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IPOs and SEOs, real investments, and market timing: Emerging market evidence

Kavita Wadhwa, V. Nagi Reddy, Abhinav Goyal

Abstract

This paper uses market-to-book ratio decomposition to examine whether firms that issue equity through initial public offerings or seasoned equity offerings exploit mispricing because of investor enthusiasm or to finance growth opportunities. We find strong evidence that, on average, firms do not issue mispriced stocks to exploit investors but, rather, to finance their investment opportunities in the form of real assets, inventory, and capital expenses. Firms that issue overvalued stocks with the view to increase their cash holdings experience poor long-run performance. Overall, our results show that stock mispricing drives equity offerings through IPOs and SEOs. Nonetheless, high transparency and balanced regulation in the marketplace deter issuing firms from investing their proceeds in non–value-creating activities. This evidence is robust to alternative measures of valuation and long-run performance.

JEL classification: G31, G32

Keywords: IPOs, SEOs, market-timing, investment funding, market-to-book ratio, residual income model, long-run performance.

1. Introduction

A large body of literature documents that equity offerings through initial public offerings (IPOs) or seasoned equity offerings (SEOs) are among the most important events in a corporation's life. Although the decision to go public or to issue equity after-listing could be driven by different factors, both offerings are motivated by the need to finance growth opportunities or, in some instances, to exploit temporary overvaluation in the marketplace.[1] For instance, on the one hand, for IPOs, overvaluation rises because firms are private, disclose minimum information on their performance (usually only for three-year period), are not well-known to the market, and are likely to list during a hot market period (Demers and Joos, 2007). On the other hand, SEO firms issue equity to either finance growth opportunities or invest in non–value-creating activities. Hence, the central focus of this paper is to disentangle whether equity offerings are due to mispricing or the capital required to finance growth opportunities.

Traditionally, the market-to-book ratio (*M/B*) is used to examine overvalued stocks or growth potential. Hence, a higher *M/B* could be due to both overvaluation and growth opportunities. Overvaluations have different implications to investors compared to growth opportunities. The former reflect investor exploitation, while the latter reflects value creation for the investors. We investigate whether equity offerings are due to overvaluation or growth opportunities by decomposing the *M/B* into two components: the market-to-value ratio (*M/V*), to measure the overvaluation component, and the value-to-book ratio (*V/B*), to measure growth opportunity. To the best of our knowledge, little is known about how overvaluation due to timing or growth opportunity influences firm performance, especially outside the U.S.[2]

[1] We are grateful to the referee for pointing out the different motives for initial listings and SEOs.

[2] We are only aware of two studies that examine the mispricing of IPOs and SEOs. The first study is by Kim and Weisbach (2008), who examine the motivations and mispricing for IPOs and SEOs across 38 countries by using the *M/B* instead of *M/B* decomposition, which distinguishes between the effects of mispricing and growth opportunities related to equity offerings. The second study is by Bo et al. (2011), who examine the timing of SEOs in China using the *M/B* rather than the decomposed *M/B*, similar to Kim and Weisbach (2008).

To address this question, we focus on the Indian capital market for at least four reasons: First is the availability of detailed public information relative to other developed and developing markets and the presence of regulatory bodies that encourage transparency for equity offering firms. For instance, under the Indian regulatory setup, the subscriber's application information during IPO book building needs to be publicly available, by investor type, institutional or non-institutional (Clarke et al., 2016). Second, the market is the oldest capital market among emerging countries, dating back to 1875, and has experienced a number of incidents related to misvaluation (Deb and Marisetty, 2010; Clarke et al., 2016). Prior to 1992, the Indian IPO market was heavily regulated by the Controller of Capital Issues. Following a balance of payment crisis in 1991, a number of structural reforms were implemented that greatly deregulated a number of economic activities, resulting in the formation of regulatory bodies such as the Committee on the Financial Services and the Securities and Exchange Board of India, or SEBI (Gromley, 2010).[3] Third, the market is less liquid and creates a burden on retail investors who are interested in investing in IPOs and who could be subject to high mispricing (i.e., overvaluation). Lastly, unlike other developed or emerging markets, when planning IPOs in India, firms must undergo a compulsory grading process by the regulators (Deb and Marisetty, 2010). The grading process is aimed at providing potential investors with an independent, reliable, and consistent assessment of the fundamentals of the IPO firm and its overall governance level (Khurshed et al., 2014). These features provide a unique setting for assessing the extent to which the quality of information transparency and the role played by the regulator mitigate the impact of mispricing related to equity offerings through either IPOs or SEOs.

Using *M/B* decomposition on a sample of 1,856 IPOs and 796 SEOs, we find that, for IPOs, the overvaluation is approximately 14% lower than the 50% overvaluation reported by

[3] SEBI is the regulator of securities market in India, similar to the U.S. Securities Exchange Commission.

Purnanandam and Swaminathan (2004) for U.S. IPOs. Further, we find strong evidence that IPO proceeds are used to finance value-creating activities, such as real assets, inventory, and capital expenses. This observation is based on our analysis, which shows an increase in firm investments after equity issues. We find only a few cases in which IPO proceeds are used to increase cash holdings instead of investments. Similarly, we find firms use SEO proceeds to enhance firm-level investments, such as total assets, inventory, research and development (R&D), and capital expenditures. The evidence contrasts with previous findings on the U.S. market (Hertzel and Li, 2010), which show that firms use the proceeds to increase cash holding or reduce long-term debt. In the long run, we find underperformance for both high-*M/V* (above the median) and low-*M/V* (below the median) overvalued IPOs. This finding is consistent with the fact that firms issue overvalued stocks regardless of the intended use of the proceeds and investors are typically overoptimistic about equity offerings in India. Hence, they become disappointed as price information becomes public in the long run. Despite long-run underperformance, we find that highly overvalued IPOs experience a steeper decline in performance than less overvalued IPOs. We find similar evidence of underperformance among SEOs.

This study makes two important contributions to the IPO and SEO literature. First, it shows that overvaluation drives equity offerings even in a market that encourages high information transparency and disclosure. Nonetheless, the proceeds from the offerings in such a market are used to finance real assets, inventory, and capital expenses. These findings are important for both institutional and individual investors, who typically invest in IPO or SEO offerings. Second, previous studies use the *M/B* as a proxy for growth opportunity and overvaluation. We document that overvaluation drives equity offerings but not necessarily growth opportunities. Hence, in the context of equity offerings (IPOs or SEOs), the *M/B* is a good proxy for overvaluation and a biased measure of growth opportunity.

The remainder of the paper is organized as follows: Section 2 reviews the relevant literature, both international and within the Indian setup, along with empirical predictions. Section 3 describes our data, variables, and methodology. Section 4 discusses the empirical results and Section 5 presents a robustness check of our findings. Finally, Section 6 presents a summary and concluding remarks.

2. Literature review and background of equity offerings in India

2.1 Prior evidence of the misvaluation of public equity offerings

Purnanandam and Swaminathan's (2004) seminal paper investigates the misvaluation of IPO firms. For a sample of 2,288 U.S. IPOs from 1980 to 1997, they find significant overvaluation, ranging from 14% to 50%, using the ratio of price to sales (*P/S*); the ratio of price to earnings before interest, taxes, depreciation, and amortization, or EBITDA) (*P/EBITDA*), and price-to-earnings (*P/E*) multiples. Each IPO firm is matched with a non-IPO firm, using industry, size, and profitability. The authors interpret the positive (negative) relation between overvaluation and first-day (long-run ex post) IPO returns as the manager's ability to time the market by selling overvalued equity. Kim and Weisbach (2008) explore the motivation of firms issuing equity, using a comprehensive pooled sample of more than 30,000 public offerings across 38 economies internationally. They find that firms issue equity to time the market and finance investments. They also find that undervalued firms use the proceeds from listings for investment purposes, whereas overvalued listings tend to time the market by increasing their cash holdings. Chemmanur and Krishnan (2012) study overvaluation using a sample of 3,737 U.S. IPOs in 1980s and 1990s. They find that IPOs backed by high-reputation underwriters obtain the highest possible valuation and therefore their equity prices are farther from their true intrinsic value.

