}$	0.015	0.051	-0.578	-3.468***	-0.493**	-0.575***	-0.086	-0.038
	[0.278]	[0.359]	[0.551]	[0.812]	[0.203]	[0.213]	[0.236]	[0.437]
HOT	0.874**	0.343	0.576	0.321	0.381	0.936	-1.751	0.366
	[0.366]	[0.463]	[0.494]	[0.604]	[0.975]	[1.265]	[1.445]	[1.913]
$M/B_{efwa,\ t-1}$	-	-3.807***	-4.547***	-6.845***	-	-3.862***	-4.161***	-
	-	[0.357]	[0.500]	[0.639]	-	[0.521]	[0.586]	-
M/B_{t-1}	-2.355***	0.278	0.242	0.838	-3.101***	-0.271	-1.274***	-2.464***
	[0.207]	[0.415]	[0.483]	[0.559]	[0.274]	[0.524]	[0.477]	[0.702]
$EBITDA/A_{t-1}$	-0.373***	-0.326***	-0.390***	-0.485***	-0.326***	-0.335***	-0.334***	-0.367***
	[0.027]	[0.041]	[0.042]	[0.054]	[0.037]	[0.040]	[0.049]	[0.089]
$SIZE_{t-1}$	1.789***	1.810***	1.897***	2.615***	2.818***	2.518***	2.648***	2.237***
	[0.128]	[0.161]	[0.185]	[0.240]	[0.291]	[0.366]	[0.427]	[0.584]
PPE/A_{t-1}	0.086***	0.055***	0.029	-0.073***	0.177***	0.163***	0.166***	0.132***
	[0.012]	[0.016]	[0.018]	[0.024]	[0.023]	[0.026]	[0.031]	[0.046]
$R\&D/A_{t-1}$	0.005	-0.051	-0.055	-0.07	-0.265***	-0.081	-0.078	0.11
	[0.062]	[0.071]	[0.086]	[0.120]	[0.079]	[0.089]	[0.094]	[0.120]
$R\&D\ d_{t-1}$	1.258**	0.574	2.202***	2.302**	0.756	2.608**	-0.099	1.33
	[0.564]	[0.716]	[0.842]	[1.173]	[0.968]	[1.207]	[1.419]	[2.040]
D/A_{Pre}	-0.434***	-0.560***	-0.565***	-0.606***	-0.646***	-0.644***	-0.759***	-0.787***
	[0.018]	[0.022]	[0.030]	[0.044]	[0.021]	[0.025]	[0.030]	[0.048]
N	5070	4299	3562	2276	2194	1742	1313	617
Adj. R^2	0.341	0.344	0.343	0.447	0.459	0.424	0.464	0.49
RMSE	11.531	13.114	13.433	13.1	16.182	17.517	17.844	17.938
F-stat	33.503	27.202	22.051	33.803	44.186	26.795	34.14	12.907

Table 12 Long-Run Calendar-Time Performance by Subsamples

Calendar-time Carhart (1997) four-factor regression for the full sample of SEOs and IPOs on RMRF, SMB, HML and PR12 are performed as in Table 8. SEOs and IPOs are divided into subsamples as follows. *RPVGO Q1* and *Q5* are the lowest and highest RPVGO quintile, quintiles are determined for SEOs and IPOs separately using RPVGO calculated in the fiscal year preceding the offering. *Proceeds^T/A Q1* and *Q5* are the lowest and highest quintiles of total offering proceeds, quintiles are determine for SEOs and IPOs separately. Hot market and cold market are subsamples divided by whether the issuing date is in a hot or cold issuing month, hot and cold markets are determined for SEOs and IPOs separately. *High KZ Index and Low KZ Index* are subsamples formed by whether *KZ Index* in the pre-offer year is above or below the median of the IPO and SEO subsamples, respectively. *High RSQ$_{YT}$* and *Low RSQ$_{YT}$* are subsamples formed by whether *RSQ$_{YT}$* is above or below the median of the SEO sample. *High YT* and *Low YT* are subsamples formed by whether *YT* is above or below the median of the SEO sample. Newey-West standard errors adjusted for heteroskedasticity and autocorrelation of up to five lags are reported in brackets. *, **, and *** denote the parameter is significantly different from 0 at the 10%, 5%, and 1% level, respectively.

