



Cash shortfalls in IPO firms

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ABSTRACT

We find that most IPO firms will run out of cash soon if they did not receive proceeds from IPOs. The cash shortfalls are not caused by increases in capital expenditure, R&D, M&A, or debt repayment and persist during the 5 years after IPO. Negative net cash flows help explain the persistent cash shortfalls. These results are consistent with the funding horizon theory. IPO firms with more initial cash shortfalls also have lower cash flows in the next 5 years, suggesting that initial cash shortfalls can be used to predict the future operating performance of IPO firms.

1. Introduction

The funding horizon theory (DeAngelo et al., 2011; Huang and Ritter, 2021) suggests that firms issue debt to meet temporary cash needs and issue equity to meet persistent cash needs. Consistent with the funding horizon theory, it has been documented that most seasoned equity issuers would run out of cash without external financing (DeAngelo et al., 2010; Denis and McKeon, 2021; Huang and Ritter, 2021) and often have persistent cash needs (Denis and McKeon, 2021; Huang and Ritter, 2021). The funding horizon theory may also be applicable to initial public offering (IPO) firms and suggests that cash needs may motivate IPOs. Despite numerous studies about IPO motivations (Bodnaruk et al., 2008; Brau and Fawcett, 2006; Chemmanur et al., 2010; Demers and Lewellen, 2003; Kim and Weisbach, 2008; Pagano et al., 1998; Ritter and Welch, 2002), there is a lack of research in this area. Thus, we investigate the cash needs of IPO firms in this paper.

The funding horizon theory implies that IPO firms may have significant persistent cash shortfalls which motivate the decision to go public, so we use the pro forma cash method in DeAngelo et al. (2010) to examine the cash needs of IPO firms in the IPO year as well as the next 5 years. We find that most IPO firms will run out of cash in the IPO year if they did not receive proceeds from IPOs and the cash shortfalls persist during the 5 years after IPO. The cash shortfalls are not caused by increases in capital expenditure, R&D, M&A, or debt repayment and persist during the 5 years after IPO. Negative net cash flows help explain the persistent cash shortfalls. In contrast, seasoned peer firms do not have similar cash shortfalls. These results are consistent with the funding horizon theory. In addition, IPO firms with more initial cash shortfalls also have lower cash flows in the next 5 years, suggesting that initial cash shortfalls can be used to predict the future operating performance of IPO firms.

This paper contributes to the empirical literature in several aspects. As far as we know, this is the first study that examines the cash needs of IPO firms, providing evidence about a distinctive motivation for IPOs. Our study also complements the literature about

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operating performance of IPO firms. We find that the poor operating performance of IPO firms is persistent and predictable based on initial cash shortfalls.

This paper also contributes to the theoretical literature by linking capital structure and security issuance theories to IPOs. The traditional theories about security issuance including the pecking order theory (Myers, 1984) and the static tradeoff theory do not seem to be applicable to IPOs. The pecking order theory suggests that firms always issue debt before issuing equity because of information asymmetry. This contradicts the well-known fact that most IPO firms have low leverage. The static tradeoff theory assumes optimal capital structure target and encounters difficulty in explaining why firms make substantial changes to capital structure through IPOs. We show that the funding horizon theory, which is one of the dynamic tradeoff models about capital structure and security issuance, offers reasonable explanations to IPO decisions. By doing this we bridge the gap between IPO theories and capital structure/security issuance theories.

2. Empirical tests

2.1. Data and sample

We collect the initial sample of 13,403 IPOs between 1980 and 2017 from Thomson Financial SDC Platinum (SDC) New Issues database. The financial and stock data are obtained from Compustat database and the Center for Research in Security Prices (CRSP) database. We follow the standard procedure in the IPO literature to clean up the sample. As described in Table 1, we remove all penny stocks (offer price less than 5 dollars¹), right issues, unit issues, unit investment issues, depositary issues, closed-end fund trust issues, and REIT issues. We also exclude financial firms (SIC code between 6000 and 6799) and utility firms (SIC code from 4800 to 4999). The final sample consists of 5548 IPOs.