Considering that a higher *M/B* has a twofold interpretation—higher misvaluation and significant growth opportunities—Elliott et al. (2008) decompose the *M/B* to analyze the

impact of both on equity and debt issuance. Following the *M/B* decomposition of Rhodes-Kropf et al. (2005), Elliott et al. (2008) estimate the intrinsic value of the stocks using a residual income model for 9,172 U.S. securities issued between 1980 and 1999. Their findings indicate a higher incidence of misvaluation for equity issuances when firms prefer equity over debt. Hertzel and Li (2010) show that SEO firms have higher levels of mispricing and growth components than non-issuing firms. The authors find evidence that managers issue equity to time the market to reduce debt and accumulate cash, leading to poor post-issue stock returns. In the presence of ample firm-level growth opportunities, funds from the listings are used to accumulate real assets.

During favorable market conditions, when external financing costs are low, a firm could time the market and issue equity, even when there is no immediate need for external funds to hoard cash for a rainy day at a considerable price of near- to long-term stock underperformance. DeAngelo et al. (2010) postulate market timing and the corporate lifecycle as a tentative rationale for SEOs, with stronger lifecycle effects. Using the approach of Rhodes-Kropf et al. (2005), they document that about 81% of firms primarily issue overvalued SEOs to fulfill their near-term cash requirements. Bo et al. (2011) study SEO activity among 1,081 Chinese firms and find the behavioral view of market timing explains post-issue stock return underperformance among Chinese firms. Overall, previous studies document that mispricing at the firm level determines long-run performance after equity issuance.

2.2 Public equity offerings in India

Despite the number of studies that examine the development of stock markets, investor (both institutional and retail) behavior, transparency, book building, and grading, among others, none study has exclusively examined the issues regarding the misvaluation of IPOs and SEOs in emerging markets, including India. Marisetty and Subrahmanyam (2010)

document the effect of group affiliation on the initial performance of IPOs and lend support to the *tunneling* hypothesis, wherein group firms experience higher levels of underpricing compared to standalone firms. Deb and Marisetty (2010) test the relevance of the IPO grading mechanism. They observe IPO grading has a positive effect on reducing underpricing and market risk and in increasing demand among retail investors and liquidity, thus contributing to market welfare. Bubna and Prabhala (2011) study the role of underwriters on the allocation, bidding, and underpricing of offerings before and after book-building regimes. Their empirical evidence suggests that underwriters can use their allocation powers extensively by assisting in pre-market price discovery and lowering underpricing.

A priori, in emerging markets, including India, herding is common among retail investors. The participation of retail investors is heavily influenced by the participation of large and better-informed institutional investors, who enhance the IPO price (Neupane and Poshakwale, 2012). Surprisingly, prior studies on Indian IPO performance post issue (e.g., Deb and Marisetty, 2010; Marisetty and Subrahmanyam, 2010; Bubna and Prabhala, 2011) do not examine long-run stock performance. This is important specifically for institutional investors, who tend to hold stocks for the long term.

2.3. Relative value predictions

The discussion above cites two strands of literature: The first is related to the misvaluation of equities at the time of listing and the availability of investment opportunities. The second focuses on IPO overpricing in India but provides a weak theoretical justification of why IPOs are overpriced. This paper examines equity issues through IPOs and SEOs using *M/B* decomposition to unravel the related effect of timing and growth opportunities.

Typically, a high *M/B* is due to (i) overvaluation and (ii) greater growth opportunities. As Kim and Weisbach (2008) point out, firms could issue equity to take advantage of mispricing or to channel wealth from new shareholders to existing ones. Alternatively, they

could issue equity to finance their investments or to reap the benefits of overvalued equity to increase liquidity for firm and stakeholders. Most empirical studies use the *M/B* as a proxy for either growth or mispricing; however, such a measure could be misleading without further adjustments and the results should be interpreted with caution.

3. Data description and methodology

3.1 Data description

Our initial sample includes all IPOs and SEOs listed on the Bombay Stock Exchange (BSE) and the National Stock Exchange from 1991 (the year of financial deregulation) to 2012. The financial and market data on IPOs and SEOs are collected from the Prime Database and the Securities Data Corporation database. These databases have been used in a number of previous studies (Marisetty and Subrahmanyam, 2010; Bubna and Prabhala, 2011; Gopalan and Gromley, 2013) and are widely acknowledged as the most reliable and comprehensive source of data for equity offerings in India.

Our sample differs substantially from the sample of IPOs and SEOs of Kim and Weisbach (2008), an unfiltered sample of 3,580 IPOs and 232 SEOs in India out of a total sample of 17,226 IPOs and 13,142 SEOs.[4] We obtain an initial, unfiltered sample of 3,995 IPOs and 1,700 SEOs between 1991 and 2012 from the Prime database. We exclude 822 IPOs and 391 SEOs due to data unavailability for the control variables required in our bivariate and multivariate analysis. Next, following Kim and Weisbach and Neupane and Poshakwale (2012), we exclude all utilities, including telecoms (194 IPOs and 84 SEOs), financial institutes and investment trusts (699 IPOs and 108 SEOs), and privatizations of state-owned enterprises (103 IPOs and 34 SEOs). This filter leaves us with a sample of 2,177 IPOs and 1,083 SEOs. Further, we eliminate outliers by winsorizing our variables at the 1% and 99% levels.

[4] For the number of IPOs listed in India relative to other markets in Asia, see Table A1 of Kim and Weisbach (2008).

Next, unlike Kim and Weisbach (2008), we split the *M/B* into *M/V* and *V/B* components, using three distinct pricing multiples, similar to the approach of Rhodes-Kropf et al. (2005). This method requires a unique one-to-one matching of IPO with non-IPO firms, leaving us with 1,856 IPOs in our final sample.[5] Following Lyon et al. (1999), we exclude SEOs issued by the same firm within three years of the previous SEO offering. Lyon et al. (1999) argue that the overlapping of event windows leads to cross-sectional correlation and biases the test statistics. This reduces the sample of SEO firms from 1,083 to 852. Lastly, since the estimation of the terminal value of the SEOs using Ohlson's (1990) residual income model requires two consecutive years of accounting data around the time of the seasoned offering, so we finally end up with 796 SEO observations in our dataset.[6]

The variables in our *M/B* decomposition analysis are defined as follows: *Mispricing*, or the *misvaluation* of a firm's equity, is captured by the *M/V*, where *M* is the market price of equity and *V* is the intrinsic value of the stock.[7] The variable *Growth opportunities* for a firm is measured by the *V/B*, where *V* is the intrinsic value of equity and *B* is the book value of the equity; *Primary capital* is the total proceeds in equity issuance and is measured as a product of the offer price and the number of shares issued for the equity offering (IPO or SEO); *Other sources of capital* are measured as the difference between the sum of funds from the firm's operating, financing, and investment activities and primary capital; *Size* is calculated as the natural logarithm of the firm's total assets. To measure the variable *use of proceeds on investment activities*, we examine annual changes in capital expenditures, R&D, inventory procurement, and total assets after equity issuance. Finally, to investigate the variable *use of*

[5] The Appendix A1 summarizes the differences in mean characteristics between IPO and non–IPO matched firms. The matching is one to one for each year of listing. The differences in firm characteristics between IPO firms and the matched sample are not significant at any conventional level.

[6] Since Kim and Weisbach (2008) use a pooled sample across all countries, the final sample of Indian IPOs or SEOs is unclear. Nonetheless, in their multivariate analysis, the sample of IPOs was reduced by approximately 78%, while that for SEOs was reduced by 47%. For more details on the number of observations in the multivariate results, see Tables 3 and 4 of Kim and Weisbach (2008). Presumably, the samples of IPOs and SEOs in India are far smaller than the unfiltered samples of 3,580 and 232 for IPOs and SEOs, respectively.

[7] The calculation of the fundamental or intrinsic value for both IPOs and SEOs is detailed in Section 3.2.

proceeds on other activities, which includes market timing, we measure changes in cash holdings, and level of debt reduction post equity issue.