Panel A: Seasoned equity offerings

	RPVGO Q1		*RPVGO Q5*		*Proceeds^T/A Q1*		*Proceeds^T/A Q5*	
	VW	EW	VW	EW	VW	EW	VW	EW
Alpha (%)	-0.2928*	-0.0147	-0.3026	-0.4167	-0.2171	-0.068	0.2997	-0.0323
	[0.1728]	[0.1549]	[0.3349]	[0.3421]	[0.1638]	[0.1726]	[0.2382]	[0.2063]
MKT	0.8871***	0.9099***	1.3079***	1.2547***	0.8313***	0.8562***	1.2820***	1.2783***
	[0.0774]	[0.0661]	[0.0738]	[0.0627]	[0.0548]	[0.0496]	[0.0734]	[0.0520]
SMB	-0.115	0.2117*	0.4888***	1.2242***	-0.0038	0.1204**	0.9173***	1.2401***
	[0.0995]	[0.1153]	[0.0943]	[0.0880]	[0.0842]	[0.0557]	[0.0829]	[0.0656]
HML	0.4805***	0.3150***	-0.4561***	-0.1643	0.3905***	0.5677***	-0.9675***	-0.3306***
	[0.0872]	[0.0848]	[0.1232]	[0.1018]	[0.0894]	[0.0752]	[0.1253]	[0.0835]
PR12	-0.0279	-0.1148*	-0.0007	-0.2186***	-0.0774	-0.1870***	0.0167	-0.1988***
	[0.0649]	[0.0651]	[0.0822]	[0.0679]	[0.0553]	[0.0491]	[0.0931]	[0.0497]
N	406	406	393	393	417	417	419	419
Adjusted R^2 (%)	0.579	0.651	0.658	0.724	0.609	0.633	0.801	0.852
	Hot market		*Cold market*		*High KZ Index*		*Low KZ Index*	
	VW	EW	VW	EW	VW	EW	VW	EW
Alpha (%)	-0.0289	0.0785	-0.1062	0.0155	-0.2547	-0.0719	0.1296	0.1786
	[0.1489]	[0.1398]	[0.1339]	[0.1400]	[0.1548]	[0.1284]	[0.1621]	[0.1416]
MKT	1.0108***	1.0742***	0.8466***	0.9564***	1.0133***	1.0589***	0.9026***	1.0120***
	[0.0479]	[0.0333]	[0.0406]	[0.0397]	[0.0495]	[0.0378]	[0.0451]	[0.0377]
SMB	0.2621***	0.7955***	0.0714	0.5299***	0.2600***	0.7291***	0.1571*	0.7456***
	[0.0608]	[0.0478]	[0.0668]	[0.0745]	[0.0451]	[0.0668]	[0.0828]	[0.0553]
HML	-0.1423*	0.0457	0.047	-0.0143	0.1732***	0.1626**	-0.3265***	-0.1107**
	[0.0792]	[0.0522]	[0.0653]	[0.0588]	[0.0650]	[0.0637]	[0.1102]	[0.0501]
PR12	-0.0904	-0.2760***	-0.0511	-0.1695***	-0.1150**	-0.2981***	-0.0251	-0.2316***
	[0.0683]	[0.0368]	[0.0476]	[0.0564]	[0.0463]	[0.0376]	[0.0837]	[0.0473]
N	412	412	392	392	418	418	419	419
Adjusted R^2 (%)	0.834	0.904	0.746	0.812	0.838	0.895	0.791	0.888
	High RSQ$_{YT}$		*Low RSQ$_{YT}$*		*High YT*		*Low YT*	
	VW	EW	VW	EW	VW	EW	VW	EW
Alpha (%)	-0.0036	0.0927	-0.1266	0.0242	-0.0555	0.1623	-0.0597	-0.0133
	[0.1533]	[0.1303]	[0.1274]	[0.1148]	[0.1496]	[0.1334]	[0.1352]	[0.1252]
MKT	0.9502***	1.0645***	0.9498***	1.0044***	0.9933***	1.0689***	0.9106***	0.9967***
	[0.0431]	[0.0383]	[0.0441]	[0.0302]	[0.0450]	[0.0325]	[0.0404]	[0.0335]
SMB	0.1816***	0.6720***	0.2430***	0.7794***	0.2481***	0.8275***	0.1076**	0.6247***
	[0.0637]	[0.0445]	[0.0675]	[0.0436]	[0.0644]	[0.0403]	[0.0481]	[0.0523]
HML	-0.1315	-0.0236	-0.005	0.0709	-0.3317***	-0.1273***	0.1619***	0.2056***
	[0.0929]	[0.0532]	[0.0680]	[0.0461]	[0.0908]	[0.0409]	[0.0566]	[0.0584]
PR12	-0.056	-0.2885***	-0.0244	-0.2181***	0.0204	-0.2385***	-0.1370***	-0.2696***
	[0.0738]	[0.0406]	[0.0505]	[0.0282]	[0.0709]	[0.0335]	[0.0418]	[0.0351]
N	419	419	416	416	419	419	419	419
Adjusted R^2 (%)	0.824	0.893	0.83	0.908	0.818	0.911	0.805	0.883