2.2. Empirical evidence on cash shortfalls

We first report the medians of Cash, Cash/Total Assets, and Excess Cash/Total Assets from the pre-IPO year to the 5th year after IPO year for our sample firms in Panel A of Table 2. IPO year is the first fiscal year that ends after IPO. Excess Cash is calculated using the same method as in DeAngelo et al. (2010).² Median IPO proceeds are also reported in Panel A. It seems most IPO firms have below normal cash holdings before IPO but above normal cash holdings after IPO, especially in the first few years after IPO.

Following DeAngelo et al. (2010), we calculate Pro-Forma Cash Ratio (PFCASH) as $(\text{Cash} - \text{IPO Proceeds})/\text{TA}$ to measure the level of cash shortfalls. Higher PFCASH means less cash shortfalls. A negative PFCASH indicates that a firm will run out of cash if no IPO proceeds are received. The medians of PFCASH from the IPO year to the 5th year after IPO year are reported in Panel B of Table 2.

As reported in item 5 of Table 2, the median PFCASH in IPO year is negative and significant at -11.39% , suggesting that a typical IPO firm would have a cash shortfall that equals 11.39% of its total assets in the IPO year if it did not receive any IPO proceeds. In addition, 68.59% of the sample firms would run out of cash if they did not receive IPO proceeds. However, it can be argued that the negative PFCASH may be caused by increase in capital expenditure (CapEx) after IPO and IPO firms may not increase CapEx if they did not receive IPO proceeds. So, we re-calculate the median Pro-Forma Cash/TA assuming that CapEx does not change in the IPO year relative to the pre-IPO year. As reported in item 6 of Table 2, a typical IPO firm would have a cash shortfall of around 7.14% in the IPO year after this adjustment. IPO proceeds also allow IPO firms to increase R&D. Therefore, we re-calculate the median Pro-Forma Cash/TA assuming that both CapEx and R&D do not change in the IPO year. The cash shortfall is still significant in the IPO year after this adjustment (item 7). Celikyurt et al. (2010) find that IPO firms' acquisition activity is fueled by IPO proceeds. Thus, we re-calculate the median Pro-Forma Cash/TA with the additional assumption that there are no M&A activities in the IPO year. The median Pro-Forma Cash/TA is still negative and significant in the IPO year after this adjustment (item 8). IPO firms may also use IPO proceeds to repay debt. After we add debt repayment back, the median Pro-Forma Cash/TA become positive in the IPO year (item 9). However, the literature document that IPO firms frequently issue additional equity soon after IPO (see, for example, Jegadeesh et al., 1993) and the positive Pro-Forma Cash/TA may be the result of the additional cash raised through seasoned equity offering. So, we recalculate Pro-Forma Cash/TA after adding the assumption of no additional equity issuance. After all these adjustments, item 10 (denoted as PFALL) in Panel B shows that a typical IPO firm would still have a cash shortfall that is 6.6% of its total assets in the IPO year if it did not receive any IPO proceeds and more than 63% of IPO firms in our sample would still run out of cash. The results are consistent with the hypothesis that covering the cash shortfalls using IPO proceeds is among the most important motivations for IPOs.

Panel B of Table 2 also reports median cash variables in the 5 years after the IPO year. In the first year after IPO year (Year 1), the median PFCASH is -12.09% and more than 69% of IPO firms would run out of cash if they did not receive any IPO proceeds. After adjusting for CapEx, R&D, M&A, and financing, the median PFALL is -15.18% and 70% of IPO firms have negative Prof Forma Cash/TA ratio. In the next 4 years, PFCASH shows an increasing trend and PFALL also improves after deteriorating in Year 2. However, even in Year 5, more than 61% (59%) of IPO firms would still run out of cash before (after) adjustments. These results suggest persistent cash

¹ The results are similar when using alternative thresholds such as 8 dollars or 10 dollars.