3.2 Research methodology

In this section, we discuss our methodology to examine equity misvaluation. We follow the methodology developed by Rhodes-Kropf et al. (2005) to decompose *M/B* into two components: the mispricing component (*M/V*) and the growth component (*V/B*):

$$\frac{M}{B} = \frac{M}{V} \times \frac{V}{B} \quad (1)$$

Where, *M* is the offer price at which the IPO/SEO is issued, *B* is the book value of the share at the close of the month prior to offer date and *V* is the fundamental value of the stock. Theoretically, if the equity is correctly priced, *M/B* ratio should be equal to one suggesting that market value equals the fundamental value of the listing. *M/V* greater (lesser) than one indicates that the firm is overvalued (undervalued) while *V/B* ratio greater than one simply means growth opportunities in near future (Elliot et al., 2008). For the sake of empirical consistency, all the variables *i.e., M*, *B* and *V* are considered at time zero when the equity is issued.[8] Relevant and correct estimation of the intrinsic value i.e., *V* is the main variable in this paper and hence we use residual income model to calculate the intrinsic value of equity for SEO and IPO firms.[9] For IPO firms, we also follow the Purnanandam and Swaminathan (2004) approach to compute the fair value of IPOs using the price multiples of industry peers.

3.2.1 Estimation of *M/V* and *V/B* for IPOs

Following Purnanandam and Swaminathan's (2004) method of computing the intrinsic value of newly listed firms, we use three price multiples of non-IPO firms, namely,

[8] For SEO firms, *M* is the stock price at the end of the month prior to the equity issuance. For IPO firms, *M* is the offer price, since there is no stock price prior to the IPO listing.

[9] Ohlson's (1990) residual income model is identical to the dividend discount model commonly used in the determination of the value of equity. It is the standard method for calculating the fair value of equity and has been used in the literature to study either instances of overvaluation in mergers and acquisitions (e.g., Rhodes-Kropf et al., 2005) or mispricing in cases of IPO issuance (Chemmanur and Krishnan, 2012) or SEO issuance (e.g., Elliot et al., 2008; Kim and Weisbach, 2008; Hertzel and Li, 2010).

P/S, *P/EBITDA*, and *P/E*. Each of these price multiples divided by the respective price multiple of the non-IPO matched firm yields the *P/V* of the IPO firm.[10] We obtain three *P/V* ratios on the basis of three multiples that are Sales, EBITDA and Earnings respectively. We compute *P/V* and *M/V* ratio as follow:

$$\left(\frac{\text{Price}}{\text{Value}}\right)_{\text{Sales}} = \left(\frac{\text{Price}}{\text{Sales}}\right)_{\text{IPO}} \Big/ \left(\frac{\text{Price}}{\text{Sales}}\right)_{\text{Match}} \tag{2}$$

$$\left(\frac{\text{Price}}{\text{Value}}\right)_{\text{EBITDA}} = \left(\frac{\text{Price}}{\text{EBITDA}}\right)_{\text{IPO}} \Big/ \left(\frac{\text{Price}}{\text{EBITDA}}\right)_{\text{Match}} \tag{3}$$

$$\left(\frac{\text{Price}}{\text{Value}}\right)_{\text{Earnings}} = \left(\frac{\text{Price}}{\text{Earnings}}\right)_{\text{IPO}} \Big/ \left(\frac{\text{Price}}{\text{Earnings}}\right)_{\text{Match}} \tag{4}$$

We compute the *V/B* of IPO firms by dividing *P/B* estimated from these equations. Estimation of the optimum *V/B* of IPO firms is the key novelty of our study. To the best of our knowledge, this is the first study that to estimate the fair value of an IPO firm and examine whether the equity offerings at the IPO level are due to mispricing or growth opportunities. This method is used to compute optimum *V/B* control for industry and growth at the firm level. Therefore, we attempt to fill an important gap in the literature by simultaneously testing the effect of timing and investment opportunities. This gives us three *V/B* values based on three price multiples, as follows:

$$\left(\frac{\text{Value}}{\text{Book}}\right)_{\text{Sales}} = \left(\frac{\text{Price}}{\text{Book}}\right) \Big/ \left(\frac{\text{Price}}{\text{Value}}\right)_{\text{Sales}} \tag{5}$$

$$\left(\frac{\text{Value}}{\text{Book}}\right)_{\text{EBITDA}} = \left(\frac{\text{Price}}{\text{Book}}\right) \Big/ \left(\frac{\text{Price}}{\text{Value}}\right)_{\text{EBITDA}} \tag{6}$$

[10] Here, we treat *P* and *M* as analogous to each other, since they refer to the same variable, that is, the IPO offer price or the market value of the listed stock.

$$\left(\frac{\text{Vlaue}}{\text{Book}}\right)_{\text{Earnings}} = \left(\frac{\text{Price}}{\text{Book}}\right) \Big/ \left(\frac{\text{Price}}{\text{Value}}\right)_{\text{Earnings}} \tag{7}$$

Where *Price* represents the IPO offer price, *Book* is the book value of share at the end of the month prior to the offer date, and the denominators are obtained from Eqs. (2) to (4), respectively.

3.2.2 Estimation of *M/V* and *V/B* for SEOs

We use Ohlson's (1990) residual income model to calculate the fundamental value of equity for firms issuing SEOs. In the residual income model, the fair value of equity is the sum of the book value of equity, the present value of expected future abnormal earnings, and a terminal value. Abnormal earnings are earnings in excess of normal returns required by shareholders and the terminal value measures long-term growth opportunities. The residual income model for the computation of fair value is presented by Elliot et al. (2008) and Chemmanur and Krishnan (2012).[11] We specifically estimate the following model:

$$V_0 = B_0 + \sum \left[\left(E_0 \left[X_t - r \times B_{t-1} \right] \right) / (1+r)^t \right] + \frac{TV}{r(1+r)^T} \tag{8}$$

where V_0 is the fair value of equity at time 0;[12] B_0 is the book value of equity at time 0; *T* is total time, which is two years;[13] *r* is the cost of equity (detailed below); $E_0(X_t)$ is expected future earnings for year *t* at time 0 proxied by earnings before interest and tax (EBIT); and *TV* is the terminal value of equity, given as

$$TV = \frac{E_0 \left[\left(X_T - r \times B_{T-1} \right) + \left(X_{T+1} - r \times B_T \right) \right]}{2} \tag{9}$$

[11] Chemmanur and Krishnan (2012) use Ohlson's (1990) residual income model as a robustness check to compute the fair value of IPO firms. Elliott et al. (2008) use the same model to compute the fair value of SEO firms.

[12] For SEO valuation, time 0 in the residual income model is the fiscal year-end preceding the equity issuance.

[13] Since the estimation of fair value for SEOs requires two years of post-listing accounting data, we include SEO firms only up to 2011.

As in Eq. (8), the monthly cost of equity, *r*, is estimated using a single-factor model for each firm in our sample:[14]

$$R_{it} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + \varepsilon_{it} \quad (10)$$

where R_{it} is the return on stock *i* for month *t*; R_{ft} is the risk-free rate, which is the 91-day Treasury bill rate at the end of month *t*; and R_{mt} is the monthly market return, which is the value-weighted monthly return of the CNX Nifty Index.[15] Applying the standard approach, we run rolling monthly regressions for the past 36 months' stock returns. The variable β_i, estimated in Eq. (10), is used to calculate the monthly cost of equity (r_i) for firm *i*, using a single-factor model:

$$E(r_i) = R_f + \hat{\beta}_i (E[R_m] - R_f) \quad (11)$$

3.2.3 Models for testing empirical predictions

After calculating the fair value V_0, the next step is to estimate the mispricing component *M/V* and the growth component *V/B* for all firms at the time of offer. We use two-pair test statistics to examine if the *M/V* and *V/B* values of IPO/SEO firms are significantly greater than one. We are interested in testing if issuing firms are overvalued, have growth opportunities, or both. Next, in the vein of Hertzel and Li (2010), we analyze the impact of misvaluation and growth components on the use of the actual proceeds of equity listings, controlling for primary capital raised in equity issuance, other sources of internally generated funds, and size, with the following equation:

$$\begin{aligned} Y_{it} = {} & \alpha + \beta_1 (M/V)_i + \beta_2 (V/B)_i + \beta_3 \mathrm{Ln}\left[\left(\frac{PC_i}{TA_{i0}}\right) + 1\right] + \beta_4 \mathrm{Ln}\left[\left(\frac{OSC_i}{TA_{i0}}\right) + 1\right] \\ & + \beta_5 \mathrm{Ln}[TA_{i0}] + D_T + D_I + \varepsilon_i \end{aligned} \quad (12)$$

[14] Note that the estimation of the fair values is different for IPOs than for SEOs. We use a price multiple approach for IPO valuation and the discounted cash flow method for SEOs.