Panel B: Initial public offerings								
	RPVGO Q1		*RPVGO Q5*		*Proceeds^T/A Q1*		*Proceeds^T/A Q5*	
	VW	EW	VW	EW	VW	EW	VW	EW
Alpha (%)	-0.051	-0.1384	-0.7542*	-0.0075	-0.3382	-0.1041	-0.1229	0.3884
	[0.2893]	[0.2366]	[0.3933]	[0.3797]	[0.2370]	[0.2812]	[0.1849]	[0.2696]
MKT	1.1176***	1.1675***	1.2555***	1.0864***	1.1723***	1.0960***	1.1203***	1.0692***
	[0.1054]	[0.0866]	[0.0863]	[0.0865]	[0.0983]	[0.1079]	[0.0642]	[0.0625]
SMB	0.9306***	1.1024***	0.6676***	1.1551***	0.4749***	0.7324***	0.9660***	1.0879***
	[0.1689]	[0.1572]	[0.1285]	[0.1428]	[0.1527]	[0.1839]	[0.0881]	[0.1324]
HML	-0.4931**	0.2333	-0.6416***	-0.4946***	-0.1164	0.0324	-0.7994***	-0.3576***
	[0.1965]	[0.1561]	[0.1473]	[0.1744]	[0.1671]	[0.2182]	[0.0949]	[0.1099]
PR12	0.2057	-0.2704***	-0.0162	-0.2841	0.1528*	-0.0912	-0.0156	-0.2814**
	[0.1341]	[0.0890]	[0.1129]	[0.1841]	[0.0877]	[0.1255]	[0.0644]	[0.1109]
N	395	395	306	306	387	387	306	306
Adjusted R^2 (%)	0.473	0.565	0.601	0.64	0.538	0.565	0.689	0.723
	Hot market		*Cold Market*		*High KZ Index*		*Low KZ Index*	
	VW	EW	VW	EW	VW	EW	VW	EW
Alpha (%)	-0.8879**	-0.495	-0.0421	0.2983	-0.7035*	-0.6440*	-0.1629	0.2553
	[0.4127]	[0.4102]	[0.2628]	[0.3509]	[0.3826]	[0.3729]	[0.2276]	[0.2874]
MKT	1.3213***	1.2014***	1.1248***	1.0672***	1.4029***	1.2380***	1.0165***	1.0330***
	[0.1912]	[0.1736]	[0.1071]	[0.1179]	[0.1795]	[0.1638]	[0.0944]	[0.1086]
SMB	1.1551***	1.3963***	0.5235***	0.7816***	1.1268***	1.3765***	0.6931***	0.8892***
	[0.3407]	[0.3208]	[0.1730]	[0.1919]	[0.3205]	[0.3002]	[0.1252]	[0.1635]
HML	0.1466	0.3895	-0.2892	-0.3126	0.2013	0.4423	-0.5261***	-0.3320*
	[0.4136]	[0.3757]	[0.1834]	[0.2097]	[0.3779]	[0.3496]	[0.1633]	[0.1959]
PR12	-0.1185	-0.3977***	0.1278	-0.1285	-0.1276	-0.3541**	0.0955	-0.1405
	[0.1452]	[0.1427]	[0.1018]	[0.1361]	[0.1371]	[0.1437]	[0.0831]	[0.1092]
N	359	359	356	356	395	395	387	387
Adjusted R^2 (%)	0.413	0.432	0.561	0.583	0.429	0.447	0.616	0.638