² The Excess Cash/TA equals a firm's actual Cash/TA minus the estimated "normal" Cash/TA. "Normal" Cash/TA is calculated by sorting all industrial firms into nine groups based on size and market to book ratio. Each observation is then allocated to one of nine groups based on size and market to book. Within each of the nine groups, a "normal" Cash/TA ratio is calculated for each two-digit SIC industry as the median ratio among all firms in that industry.

Table 1
Sample Selection Procedure.

| Description | Number of firms after each step |
|--|---------------------------------|
| 1. U.S. IPOs in SDC Global New Issue database during the period of 1980 to 2017 | 13,403 |
| 2. Merge sample with CRSP and requiring firms to be listed in CRSP within 30 days since the IPO issue date | 9286 |
| 3. Sample firms after removing penny stocks (offer price less than 5 dollars) | 8713 |
| 4. Sample firms after removing right issues, unit issues, unit investment issues, depositary issues, closed-end fund trust issues, and REIT issues | 6722 |
| 5. Sample firms after removing financial firms (SIC code between 6000 and 6799) and utility firms (SIC code from 4800 to 4999) | 5713 |
| 6. Sample firms that have data available in Compustat database | 5548 |
| Final Sample | 5548 |

This table summarizes the steps in selecting the IPO sample using data from Thomson Financial Securities Data Corporation (SDC) Global New Issues, Compustat and CRSP databases.

Table 2
Summary of Cash Variables for IPO Year and Subsequent Years.

| Panel A. Median Cash and IPO Proceeds | | | | | | | |
|--|--------------|-----------|-----------|-----------|-----------|-----------|-----------|
| | Pre-IPO Year | IPO year | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| 1. Cash (in millions) | 2.63 | 15.21 | 14.24 | 13.61 | 13.48 | 14.67 | 15.60 |
| | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) |
| 2. Cash/TA | 9.56% | 31.69% | 20.03% | 16.92% | 15.40% | 14.78% | 14.98% |
| | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) |
| 3. Excess Cash/TA | -1.16% | 8.35% | 2.59% | 1.46% | 0.59% | 0.10% | 0.02% |
| | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (0.0025) |
| 4. IPO Proceeds (in millions/ primary only) | | 28.84 | | | | | |
| | | (<0.0001) | | | | | |
| Panel B. Median Pro-Forma Cash | | | | | | | |
| 5 Pro-Forma Cash Ratio (PFCASH) | | -11.39% | -12.09% | -9.90% | -8.58% | -7.48% | -5.40% |
| | | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) |
| [% of item 5<0] | | [68.59%] | [69.85%] | [67.87%] | [66.63%] | [64.97%] | [61.69%] |
| 6 Pro-Forma Cash/TA – no change in CapEx | | -7.14% | -3.97% | 0.34% | 4.28% | 8.40% | 12.82% |
| | | (<0.0001) | (<0.0001) | (0.6066) | (<0.0001) | (<0.0001) | (<0.0001) |
| [% of item 6<0] | | [61.45%] | [55.79%] | [49.59%] | [43.76%] | [38.38%] | [34.86%] |
| 7 Pro-Forma Cash/TA – no change in CapEx and R&D | | -5.30% | -0.10% | 6.27% | 12.15% | 19.37% | 25.66% |
| | | (<0.0001) | (0.8482) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) |
| [% of item 7<0] | | [58.74%] | [50.15%] | [42.16%] | [35.94%] | [30.16%] | [26.44%] |
| 8 Pro-Forma Cash/TA – no change in CapEx and R&D, | | -2.38% | 6.62% | 17.15% | 25.74% | 35.81% | 43.49% |
| no M&A | | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) |
| [% of item 8<0] | | [54.12%] | [41.61%] | [32.33%] | [26.92%] | [22.32%] | [19.41%] |
| 9 Pro-Forma Cash/TA - no change in CapEx and R&D, | | 3.61% | 5.13% | 9.41% | 13.28% | 19.72% | 25.71% |
| no M&A, no change in debt | | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) |
| [% of item 9<0] | | [43.74%] | [44.08%] | [40.59%] | [37.87%] | [35.07%] | [32.41%] |
| 10 Pro-Forma Cash/TA - no change in CapEx and R&D, | | -6.60% | -15.18% | -17.40% | -17.20% | -15.27% | -12.32% |
| no M&A, no change in debt, no equity issuance | | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) |
| (PFALL) | | | | | | | |
| [% of item 10<0] | | [63.54%] | [70.08%] | [69.05%] | [66.04%] | [62.66%] | [59.63%] |
| Panel C. Median Net Cash Flow (NCF) | | | | | | | |
| | Pre-IPO Year | IPO year | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| 11. Median NCF | -0.77% | -3.15% | -6.36% | -4.20% | -2.01% | -0.63% | -0.40% |
| | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (<0.0001) | (0.1192) | (0.3770) |
| [% of item 11<0] | [53.66%] | [57.71%] | [62.39%] | [58.25%] | [54.70%] | [51.29%] | [50.78%] |