[15] The CNX Nifty Index consists of the 50 largest firms in terms of market capitalization, thereby representing about 75% of the total market capitalization of all listed firms in India.

where $Y_{it} = ((S_{it} - S_{i0})/TA_{i0})$ for inventory or cash or total assets S_{it} for firm i for year t = 1, …, 4, with $Y_{it} = (\sum_{j=1}^{4} S_{ij}/\mathrm{TA_{i0}})$ for capital or R&D expenses or long-term debt reduction S_{ij} for firm i and year j = 1, …, 4. We run six regressions where the dependent variable is the change in the six accounting variables cash, inventory, total assets, R&D, capital expenditure, and reduction in long-term debt, measured over the four years +1, +2, +3, and +4 after issue years. PC_i is the primary capital raised (*i.e.*: product of offer price and number of shares issued) for the i^{th} firm, OSC_i is the other sources of capital (*i.e.*: the difference between total funds and primary capital) for the i^{th} firm. TA_{i0} is the total assets for i^{th} firm at time zero and D_T and D_I are year and industry fixed effect dummies respectively.

Lastly, we analyze the long-run performance of issuing firms by constructing portfolio of high and low *M/V* and high and low *V/B* components using calendar-time approach. In order to examine the long-run performance of the IPOs/SEOs, we use calendar-time factor regression from 1991 to 2012. We form equally (and value) weighted portfolios of firms that issued IPOs/SEOs in the three years after issuance. Therefore, we drop listing after 2009 from our sample. Long-run performance is examined using Carhart's (1997) four-factor model:

$$\mathrm{R_{pt}} - \mathrm{R_{ft}} = \alpha_{\mathrm{i}} + \beta_1(\mathrm{R_{mt}} - \mathrm{R_{ft}}) + \beta_2 \mathrm{SMB_t} + \beta_3 \mathrm{HML_t} + \beta_4 \mathrm{MOM_t} + \varepsilon_{\mathrm{it}} \qquad (13)$$

where R_{pt} is the monthly portfolio return calculated for month t and R_{ft} is the risk-free rate;[16] $(R_{mt} - R_{ft})$ is the market risk premium, where R_{mt} is the monthly value-weighted market returns of the CNX Nifty Index; SMB_t is the difference between monthly returns on portfolios of small stocks and large stocks; and HML_t is the difference between the monthly returns of high and low book-to-market stock portfolios. The fourth factor, added by Carhart

[16] We use 91-day treasury-bill rate as a proxy for risk-free rate.

(1997), is MOM_t, the momentum factor,[17] which is the difference between the returns on portfolios of high-momentum stocks (with high past returns) and low-momentum stocks (with low past returns). The term α is the intercept and a measure of abnormal performance.[18] We follow the standard factor construction procedure for SMB_t, HML_t, and MOM_t as outlined by Fama and French (1993) and Carhart (1997).

4. Empirical analysis

This section discusses the main findings of the study. Section 4.1 reports the estimates of yearly average and median *M/B* values and decomposes the annual median *M/B* into overpricing (*M/V*) and growth opportunity (*V/B*) components. Section 4.2 explores the actual use of the proceeds raised from equity listings. Long-run performance results are discussed in Section 4.3.

4.1 Evidence of misvaluation and growth opportunities

Table 1 shows that, during 1991–2012, two-thirds (1,237 IPOs) of new listings took place in the mid-1990s (1994–1997). This is due to a boom period for Indian IPOs that was largely driven by the opening up of the Indian economy (Khurshed et al., 2014). Following several infamous bogus IPOs,[19] SEBI decided to adopt more stringent listing requirements and the IPO market subsequently dried up until 2005. Except for government companies, which was part of the government's privatization initiative, this period witnessed about 8% of the total listings in our sample period, with the majority of 63 IPOs in 2001. A slump period followed the Asian financial crisis and the dot-com collapse in the global capital markets (Khurshed et al., 2014). Finally, with the implementation of the IPO grading system (Deb and Marisetty, 2010), the IPO market gained momentum in the late 2000s and this period (2006–2012) contributes about 20% (377 IPOs) of new listings in our sample.

[17] Momentum is computed on the basis of previous twelve-month monthly returns.
[18] α, also known as Jensen's Alpha is the measure for abnormal performance. Here significant negative, zero and positive α values refer to negative, none and positive abnormal performances respectively.
[19] Please refer Gopalan and Gromley (2013) and Deb and Marisetty (2010) for detailed list of fraudulent and bogus listings during 1990s in India.

Tables 1 also present the annual cross-sectional distribution of the median and mean *M/B* for Indian IPOs from 1991 to 2012. The median (average) *M/B* for the entire sample is 1.03 (3.92). These results show that the *M/B* value of IPOs is more than one, which indicates overpricing, growth opportunities, or both.

[Please insert Table 1 about here]

Table 2 presents the yearly cross-sectional distribution of the median *M/B* of IPO firms divided by *M/V* (Panel A of Table 2) and *V/B* (Panel B of Table 2), using three price multiples—*P/S*, *P/EBITDA*, and *P/E*—to authenticate the presence of overpricing and growth options for newly listed firms.[20] Panel A of Table 2 shows that the median *M/V* value for all three multiples is significantly greater than one, with the *P/S* multiple exhibiting median overpricing of about 31% during our sample period. Except for during the early 1990s, the median *M/V* values of IPO firms are consistently high and significant for most of the sample period, ranging between eight (for the *P/E* multiple) and 14 (for the *P/S* multiple) years. Moreover, the median *M/V* value across all three pricing multiples for the full sample is significantly greater than one. This result shows that, in almost all the years and on average, IPOs are generally overvalued, leading to investor expropriation during the time of listing and exploitation though issuing IPOs.

Panel B of Table 2 reports the yearly cross-sectional distribution of the median *V/B* value of IPO firms based on the three price multiples. It is clear from the table that the *V/B* value of IPOs based on the *P/S* multiple is significantly greater than one in four years but less than one in eight years. The figures do not vary substantially when we consider *V/B* from the perspective of the *P/EBITDA* multiple. Table 2 shows that the *V/B* values for all three multiples are significantly higher than one, mainly in the early 1990s, until 1995, which was a period of financial easing in India, thereby offering firms expansion possibilities, leading to

[20] Qualitatively similar results hold using the mean value of *M/V* and *V/B* rations for IPOs. The results are not reported here due to brevity but available from the authors upon request.

higher demand for capital. Finally, we obtain mixed results when we investigate the full sample. In a nutshell, *V/B* is significantly less than one for the *P/S* multiple (median = 0.77) and almost one for the *P/EBITDA* multiple (median = 0.99). Overall, the results show periods of high and low valuation during the sample periods.

[Please insert Table 2 about here]

Table 3 presents the univariate results of mispricing and growth opportunities for SEO firms. The table presents the cross-sectional distribution of the median[21] *M/B*, *M/V*, and *V/B* for 796 SEOs between 1991 and 2011.[22] The sample of SEO firms is similar to that of IPOs and both are subject to the same level of scrutiny and regulation. Since the focus of our study is to investigate misvaluation, studying only the IPO sample would provide an incomplete overview. Hence, we study overvaluation in the context of SEOs to provide a full picture of misvaluation across the two classes of equity issues. Although the motivations behind the decision to go public and issue new stocks differ, the two methods of raising capital are both subject to misvaluation, motivating our choice to assess misvaluation for the two sub-groups.

It is evident from Panel A of Table 3 that, in India, the seasoned equity market has only picked up in the last decade (since 2005), with more than half of the total SEO activity (417 SEOs) taking place during the time of the sub-prime financial crisis (2008–2010), when debt was either expensive or difficult to procure. The values for *M/B* (median = 1.44) and *M/V* (median = 1.46) for the full sample period are significantly greater than one and almost one for *V/B* (median = 0.96). When *M/B* is split into *M/V* (Panel B, Table 3) and *V/B* (Panel C, Table 3), the median *M/V* is significantly greater (lesser) than one in six (one) years and the median *V/B* is significantly greater (lesser) than one in seven (one) years. Overall, our

[21] Qualitatively similar results hold when we use the mean values of *M/V* and *V/B* for SEOs. The results are not reported in detail here but are available from the authors upon request.