Appendix

Table A1 Industry Classification of 4-Digit SIC Codes

Issuing firms are assigned to one of the 48 industries used by Fama and French (1997) using their 4-digit primary SIC codes reported by SDC. SEO and IPO observations satisfy the data requirements of Table 1.

Industry abbreviation	Industry name	SIC Codes	SEOs		IPOs	
			Total	Percent	Total	Percent
Aero	Aircraft	3720-3729	29	0.5	14	0.57
Agric	Agriculture	0100-0799, 2048	20	0.4	6	0.25
Autos	Automobiles and trucks	2296, 2396, 3010-3011, 3537, 3647, 3694, 3700-3716, 3790-3792, 3799	78	1.5	35	1.44
Banks	Banking	6000-6099, 6100-6199		excluded		
Beer	Alcoholic beverages	2080-2085	0	0	0	0
BldMt	Construction materials	0800-0899, 2400-2439, 2450-2459, 2490-2499, 2950-2952, 3200-3219, 3240-3259, 3261, 3264, 3270-3299, 3420-3442, 3446-3452, 3490-3499, 3996	86	1.6	49	2.01
Books	Printing and publishing	2700-2749, 2770-2799	28	0.5	20	0.82
Boxes	Shipping companies	2440-2449, 2640-2659, 3210-3221, 3410-3412	12	0.2	5	0.21
BusSv	Business services	2750-2759, 3993, 7300-7372, 7374-7394, 7379, 7399, 7510-7519, 8700-8748, 8900-8999	419	7.8	435	17.84
Chem	Chemicals	2800-2829, 2850-2899	73	1.4	24	0.98
Chips	Electronic equipment	3922, 3661-3679, 3810, 3812	384	7.2	195	8
Clths	Apparel	2300-2390, 3020-3021, 3100-3111, 3130-3159, 3965	49	0.9	42	1.72
Cnstr	Construction	1500-1549, 1600-1699, 1700-1799	47	0.9	36	1.48
Coal	Coal	1200-1299	4	0.1	3	0.12
Comps	Computers	3570-3579, 3680-3689, 3695, 7373	237	4.4	161	6.6
Drugs	Pharmaceutical products	2830-2836	276	5.2	67	2.75
ElcEq	Electrical equipment	3600-3621, 3623-3929, 3640-3646, 3648-3649, 3660, 3691-3692, 3699	48	0.9	27	1.11
Enrgy	Petroleum and natural gas	1310-1389, 2900-2911, 2990-2999	280	5.2	54	2.21
FabPr	Fabricated products	3400, 3443-3444, 3460-3479	10	0.2	3	0.12
Fin	Trading	6200-6299, 6700-6799		excluded		
Food	Food products	200-2046, 2050-2063, 2070-2097, 2090-2095, 2098-2099	45	0.8	35	1.44
Fun	Entertainment	7800-7841, 7900-7999	75	1.4	44	1.8
Gold	Precious metals	1040-1049	24	0.5	3	0.12
Guns	Defense	3480-3489, 3760-3769, 3795	7	0.1	2	0.08
Hlth	Healthcare	8000-8099	148	2.8	97	3.98