This table reports the median values of cash-related variables for IPO firms in our sample. The pro forma cash ratio is calculated as $(\text{Cash} - \text{Offer Price} \times \text{Primary Shares}) / (\text{Total Assets})$. Excess Cash is calculated using the same method as in DeAngelo et al. (2010). From item 6 to item 10, the pro forma cash/TA is calculated with the additional assumptions of no change in capital expenditure, no change in R&D, no mergers & acquisitions (M&A), no change in debt, and no equity issuance. Net cash flow (NCF) is calculated as $(\text{operating cash flow} - \text{capital expenditure}) / (\text{Total assets at IPO year})$. p-values are reported in parentheses.

shortfalls for IPO firms. This is consistent with the prediction of the funding horizon theory that firms use equity issuance to meet persistent cash needs.

2.3. Net cash flow

If IPO cash shortfalls cannot be explained by CapEx, R&D, M&A, and debt reduction, then it may be caused by negative net cash flows (NCF). Following Denis and McKeon (2021), we calculate NCF as $(\text{Operating Cash Flow} - \text{CapEx}) / (\text{Total assets in IPO year})$ for all years and report the results in Panel C of Table 2. In the pre-IPO year, more than 53% of IPO firms have negative NCF and the median is significantly lower than zero. In IPO year, the median NCF decreases to -3.15% and more than 57% of IPO firms do have negative NCF. In Year 1 after IPO year, the median NCF is the lowest at -6.36% and more than 62% of IPO firms have negative NCF. In the next 4 years, NCF improves over time. However, more than 50% of IPO firms still have negative NCF in Year 5. It seems the negative NCF can help explain the persistent cash shortfalls for IPO firms.

Some IPO firms with initial cash shortage may have poor operating performance to begin with. However, it is also possible that initial cash shortage may be followed by turnaround in operating performance for many IPO firms. Using NCF as a measure of operating performance, we regress NCFs in the 5 years after IPO year on PFALL in IPO year and control variables to find out whether initial cash shortage can predict future operating performance. The control variables include Log Age (log of the number of years from a firm's founding year to the IPO issue year), UWR (the average ranking score of all underwriters involved in an IPO),³ VC (venture capital dummy that equals 1 if the IPO firm is backed by venture capital, 0 otherwise), HiTech (industry dummy that equals 1 if the IPO firm is in a hi-tech industry, 0 otherwise), LogMV (Log of market value of equity at the end of the first trading day), LogBM (Log of Book-to-Market Ratio), IR (Initial Return that is calculated as $(\text{closing price in the first trading day} / \text{offer price} - 1)$), as well as Accruals. For fiscal years after 1987, Accruals are calculated as $(\text{income before extraordinary items} - \text{net cash flow from operating activities} + \text{cash flow from extraordinary item and discontinued operations})$. For fiscal years before 1987, Accruals are calculated as $(\text{change in current assets} - \text{change in cash} - \text{change in current liabilities} + \text{change in debt included in current liabilities} + \text{change in income taxes payable} - \text{depreciation and amortization})$. Accruals are scaled by the average of the beginning and year-end total assets. All regressions control for year fixed effects and industry fixed effects. We use clustered standard errors at year level. The regression results are listed in Table 3.