[22] For the SEO sample, we stop at 2011 because of the terminal value and momentum calculations, which require the previous 12 monthly returns.

results show that SEO is associated with both market timing and raising cash to finance growth opportunities.

[Please insert Table 3 about here]

4.2 Issuance proceeds: Liquidity versus growth opportunities

Loughran and Ritter (1997) document that SEO firms use issuance proceeds to increase their investment levels, while Kim and Weisbach (2008) hypothesize that investment financing is the primary motive behind initiating an IPO. We intend to investigate the difference in the post-issuance investment behavior of firms issuing equity. If equity issuance is motivated by stock overvaluation, we should observe an increase in cash holdings and/or a reduction in debt levels after the listing. Nonetheless, if equity is raised to finance investment requirements, we should observe an increase in investment levels (e.g., total assets, capital expenditure, inventory, and R&D) in the post-issuance period. With this backdrop, in this section we examine the actual use of listing proceeds by investigating the relation between pre-issue mispricing (*M/V*) and growth (*V/B*) components up to four years of post-listing investment levels, debt-reduction and change in cash-holdings.

We use regression analysis similar to Kim and Weisbach (2008) and Hertzel and Li (2010) to examine the relation between post-issue use of equity proceeds and pre-issue mispricing and growth component for IPO and SEO firms. In order to investigate the use of equity proceeds on different activities, we classify six accounting parameters into two sets of tasks – capitalize on equity overvaluation (cash- holdings and debt reduction) or utilizing the proceeds to increase investment levels (e.g., total assets, R&D expenses, inventory levels, and capital expenditures). We regress the changes in all six accounting variables on the mispricing and growth components of the pre-issue *M/B* using Eq. (12), controlling for firm-level factors. Our approach is similar to that of Kim and Weisbach (2008) and Hertzel and Li (2010), except for the decomposition of *M/B* into growth and mispricing.

Table 4 presents the regression results for up to four years with respect to the accounting variables across three distinct multiples (*P/S, P/EBITDA,* and *P/E*) used to compute the fundamental value of the IPO firms. Panels A, B, and D clearly show that annual changes in total assets (*P/EBITDA* and *P/E* multiples), inventory levels (*P/S*, *P/EBITDA*, and *P/E* multiples), and capital expenses (*P/EBITDA* and *P/E* multiples) are positively affected by the growth opportunity (*V/B*) component in the pricing misvaluation of the IPO at the time of listing. Unlike Kim and Weisbach (2008), we do not find any influence of IPO overpricing (*M/V*) on the repayment of long-term debt due to the stricter norms implemented by SEBI (Bubna and Prabhala, 2010).[23] These results show that firms initially list their equity on the capital market to primarily finance positive-net present value projects and therefore use equity proceeds in the post-issue period on either capital expenses or total assets or invest in current assets such as inventory. The results are economically significant; for example, a one standard deviation increase in *V/B* using the *P/E* multiple increases total assets and capital expenditure by 9.7% compared to the *P/EBITDA* multiple, which increases total assets and capital expenditure by 8.5%. Similarly, a one standard deviation increase in *V/B* increases inventory holdings by 12.5% for the *P/S* multiple, 9.9% for the *P/EBITDA* multiple, and 10.2% for the *P/E* multiple. Only a small fraction of the IPO firms attempt to time the market by using issuance proceeds to increase their cash holdings.

[Please insert Table 4 about here]

Table 5 presents the SEO regression results. The overall findings with respect to SEO firms are qualitatively similar to the IPO firm results. It is evident from the results that listed firms revisit capital markets to tap future investment opportunities (the *V/B* component of *M/B*) by increasing their total assets over time. We find that a one standard deviation increase in *V/B* increases total assets by 11.8% and capital expenses by just 2.7%. However, the

[23] One of the many requirements for floating an IPO is for the firm to be profitable in at least three of the five pre-listing years, with distributable profits. Therefore the IPO firm should be almost debt free, to obtain a reasonably good IPO grading.

impact of the *M/V* on cash holdings and debt reduction is also economically significant. For instance, a one standard deviation increase in *M/V* increases cash holdings and reduces debt by 51.6%. Therefore, in the long run, managers could also reissue overpriced equity (the *M/V* component of *M/B*) to either increase their cash holdings or reduce their debt levels. Unlike for IPOs, we obtain mixed results for changes in inventory levels and capital expenses. Unlike the results for SEOs in the U.S. market (DeAngelo et al., 2010; Hertzel and Li, 2010), in emerging markets that are heavily regulated and transparent, management is subject to greater market scrutiny when raising external funds. Therefore, managers are reluctant to misguide the stakeholders and primarily use listings revenue for future investments. Overall, a market that is well regulated and promotes transparency is likely to protect shareholders and stakeholders.

[Please insert Table 5 about here]

Together, the results provide support that *M/B,* as a measure of growth, is less reliable in terms of incentives for a firm to issue equity. Hence, decomposing the ratio into mispricing and growth opportunities is more meaningful. Our results show that the rational expectation of issuing new and seasoned equity is to invest in future growth options and maximize long-term shareholder value. This evidence is robust in the context of a market that is highly regulated and encourages transparency.

4.3 Long-run post-listing performance across the *M/B* components

It well documented in the literature that newly listed IPOs and SEOs underperform in the long run (e.g., Ritter, 1991; Loughran and Ritter, 1995, 1997; Purnanandam and Swaminathan, 2004; Kim and Weisbach, 2008; Hertzel and Li, 2010). Typically, as in real investment theory, firms with highly overpriced equity should experience greater post-listing underperformance. Rational expectation theory suggests that firms with significant growth options should experience greater underperformance following equity issuance in the long

run. In the following sections, we discuss the results of long-run performance for IPOs and SEOs with reference to mispricing and growth opportunities. We divide IPO/SEO firms into firms with high versus low levels of mispricing and high- versus low-growth firms. Firms with *M/V* values above (below) the median are classified as having a high (low) overvaluation level. Similarly, firms with *V/B* values above (below) the median are classified as having more (fewer) growth options. Following Hertzel and Li (2010), we use a calendar-time approach to examine the long-run performance of newly listed firms. We use Carhart's (1997) four-factor model to examine long-run performance three years after equity issuance. We also report the figures for two simpler versions of Carhart's (1997) model, namely, the capital asset pricing model (CAPM) and Fama and French's (1993) three-factor model.[24]

Table 6 shows the post-issue long-run performance results for IPOs with high versus low levels of mispricing across three valuation multiples: *P/S* (Panel A), *P/EBITDA* (Panel B), and *P/E* (Panel C). The intercept is negative and statistically significant in Panels A to C. On average, firms with both higher levels of mispricing (model 1 of Panels A to C) and lower levels of mispricing (model 2 of Panels A to C) exhibit strong underperformance in the long run, ranging from -0.06% per month (-0.72% per annum) to -0.08% per month (about -1.00% per annum), compared to the benchmark market index. Model 3 in Panel B shows a marginal performance difference (0.24%) between IPOs with high and low levels of mispricing when the intrinsic value is estimated using the *P/EBITDA* pricing multiple. This result provides ancillary support for the *behavioral* aspect of higher underperformance among more overvalued firms in the post-IPO period. The results for the three- and four-factor models are broadly comparable to those of the market model (Fama and French, 1993; Carhart, 1997) across all three pricing multiples.

[24] For ease of illustration, we mainly focus on the intercept values obtained using the CAPM, since this is the simplest and easiest way to interpret our three models. The results for Fama and French's (1993) and Carhart's (1997) models are qualitatively and (somewhat) quantitatively similar to those of the CAPM, although weaker in a few dimensions and we therefore discuss them where applicable.

[Please insert Table 6 about here]

Table 7 reports the results for IPOs with higher versus lower growth opportunities across the three valuation multiples. Unlike for Kim and Weisbach (2008), in our study, firms with higher growth opportunities witness a steeper average monthly (three-year) decline of up to -0.08% (about -3%) in equity returns over the long run. New IPOs with fewer chances of growth improvement also show a significant post-issue decrease in monthly stock returns of about 0.06%. Overall, we find stock prices decline in the long run for IPOs after listings but, interestingly, there is no significant difference between high- and low-growth firms, regardless of their future growth options.