Hshld	Consumer goods	2047, 2391-2392, 2510-2519, 2590-2599, 2840-2844, 3160-3199, 3229-3231, 3260, 3262-3263, 3269, 3630-3639, 3750-3751, 3800, 3860-3879, 3910-3919, 3960-3961, 3991, 3995	51	1.0	57	2.34
Insur	Insurance	6300-6399, 6400-6411		excluded		
LabEq	Measuring and control Equipment	3811, 3820-3830	108	2.0	57	2.34
Mach	Machinery	3510-3536, 3540-3569, 3580-3599	178	3.3	79	3.24
Meals	Restaurants, hotel, motel	5800-5813, 5890, 700-7019, 7040-7049, 7213	142	2.7	84	3.44
MedEq	Medical equipment	3693, 3480-3851	143	2.7	63	2.58
Mines	Nonmetallic mining	1000-1039, 1060-10999, 1400-1499	10	0.2	2	0.08
Misc	Miscellaneous	3900, 3990, 3999, 9900-9999	2	0.0	1	0.04
Paper	Business supplies	2520-2549, 2600-2639, 2670-2699, 2760-2761, 3950-3955	39	0.7	22	0.9
PerSv	Personal services	7020-7021, 7030-7039, 3200-7212, 7215-7299, 7395, 7500, 7520-7549, 7600-7699, 8100-8199, 8200-8299, 8300-8399, 8400-8499, 8600-8699, 8800-8899	49	0.9	29	1.19
RlEst	Real estate	6500-6553		excluded		
Rtail	Retail	5200-5299, 5300-5399, 5400-5499, 5500-5599, 5600-5699, 5700-5736, 5900-5999	305	5.7	200	8.2
Rubbr	Rubber and plastic products	3000, 3050-3099	34	0.6	24	0.98
Ships	Shipbuilding, railroad equipment	3730-3731, 3740-3743	4	0.1	8	0.33
Smoke	Tobacco products	2100-2199	3	0.1	0	0
Soda	Candy and soda	2064-2086, 2086-2087, 2098-2097	11	0.2	6	0.25
Steel	Steel works etc.	3300-3369, 3390-3399	77	1.4	36	1.48
Telcm	Telecommunications	4800-4899	178	3.3	78	3.2
Toys	Recreational products	0900-0999, 3650-3652, 3732, 3930-3949	38	0.7	44	1.8
Trans	Transportation	4000-4099, 4100-4199, 4200-4299, 4400-4499, 4500-4599, 4600-4699, 4700-4799	166	3.1	87	3.57
Txtls	Textiles	2200-2295, 2297-2299, 2393-2395, 2397-2399	35	0.7	21	0.86
Util	Utilities	4900-4999	1,236	23.1	48	1.97
Whlsl	Wholesale	5000-5099, 5100-5199	173	3.2	136	5.58
Total			5361	100	2439	100

Table A2 Cumulative Changes in Leverage, Net Equity Issues and Net Debt Issues: Robustness Tests

This table reports results for estimating equation (8) with the cumulative change in leverage as the dependent variable in Panels A and B and net equity issues and debt issues as the dependent variable in Panels C and D. All regressions contain the variables *HOT, M/B_t, $EBITDA/A_{t-1}$, $SIZE_{t-1}$, PPE/A_{t-1}, $R\&D/A_{t-1}$, $R\&Dd_{t-1}$, D/A_{pre}*, and industry fixed effects. Panels A and C add SEO-year and IPO-year fixed effects. Panels B and D condition of survival of the firm until year *SEO+3* and *IPO+3*. Robust standard errors are reported in brackets. *, **, and *** denote the parameter is significantly different from 0 at the 10%, 5%, and 1% level, respectively.