Table 3 shows that the coefficients of PFALL are negative and significant in all the five regressions, suggesting that IPO firms with more cash shortfalls in the IPO year have lower net cash flows in each of the next 5 years. It seems that the initial IPO cash shortage can predict the future operating performance of IPO firms for up to 5 years. Those IPO firms with more initial cash shortage are more likely to have poor future operating performance.

We conduct several robustness checks. First we replace PFALL in IPO year with PFCASH in IPO year. Then we replace NCF with $(\text{Operating Cash Flow}) / (\text{Total Assets in IPO year})$. We also try using Total Assets in the same year instead of the IPO year as denominator for NCF and operating cash flow. The regression results are all similar in the robustness checks.⁴

2.4. Non-IPO firms

IPO firms may not be the only group of firms with significant cash shortfalls. Seasoned firms with similar characteristics may also experience cash shortfalls. To find out whether IPO firms are really different, we select a non-IPO⁵ matching firm from Compustat based on industry and size for each IPO firm in our sample and estimate pro forma cash and NCF for the matching firms. Then we estimate the median Cash/TA ratio, median Pro-Forma Cash/TA with different adjustments, and Net Cash Flow for the non-IPO matching firms. The results are reported in Table 4.

We can compare the results in Table 4 with those in Table 2. The Cash/TA ratio of IPO firms is lower than that of non-IPO matching firms in the pre-IPO year but higher in the IPO year and the next 5 years. When IPO proceeds are excluded, the median Pro-Forma Cash Ratio of IPO firms is significantly lower than the median Cash/TA ratio of non-IPO matching firms in the IPO year as well as the next 5 years. After adjusting for changes in Capex, changes in R&D, M&A, changes in debt, and equity issuance, the median Pro-Forma Cash/TA of the matching firms are positive and significantly higher than those of IPO firms in both the IPO year and the next 5 years. This is consistent with the prediction of the funding horizon theory that IPO firms have significant and persistent cash shortfalls. The median NCF of matching firms is also significantly higher than the median NCF of IPO firms in all years, suggesting that a typical IPO firm has lower operating performance than its seasoned peer.

3. Conclusions

Consistent with the funding horizon theory, we find that most IPO firms would run out of cash in the IPO year if they did not receive any IPO proceeds. The cash shortfalls are persistent in the next 5 years. This is consistent with the funding horizon theory prediction that firms use equity issues to meet persistent cash needs. More than half of IPO firms have negative net cash flows before IPO and in the 5 years after IPO. IPO firms with more initial cash shortfalls have lower future cash flows, suggesting that the initial cash shortfalls

³ The data for founding year and underwriter ranking are collected from Jay Ritter's website at <https://site.warrington.ufl.edu/ritter/ipo-data/>.

⁴ Available upon request

⁵ Defined as firms that are listed in CRSP for more than 5 years.

Table 3
Initial IPO Cash Shortage and NCF in Subsequent Years.

| | NCF Year 1 | NCF Year 2 | NCF Year 3 | NCF Year 4 | NCF Year 5 |
|---------------------|----------------------|-----------------------|---------------------|-----------------------|----------------------|
| PFALL | 0.2762*** [12.53] | 0.2171*** [6.76] | 0.1786*** [5.51] | 0.1634*** [5.31] | 0.1325*** [4.76] |
| LogAge | 0.0445*** [7.44] | 0.0525*** [9.26] | 0.0554*** [5.21] | 0.0570*** [6.20] | 0.0536*** [5.36] |
| UWR | 0.0069** [2.53] | 0.0078* [1.92] | 0.0052 [1.51] | 0.0014 [0.42] | -0.0020 [-0.32] |
| VC | -0.0247** [-2.05] | -0.0381*** [-3.20] | -0.0373* [-1.86] | -0.0584*** [-3.29] | -0.0445** [-2.31] |
| HiTech | 0.0214 [1.55] | -0.0110 [-0.58] | -0.0020 [-0.09] | 0.0491* [2.00] | 0.0696** [2.13] |
| LogMV | 0.0418*** [7.47] | 0.0331*** [3.99] | 0.0347*** [4.02] | 0.0479*** [6.46] | 0.0648*** [5.05] |
| LogBM | 0.0405*** [3.96] | 0.0254*** [2.83] | 0.0236* [1.80] | -0.0017 [-0.12] | 0.0122 [0.60] |
| IR | -0.0130 [-0.74] | -0.0249 [-0.67] | -0.0045 [-0.12] | 0.0030 [0.07] | 0.0172 [0.33] |
| Accruals | 0.0541* [2.01] | 0.0064 [0.20] | -0.0079 [-0.15] | 0.0219 [0.41] | 0.0137 [0.21] |
| Year Fixed | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed | Yes | Yes | Yes | Yes | Yes |
| N | 4023 | 3595 | 3207 | 2848 | 2497 |
| adj. R ² | 0.3164 | 0.2334 | 0.1835 | 0.1884 | 0.1706 |