[Please insert Table 7 about here]

Finally, in Table 8, we revisit the long-run performance of SEO firms. Panels A and B shows the long-run performance of SEOS with high versus low levels of mispricing and high- versus low-growth SEOs, respectively. We find evidence of management's attempts to time the market by issuing highly overpriced follow-up issues. However, the market seems to penalize such firms with significantly negative average post-issue abnormal returns (-0.13% monthly, -1.6% annually). Underpriced SEOs do not underperform after listings, which is consistent with the behavioral view of SEO mispricing. The results show that low-growth SEOs significantly underperform in the long run (up to 1.5% over a three-year period), while high-growth SEOs do not underperform. Finally, the results are mixed when we examine the returns between SEOs with various levels of mispricing (Panel A3, Table 8) and growth options (Panel B3, Table 8). Even though SEOs with higher overpricing or lower growth opportunities face significant decline over time, this evidence is not explained by either *behavioral* theory or *rational* real investment theory.

[Please insert Table 8 about here]

5. Robustness check: IPO valuation using the residual income model

In this section, we check the robustness of our results by computing the fair value of IPO firms using the discounted cash flow method, similar to Ohlson's (1990) residual income model.[25] Chemmanur and Krishnan (2012) document that estimating the fair value of IPO firms using the residual income model allows checking the robustness of the results with respect to the fair value of the IPO firms calculated using price multiples. We use the following residual model to compute the fair value of the IPO firms, an approach similar to that of Ohlson (1990) and Chemmanur and Krishnan (2012):[26]

$$V_0 = B_0 + \sum\left[\left(E_0\left[X_t - r \times B_{t-1}\right]\right)/(1+r)^t\right] + \frac{TV}{r(1+r)^T} \qquad (14)$$

where V_0 is the fair value of equity at time 0; B_0 is the book value of equity at time 0; *T* is total time, that is, two years; *r* is the cost of equity (the estimation for the cost of equity is detailed below); $E_0(X_t)$ is expected future earnings for year *t* at time 0, proxied by EBIT; year 0 is the fiscal year-end preceding the equity issuance; and *TV* is the terminal value of equity, which is calculated as

$$TV = \frac{E_0\left[\left(X_T - r \times B_{T-1}\right) + \left(X_{T+1} - r \times B_T\right)\right]}{2} \times \left(\frac{1}{(1+t) \times (r-g)}\right) \qquad (15)$$

We compute the required rate of return on the basis of the average excess annual rate of return on the BSE Sensex and CNX Nifty Index during our sample period. Our objective is to measure the growth rate of the BSE Sensex and CNX Nifty Index over time. To do so, we use the growth rate measure proposed by Jones (1995), using the following equation:

$$Ln(Y_t) = \alpha + \beta t + \varepsilon_t \qquad (16)$$

Where Y*t* is the benchmark stock index level at the end of year *t*. From this equation, we compute the required rate of return as

[25] We would like to thank an anonymous referee for making this suggestion to further establish the robustness of our empirical findings with respect to IPO misvaluation.
[26] We also use the residual income model to compute the intrinsic value of SEOs (see Section 3.2.2).

$$t = \left(e^{\hat{\beta}} - 1 \right) \times 100 \qquad (17)$$

We estimate Eq. (16) for the BSE Sensex and CNX Nifty Index separately. In both cases, we find the required rate of return to be approximately 13%. Hence, in Eq. (15), we set *r* as 13%.[27] Next, similar to Chemmanur and Krishnan (2012), we compute the intrinsic value of IPO firms using two growth rates: g = 0% and g = 5%.[28] We report the regression results of Eq. (12), where the fundamental value of the IPO firm is computed using the residual income model in Table 9.

[Please insert Table 9 about here]

Table 9 reports the impact of mispricing and growth opportunities on the actual use of proceeds, assuming a zero growth rate (Table 9A) and a 5% growth rate (Table 9B), respectively. We find a significant positive relation between the growth component (*V/B*) and changes in total assets, inventory, and capital expenditure, using either the zero or the 5% growth rate. However, the relation between the mispricing component (*M/V*) and changes in cash holdings and long-term debt reduction is either negative and significant (for changes in cash holding) or insignificant (for debt reduction). Overall, the results in Table 9 are consistent with the rational explanation of equity issuance and the overall results reported in Table 4.

6. Summary and concluding remarks

This study examines whether equity issues through IPOs or SEOs are due to mispricing or growth opportunities. To address this question, we follow the method of

[27] We also estimate *r* using the gross domestic product per capita growth rate in India, which, on average, is about 9.5% during our sample period. With *r* = 9.5%, the results remain qualitatively similar to those reported in Table 9 with *r* = 13%.

[28] As Chemmanur and Krishnan (2012), we also compute the mispricing component, that is, *M/V*, in two ways: The first is by taking *M* as the offer price at which the IPO was issued and the second is where *M* is the closing price of the stock on the first day of the listing. We find qualitatively similar results using both measures of mispricing. However, due to space constraints and to maintain consistency with the previous computation of the fair value of the IPO using price multiples matched by industry peers (reported in Table 4), we report the results based on offer price. However, the results based on the closing price of the IPO on the first day of the listing are available from the authors upon request.

Rhodes-Kropf et al. (2005) to decompose *M/B* into *M/V*, to account for mispricing, and *V/B*, to control for growth opportunities. Our results show instances of market timing similar to those of developed markets but the proceeds from equity offerings are used to finance investment opportunities, such as real assets, inventory, and capital expenses. We conjecture that tight regulation and high transparency limit issuing firms from the tendency to exploit investors and motivates them to focus on value-creating activities. Our results show that the market penalizes firms that issue overvalued stocks to increase their cash holdings, as exhibited by poor long-term stock performance. However, IPOs and SEOs in India are subject to both mispricing and growth opportunities. Issuing firms tend to invest in value-creating rather than value-destroying activities. Further, mispricing drives equity offerings more than growth opportunities. Hence, *M/B* is a biased proxy for growth opportunities in the context of equity offerings. Our findings are robust to alternative measures of firm valuation and a battery of control variables and different model specifications. These findings are not only interesting to regulators, but also to institutional and individual investors interested in investing over the long term.

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Table 1
Number, median and mean market-to-book of Indian IPOs by year

Year	No. of IPOs	Median M/B	Wilcoxon p-value	Mean M/B	t-test p-value
1991	9	1.44	0.250	2.00	0.250
1992	27	2.09	0.002	5.53	0.014
1993	55	1.56	0.000	3.46	0.006
1994	242	1.25	0.000	3.68	0.005
1995	446	1.51	0.000	8.68	0.003
1996	429	0.82	0.673	2.04	0.005
1997	120	0.59	0.007	1.19	0.310
1998	12	0.21	0.001	0.23	0.000
1999	7	0.18	0.297	0.58	0.346
2000	16	0.59	0.528	4.56	0.055
2001	63	0.79	0.533	2.89	0.039
2002	4	0.26	0.125	0.37	0.044
2003	6	0.11	0.438	1.44	0.751
2004	10	0.38	0.432	3.13	0.424
2005	34	0.63	0.497	1.47	0.307
2006	63	1.19	0.018	1.81	0.001
2007	76	1.06	0.008	2.27	0.000
2008	78	1.24	0.031	1.53	0.013
2009	34	0.45	0.079	5.17	0.336
2010	37	1.09	0.481	1.78	0.190
2011	54	1.39	0.000	1.83	0.000
2012	34	0.83	0.621	1.47	0.139
Overall	1856	1.03	0.000	3.92	0.000

Notes: This table reports cross-sectional distribution of market-to-book (*M/B*) ratio of Indian IPOs from 1991 to 2012. In *M/B* ratio, numerator is the offer price at which the IPO stock is offered and denominator is the book value of share at the close of the month prior to the offer date. No. of IPOs is the total number of Indian IPOs in a year for which we have available *M/B* ratio data. Both median and mean *M/B* is shown. Wilcoxon p-value represents p-value of Wilcoxon rank sum test to test if median is equal to one. t-test p-value of mean *M/B* represents p-value of t-test if mean is equal to 1. Overall corresponds to the aggregate of all the IPOs from 1991 to 2012 and the statistics for overall are computed on the basis of pooled time-series and cross-sectional data.