Dep. variable	Relative year	$RPVGO_{t=-1}$		YT		RSQ_{YT}		$KZ\ Index_{t=-1}$		N	$Adj.\ R^2$
Panel A: SEO-year and IPO-year fixed effects											
D/A_t- $D/A_{Pre\text{-}SEO}$	SEO	-0.187***	[0.072]	-0.483*	[0.257]	0.213*	[0.114]	-0.439**	[0.222]	5,291	0.39
	SEO+1	-0.201**	[0.085]	-0.379**	[0.187]	-0.523***	[0.145]	0.366	[0.240]	5,070	0.36
	SEO+3	0.104	[0.116]	-0.199	[0.292]	-0.490***	[0.190]	0.399	[0.390]	4,299	0.34
D/A_t- $D/A_{Pre\text{-}IPO}$	IPO	-0.218***	[0.055]	-	-	-	-	-0.649***	[0.153]	2,358	0.54
	IPO+1	-0.183***	[0.057]	-	-	-	-	-0.644***	[0.197]	2,194	0.49
	IPO+3	-0.066	[0.063]	-	-	-	-	-0.475**	[0.213]	1,742	0.43
Panel B: Balanced SEO and IPO panels											
D/A_t- $D/A_{Pre\text{-}SEO}$	SEO	-0.231***	[0.040]	-0.538*	[0.316]	0.410***	[0.103]	-0.570**	[0.259]	4,329	0.39
	SEO+1	-0.175***	[0.047]	-0.666**	[0.332]	-0.260**	[0.126]	0.101	[0.256]	4,291	0.36
	SEO+3	0.007	[0.057]	-0.425	[0.411]	-0.375**	[0.162]	0.188	[0.381]	4,299	0.32
D/A_t- $D/A_{Pre\text{-}IPO}$	IPO	-0.212***	[0.055]	-	-	-	-	-0.352**	[0.173]	1,761	0.52
	IPO+1	-0.167***	[0.057]	-	-	-	-	-0.445**	[0.213]	1,731	0.47
	IPO+3	-0.055	[0.059]	-	-	-	-	-0.28	[0.212]	1,742	0.40
Panel C: SEO-year and IPO-year fixed effects											
e/A_t	SEO	0.492***	[0.083]	0.686*	[0.405]	0.401***	[0.136]	0.835**	[0.354]	5,288	0.69
	SEO+1	-0.101	[0.089]	0.165	[0.167]	0.256	[0.260]	-0.092	[0.636]	5,069	0.10
	SEO+3	0.005	[0.081]	0.151	[0.109]	0.153	[0.136]	0.475**	[0.216]	4,300	0.22
d/A_t	SEO	0.081	[0.120]	-0.008	[0.140]	0.661***	[0.169]	0.237	[0.344]	5,288	0.10
	SEO+1	0.195*	[0.116]	0.148	[0.120]	-0.159	[0.256]	0.997***	[0.381]	5,069	0.05
	SEO+3	0.336***	[0.129]	0.284	[0.217]	0.061	[0.160]	0.670**	[0.324]	4,300	0.06
e/A_t	IPO+1	-0.085	[0.395]	-	-	-	-	0.505***	[0.126]	2,247	0.13
	IPO+3	0.517	[0.352]	-	-	-	-	0.367***	[0.125]	1,776	0.12
d/A_t	IPO+1	1.322***	[0.503]	-	-	-	-	0.15	[0.181]	2,247	0.09
	IPO+3	0.763	[0.551]	-	-	-	-	0.173	[0.209]	1,776	0.06
Panel D: Balanced SEO and IPO panels											
e/A_t	SEO	0.469***	[0.046]	0.92	[0.585]	-0.449***	[0.127]	1.579***	[0.545]	4,328	0.7
	SEO+1	-0.04	[0.046]	0.151	[0.166]	0.015	[0.126]	0.109	[0.693]	4,292	0.1
	SEO+3	-0.048	[0.036]	0.101	[0.121]	0.15	[0.114]	0.434**	[0.214]	4,300	0.2
d/A_t	SEO	-0.095	[0.067]	-0.071	[0.140]	0.586***	[0.149]	0.336	[0.388]	4,328	0.1
	SEO+1	0.190***	[0.070]	-0.111	[0.148]	-0.224	[0.139]	1.131***	[0.371]	4,292	0.1
	SEO+3	0.112	[0.077]	0.329*	[0.188]	0.082	[0.142]	0.580*	[0.333]	4,300	0.0
e/A_t	IPO+1	-0.437	[0.382]	-	-	-	-	0.424***	[0.135]	1,765	0.1
	IPO+3	0.505	[0.319]	-	-	-	-	0.326***	[0.120]	1,776	0.1
d/A_t	IPO+1	1.153**	[0.511]	-	-	-	-	-0.023	[0.200]	1,765	0.1
	IPO+3	0.594	[0.516]	-	-	-	-	0.124	[0.204]	1,776	0.1