This table reports the results of regressions using the annual net cash flows (NCF) in the 5 years after IPO year as the dependent variable. IPO year is the first fiscal year that ends after the IPO date. All independent variables are defined in the Appendix and are calculated as of the IPO year. Year fixed effects and industry fixed effects are also included. t-statistics of coefficients are showed in square brackets. PFALL and annual NCF are winsorized at top and bottom 1% level. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

Table 4
Summary of Cash Variables for non-IPO Matching Firms.

| Median Cash/TA for non-IPO matching firms | Pre-IPO Year | IPO year | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 1 Cash/TA | 10.86% (<0.0001) | 11.03% (<0.0001) | 11.20% (<0.0001) | 11.24% (<0.0001) | 11.02% (<0.0001) | 10.63% (<0.0001) | 10.86% (<0.0001) |
| [% <0] | [0.00%] | [0.00%] | [0.00%] | [0.00%] | [0.00%] | [0.00%] | [0.00%] |
| 2 Pro-Forma Cash/TA - no change in CapEx | | 12.46% (<0.0001) | 14.96% (<0.0001) | 16.10% (<0.0001) | 18.17% (<0.0001) | 19.20% (<0.0001) | 20.98% (<0.0001) |
| [% <0] | | [8.85%] | [12.03%] | [14.06%] | [16.05%] | [16.47%] | [17.65%] |
| 3 Pro-Forma Cash/TA - no change in CapEx and R&D | | 12.62% (<0.0001) | 15.74% (<0.0001) | 17.18% (<0.0001) | 20.10% (<0.0001) | 21.82% (<0.0001) | 23.44% (<0.0001) |
| [% <0] | | [9.69%] | [13.69%] | [16.01%] | [18.00%] | [18.36%] | [18.93%] |
| 4 Pro-Forma Cash/TA -no change in CapEx and R&D, no M&A | | 14.74% (<0.0001) | 20.05% (<0.0001) | 24.20% (<0.0001) | 28.37% (<0.0001) | 32.82% (<0.0001) | 36.84% (<0.0001) |
| [% <0] | | [9.01%] | [11.99%] | [13.61%] | [15.47%] | [15.44%] | [16.06%] |
| 5 Pro-Forma Cash/TA - no change in CapEx and R&D, no M&A, no change in debt | | 15.19% (<0.0001) | 16.91% (<0.0001) | 18.90% (<0.0001) | 20.79% (<0.0001) | 22.31% (<0.0001) | 24.03% (<0.0001) |
| [% <0] | | [21.86%] | [24.30%] | [25.71%] | [27.32%] | [26.87%] | [27.12%] |
| 6 Pro-Forma Cash/TA - no change in CapEx and R&D, no M&A, no change in debt, no equity issuance | | 9.98% (<0.0001) | 8.02% (<0.0001) | 7.70% (<0.0001) | 6.46% (<0.0001) | 5.65% (<0.0001) | 6.69% (<0.0001) |
| [% <0] | | [29.51%] | [37.36%] | [40.06%] | [42.98%] | [43.58%] | [44.00%] |
| 7 Median NCF | 1.50% (<0.0001) | 1.25% (0.0126) | 1.56% (0.0008) | 1.48% (0.0006) | 1.50% (<0.0001) | 2.02% (<0.0001) | 1.79% (<0.0001) |
| [% <0] | [44.15%] | [44.92%] | [44.05%] | [44.93%] | [44.67%] | [42.30%] | [43.39%] |