Table 2
Median market-to-value and value-to-book of Indian IPOs by year using match-firm multiples

Year	Panel A: Market-to-value ratio based on pricing multiples									Panel B: Value-to-book ratio based on pricing multiples								
	Price/Sales multiple			Price/EBITDA multiple			Price/Earnings multiple			Price/Sales multiple			Price/EBITDA multiple			Price/Earnings multiple		
	No. of IPOs	Median	Wilcoxon p-value	No. of IPOs	Median	Wilcoxon p-value	No. of IPOs	Median	Wilcoxon p-value	No. of IPOs	Median	Wilcoxon p-value	No. of IPOs	Median	Wilcoxon p-value	No. of IPOs	Median	Wilcoxon p-value
1991	9	0.57	0.820	9	0.57	0.910	8	0.53	0.313	9	1.47	0.359	9	2.19	0.164	8	3.18	0.148
1992	27	0.91	0.761	27	0.87	0.452	23	0.76	0.906	27	1.99	0.003	27	1.38	0.103	23	2.67	0.001
1993	55	0.89	0.273	54	0.79	0.088	37	1.31	0.106	55	1.59	0.000	54	1.49	0.003	37	1.20	0.023
1994	242	0.86	0.020	238	0.85	0.307	182	0.68	0.393	242	1.37	0.000	238	1.00	0.001	182	1.79	0.000
1995	446	0.87	0.040	446	0.62	0.219	348	0.62	0.860	446	1.93	0.000	446	1.08	0.000	348	2.36	0.000
1996	429	1.27	0.000	427	1.18	0.000	278	1.58	0.000	429	0.66	0.999	427	0.30	0.000	278	0.55	0.951
1997	120	3.15	0.000	119	3.97	0.000	66	4.43	0.000	120	0.23	0.000	119	0.07	0.000	66	0.10	0.000
1998	12	2.00	0.016	12	1.55	0.151	10	0.90	0.846	12	0.07	0.002	12	0.11	0.001	10	0.22	0.002
1999	7	1.98	0.016	7	1.07	0.813	4	3.38	0.625	7	0.03	0.078	7	0.03	0.297	4	0.08	0.875
2000	16	1.52	0.093	16	1.34	0.376	11	1.48	0.240	16	0.53	0.744	16	0.12	0.376	11	0.19	0.638
2001	63	1.75	0.000	61	0.82	0.215	38	0.83	0.124	63	0.63	0.268	61	0.28	0.114	38	0.91	0.313
2002	4	4.40	0.625	4	5.27	0.625	2	24.01	1.000	4	0.09	0.125	4	0.15	0.125	2	0.16	0.500
2003	6	3.67	0.156	6	2.26	0.438	6	3.00	0.156	6	0.04	0.438	6	0.04	0.438	6	0.05	0.031
2004	10	2.15	0.232	10	2.08	0.322	6	1.44	0.313	10	0.08	0.084	10	0.02	0.002	6	0.05	0.031
2005	34	1.61	0.004	34	1.09	0.047	27	0.80	0.657	34	0.30	0.519	34	0.52	0.563	27	1.01	0.120
2006	63	2.14	0.000	63	1.65	0.000	55	1.70	0.000	63	0.62	0.995	63	0.77	0.164	55	1.17	0.060
2007	76	1.86	0.000	76	1.54	0.000	67	1.47	0.000	76	0.56	0.818	76	0.73	0.782	67	0.79	0.557
2008	78	2.60	0.000	78	1.21	0.002	67	1.42	0.000	78	0.37	0.026	78	0.49	0.431	67	0.57	0.814
2009	34	1.87	0.002	34	1.40	0.195	19	1.21	0.134	34	0.18	0.387	34	0.10	0.079	19	0.19	0.891
2010	37	3.79	0.000	37	1.64	0.001	30	1.38	0.015	37	0.29	0.000	37	0.58	0.099	30	0.82	0.787
2011	54	2.27	0.000	54	2.04	0.000	44	1.62	0.000	54	0.62	0.053	54	0.65	0.712	44	0.79	0.819
2012	34	2.53	0.000	34	2.34	0.005	24	1.83	0.024	34	0.38	0.053	34	0.49	0.142	24	0.57	0.868
Overall	1856	1.31	0.000	1846	1.05	0.000	1352	1.061	0.000	1856	0.77	0.000	1846	0.56	0.523	1352	0.99	0.000

Notes: This table reports cross-sectional distribution of median market-to-value (*M/V*) and value-to-book (*V/B*) ratios of Indian IPOs from 1991 to 2012. *M/V* and *V/B* of the IPO firm is computed on the basis of three price multiples of an industry peers *i.e.* price-to-sales (*P/S*), price-to-EBITDA and price-to-earnings (*P/E*). EBITDA is earnings before interest, tax, depreciation and amortization. Earnings are net income or profit after tax. *M/V* ratio of IPO firm is computed as *P/S*, *P/EBITDA* and *P/E* of IPO firm divided by corresponding *P/S*, *P/EBITDA* and *P/E* of the match firm. *V/B* ratio of the IPO firm is computed as *M/V* ratio of the IPO firm (using all three multiples) divided by *M/B* of the IPO firm. No. of IPOs is the total number of Indian IPOs in a year for which we have available matching price multiple. Wilcoxon p-value represents p-value of Wilcoxon rank sum test to test if median is equal to one. Overall corresponds to the aggregate of all the IPOs from 1991 to 2012 and the statistics for overall are computed on the basis of pooled time-series and cross-sectional data.

Table 3
Median market-to-book, market-to-value and value-to-book ratios of Indian SEOs by year

Year	Panel A: Market-to-book			Panel B: Market-to-value		Panel C: Value-to-book	
	No. of SEOs	Median M/B	Wilcoxon p-value	Median M/V	Wilcoxon p-value	Median V/B	Wilcoxon p-value
1991	1	4.43	1.000	2.36	1.000	1.88	1.000
1992	2	0.63	0.500	0.71	1.000	0.97	0.688
1993	11	1.64	0.206	0.43	0.426	2.51	0.000
1994	39	1.60	0.002	3.29	0.000	0.76	0.511
1995	20	1.51	0.009	0.73	0.570	0.55	0.854
1996	12	1.53	0.043	1.47	0.232	0.62	0.720
1997	1	4.23	1.000	4.08	1.000	1.04	1.000
1998	1	0.14	1.000	0.13	1.000	1.12	1.000
1999	2	1.61	1.000	0.51	0.500	3.04	0.500
2000	3	1.52	0.750	1.17	0.750	0.77	1.000
2001	8	1.22	0.445	0.55	0.727	0.89	0.813
2002	5	0.42	0.063	1.45	0.438	0.30	0.063
2003	22	0.40	0.000	0.26	0.000	2.00	0.001
2004	30	1.32	0.211	0.52	0.225	1.30	0.005
2005	63	1.65	0.000	1.35	0.004	1.22	0.002
2006	82	2.50	0.000	1.71	1.000	1.34	0.002
2007	71	4.22	0.000	3.08	0.000	1.79	0.000
2008	126	1.76	0.000	2.23	0.000	0.62	0.107
2009	203	1.00	0.009	1.47	0.000	0.72	0.298
2010	88	1.19	0.003	1.18	0.005	0.88	0.208
2011	6	1.79	0.063	0.35	0.125	5.27	0.031
Overall	796	1.44	0.000	1.46	0.000	0.96	0.000

Notes: This table reports cross-sectional data of median market-to-book (*M/B*), market-to-value (*M/V*) and value-to-book (*V/B*) of the SEOs from 1991 to 2011. *M/B* of the SEO firm is the ratio at the end of month prior to equity issuance month. In *M/V* and *V/B*, *M* represents market value of equity at the close of the month prior to equity issuance month and *V* represents fair value of equity which is computed by using residual income model, and B is the book value of share at the close of the month prior to the offer date. No. of SEOs is the total number of Indian SEOs in a year for which we have available *M/B* ratio data. Wilcoxon p-value represents p-value of Wilcoxon rank sum test to test if median is equal to one. Overall corresponds to the aggregate of all the SEOs from 1991 to 2011 and the statistics for overall are computed on the basis of pooled time-series and cross-sectional data.