Table A3 SEO Firm Sample Versus Random Sample

The table reports differences between the SEO firm sample and a random sample drawn from the matched CRSP and COMPUSTAT firm universe. Every SEO sample firm is matched by its offer date with all available benchmark firms on that date. Benchmark firms satisfy the requirements of not having performed an IPO or SEO within the prior 60 months, not performing an SEO for the next 12 months and having price history available on CRSP for 36 months prior to the matched offer date. From the available benchmark firms two firms are randomly drawn for every SEO firm. Columns 3 to 5 report the results of a probit regression, where the dependent variable *SEO* equals one if the firm is included in the sample of SEO firms, zero otherwise. Coefficients are reported as marginal effects. All dependent variables with the exception of *M/B* and *SIZE* are reported as a percentage. Robust asymptotic standard errors are in brackets. *, **, and *** denote the parameter is statistically significant different from 0 at the 10%, 5%, and 1% level, respectively. *Prob* denotes the significance level of the asymptotic χ^2–statistic, which tests the hypothesis that all parameters in the model are simultaneously equal to zero.

	SEO Firms	Random Sample	Probit		
	Mean (Median)	Mean (Median)	*dF/dx* [se]	*dF/dx* [se]	*dF/dx* [se]
RSQ_{YT}	23.93	19.39	0.003***	0.003***	0.004***
	(21.41)	(15.54)	[0.000]	[0.000]	[0.000]
YT	21.70	0.56	0.001**	0.001**	0.001**
	(12.75)	(0.00)	[0.000]	[0.000]	[0.000]
M/B_{t-1}	1.48	1.63	0.031***	0.029***	0.024***
	(1.09)	(1.13)	[0.005]	[0.005]	[0.004]
D/A_{t-1}	48.85	56.04	-0.000**	-0.000***	0
	(52.39)	(50.10)	[0.000]	[0.000]	[0.000]
$EBITDA/A_{t-1}$	11.30	7.29	0.004***	0.004***	0.004***
	(11.90)	(10.95)	[0.000]	[0.000]	[0.000]
$SIZE_{t-1}$	5.72	4.91	0.006**	0.003	-0.004
	(5.82)	(4.95)	[0.002]	[0.002]	[0.003]
$R\&D/A_{t-1}$	2.73	2.82	0.006***	0.005***	0.004***
	(0.00)	(0.00)	[0.001]	[0.001]	[0.001]
$R\&D\ d_{t-0}$	0.55	0.49	0.109***	0.094***	0.089***
	(1.00)	(0.00)	[0.009]	[0.011]	[0.011]
PPE/A_{t-1}	47.44	30.63	0.003***	0.003***	0.003***
	(43.36)	(25.01)	[0.000]	[0.000]	[0.000]
Industry fixed effects	-	-	NO	YES	YES
Offer year fixed effects	-	-	NO	NO	YES
N	5,298	10,425	14674	14674	14674
Pseudo-R^2	-	-	0.068	0.11	0.162
χ^2	-	-	833.069	1593.403	2218.788
Prob	-	-	0.000	0.000	0.000