This table reports the median values of cash-related variables for non-IPO matching firms. The pro forma cash ratio is calculated as (Cash – Offer Price*Primary Shares) / (Total Assets). Excess Cash is calculated using the same method as in DeAngelo et al. (2010). From item 6 to item 10, the pro forma cash/TA is calculated with the additional assumptions of no change in capital expenditure, no change in R&D, no mergers & acquisitions (M&A), no change in debt, and no equity issuance. Net cash flow (NCF) is calculated as (operating cash flow – capital expenditure) / (Total assets at IPO year). p-values are reported in parentheses.

may be a good predictor for the operating performance of IPO firms.

Author statement

Lei Liu: Conceptualization, Validation, Data Curation, Writing - Review & Editing
 Gady Jacoby: Methodology, Writing - Review & Editing, Supervision, Funding acquisition
 Xiaoping Song: Methodology, Software, Formal analysis, Investigation
 Steven Xiaofan Zheng: Conceptualization, Writing - Original Draft, Supervision, Funding acquisition

Data Availability

The authors do not have permission to share data.

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Appendix. Variable Definitions

| Variable Names | Variable Definitions |
|----------------|--|
| PFCASH | Pro-Forma Cash Ratio. It is calculated as $(\text{Cash} - \text{Offer Price} \times \text{Primary Shares}) / (\text{Total Assets})$. |
| PFALL | Pro-Forma Cash/(Total Assets). Pro-Forma cash is calculated assuming no change in CapEx and R&D, no M&A, no change in debt, and no equity issuance |
| NCF | Net Cash Flow. It is calculated as $(\text{operating cash flow} - \text{capital expenditure}) / (\text{Total assets in IPO year})$ |
| LogAge | The log of the number of years from a firm's founding year to the IPO issue year. |
| UWR | Underwriter Ranking. It is the average ranking score of all underwriters involved in an IPO. |
| VC | Venture capital backed dummy that equals 1 if the IPO firm is backed by venture capital, 0 otherwise. |
| HiTech | Hi-Tech industry dummy that equals 1 if the IPO firm is in a hi-tech industry, 0 otherwise. |
| LogMV | Log of market equity. Market equity is the market value of the IPO firm at the end of the first trading day |
| LogBM | Log of Book-to-Market Ratio. Book equity is calculated as: shareholders' equity – preferred stock value + balance sheet deferred taxes – FASB 106 adjustment. The preferred stock value is proxied by its redemption, liquidating, or carrying value, in that order if available. The shareholders' equity is measure by 1) stakeholders' equity 2) total common equity – preferred stock par value 3) total asset – total liability + minority interest, in that order if available. |
| IR | Initial Return. It is the return in the first trading day and is calculated as $(\text{closing price in the first trading day} / \text{offer price} - 1)$. |
| Accruals | For fiscal years after 1987, Accruals are calculated as $(\text{income before extraordinary items} - \text{net cash flow from operating activities} + \text{cash flow from extraordinary item and discontinued operations})$. For fiscal years before 1987, Accruals are calculated as $(\text{change in current assets} - \text{change in cash} - \text{change in current liabilities} + \text{change in debt included in current liabilities} + \text{change in income taxes payable} - \text{depreciation and amortization})$. Accruals are scaled by the average of the beginning and year-end total assets. |
| Tobin's Q | Calculated as $(\text{Market value of equity} + \text{Total Assets} - \text{Book Value of Equity}) / (\text{Total Assets})$. |
| P/E | Calculated as $(\text{Market value of equity}) / (\text{Net Income})$ |
| Logsale | Log of sales |
| BHRs | Buy-and-hold returns adjusted by market returns or size-and-book-to-market matching benchmark returns |

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