Table 4
Effect of mispricing and growth opportunities on post-issue changes in assets and expenditures for Indian IPOs

			M/V	V/B	LnPC	LnOS	LnTA			
Y	*t*	α	β_1	β_2	β_3	β_4	β_5	Adj. R^2	F-Value	N
***Panel A:* Δ Total Assets**										
P/S Multiple	1	0.813***	0.000	0.000	1.120***	9.720***	-0.096***	0.51	64.42	1731
		(7.92)	(0.4)	(0.42)	(25.86)	(6.96)	(-10.13)			
	2	0.990***	0.000	0.000	1.242***	4.808***	-0.090***	0.44	45.74	1636
		(7.5)	(0.35)	(-0.11)	(20.16)	(5.87)	(-7.36)			
	3	0.956***	0.000	0.000	1.429***	3.316***	-0.072***	0.42	38.66	1549
		(5.94)	(0.62)	(0.00)	(18.38)	(6.19)	(-4.83)			
	4	0.846***	0.000	0.000	1.729***	5.627***	-0.052***	0.38	31.87	1466
		(4.42)	(0.14)	(-0.27)	(15.28)	(6.43)	(-2.96)			
P/EBITDA Multiple	1	0.808***	-0.001*	0.001**	1.126***	9.667***	-0.094***	0.52	64.74	1721
		(7.89)	(-1.66)	(2.15)	(26.15)	(6.95)	(-10)			
	2	0.979***	-0.001**	0.001***	1.240***	4.572***	-0.088***	0.45	46.35	1627
		(7.46)	(-1.84)	(2.62)	(20.26)	(5.61)	(-7.23)			
	3	0.936***	-0.001*	0.001*	1.434***	3.291***	-0.069***	0.42	38.89	1540
		(5.84)	(-1.67)	(1.78)	(18.54)	(6.18)	(-4.66)			
	4	0.833***	0.000	0.000	1.715***	5.422***	-0.050***	0.38	31.74	1457
		(4.36)	(-0.74)	(0.99)	(15.15)	(6.2)	(-2.87)			
P/E Multiple	1	0.818***	0.000	0.001***	1.118***	9.708***	-0.095***	0.51	62.12	1722
		(7.99)	(0.72)	(2.97)	(25.4)	(6.94)	(-10.04)			
	2	0.995***	0.000	0.001***	1.247***	4.921***	-0.089***	0.45	46.64	1628
		(7.58)	(0.8)	(3.45)	(20.38)	(6.04)	(-7.3)			
	3	0.943***	0.000	0.001***	1.446***	3.383***	-0.069***	0.42	39.24	1542
		(5.88)	(0.46)	(2.8)	(18.57)	(6.34)	(-4.69)			
	4	0.834***	0.000	0.001**	1.754***	5.758***	-0.051***	0.39	32.17	1459
		(4.36)	(-0.25)	(1.95)	(15.38)	(6.57)	(-2.91)			
***Panel B:* Δ Inventory**										
P/S Multiple	1	0.518**	0.000	0.001***	0.368***	-3.239	-0.050**	0.07	4.09	1464
		(2.2)	(0.13)	(3.51)	(3.25)	(-0.61)	(-2.38)			
	2	0.864***	-0.001	0.001***	0.702***	6.988**	-0.048*	0.09	5.05	1386
		(2.98)	(-1.2)	(3.1)	(4.00)	(2.04)	(-1.85)			
	3	1.005***	0.000	0.001***	0.507**	-1.588	-0.074***	0.11	5.38	1297
		(3.06)	(0.43)	(2.98)	(2.21)	(-0.51)	(-2.51)			
	4	0.623	0.001	0.001**	0.278	-4.283	-0.079**	0.10	4.81	1234
		(1.58)	(0.91)	(2.44)	(0.96)	(-1.51)	(-2.25)			
P/EBITDA Multiple	1	0.562**	0.000	0.001**	0.372***	-4.036	-0.052**	0.07	3.82	1461
		(2.38)	(-0.74)	(2.35)	(3.29)	(-0.76)	(-2.46)			
	2	0.930***	0.000	0.001***	0.699***	7.021**	-0.050**	0.09	4.91	1383
		(3.2)	(-0.64)	(2.99)	(3.98)	(2.06)	(-1.94)			
	3	1.022***	0.000	0.001***	0.478**	-2.142	-0.076***	0.10	5.22	1294
		(3.11)	(-0.22)	(2.74)	(2.09)	(-0.68)	(-2.58)			
	4	0.634	-0.001*	0.001***	0.302	-4.595*	-0.079**	0.10	4.95	1231
		(1.61)	(-1.73)*	(2.96)	(1.04)	(-1.62)	(-2.26)			
P/E Multiple	1	0.530**	0.000	0.001***	0.379***	-3.031	-0.050**	0.07	3.98	1462
		(2.25)	(0.19)	(3.07)	(3.35)	(-0.57)	(-2.37)			
	2	0.878***	0.000	0.001**	0.710***	7.449**	-0.050*	0.09	4.86	1385
		(3.02)	(-0.89)	(2.4)	(4.04)	(2.19)	(-1.93)			

	3	1.010***	0.000	0.001**	0.507**	-1.912	-0.075**	0.10	5.25	1296
		(3.07)	(-0.77)	(2.35)	(2.21)	(-0.61)	(-2.56)			
	4	0.617	0.000	0.001*	0.371	-4.027	-0.076**	0.10	4.64	1232
		(1.57)	(-0.67)	(1.74)	(1.28)	(-1.42)	(-2.15)			
***Panel C:* Δ Cash**										
P/S Multiple	1	0.777*	0.000	0.000	2.680***	62.969***	-0.123***	0.27	21.55	1697
		(1.64)	(-0.06)	(0.49)	(13.29)	(9.53)	(-2.82)			
	2	0.556	0.000	0.000	2.197***	17.542***	-0.093**	0.23	16.76	1600
		(1.12)	(-0.65)	(-0.34)	(9.41)	(5.63)	(-2.03)			
	3	0.128	0.150**	0.000	2.494***	8.337***	-0.013	0.22	15	1511
		(0.24)	(2.14)	(0.30)	(9.57)	(4.71)	(-0.26)			
	4	-0.506	0.230**	0.000	3.282***	16.751***	-0.006	0.22	13.83	1422
		(-0.91)	(2.51)	(-0.28)	(9.62)	(6.43)	(-0.13)			
P/EBITDA Multiple	1	0.824*	0.000	0.001**	2.705***	63.297***	-0.125***	0.27	21.81	1687
		(1.74)	(-0.21)	(2.13)	(13.43)	(9.6)	(-2.86)			
	2	0.635	0.002***	0.001	2.227***	17.501***	-0.096**	0.23	16.92	1591
		(1.28)	(2.64)	(0.97)	(9.55)	(5.62)	(-2.09)			
	3	0.247	0.002**	0.000	2.522**	8.433***	-0.019	0.22	15.04	1502
		(0.47)	(2.32)	(0.74)	(9.69)	(4.77)	(-0.4)			
	4	-0.364	0.001***	0.000	3.234***	16.667***	-0.020	0.22	13.6	1413
		(-0.65)	(0.97)	(-0.28)	(9.45)	(6.4)	(-0.39)			
P/E Multiple	1	0.785*	0.001**	0.001*	2.724***	63.800***	-0.122***	0.27	21.45	1688
		(1.66)	(2.23)	(1.87)	(13.23)	(9.59)	(-2.78)			
	2	0.594	0.001**	0.001*	2.237***	17.195***	-0.095**	0.23	16.99	1592
		(1.20)	(2.24)	(1.76)	(9.59)	(5.52)	(-2.07)			
	3	0.170	0.001	0.001	2.487***	8.348***	-0.018	0.22	15.08	1506
		(0.32)	(1.02)	(1.21)	(9.53)	(4.71)	(-0.38)			
	4	-0.436	0.000	0.001	3.259***	16.769***	-0.018	0.22	13.89	1417
		(-0.78)	(0.48)	(0.89)	(9.55)	(6.44)	(-0.35)			
***Panel D:* ΣCAPEX**										
P/S Multiple	1	0.411***	0.000	0.000	0.123***	-2.231**	-0.046***	0.15	10.42	1731
		(5.78)	(0.64)	(1.27)	(4.1)	(-2.31)	(-7.1)			
	2	0.530***	0.000	0.000	0.316***	0.743	-0.059***	0.20	15.22	1731
		(5.83)	(0.38)	(0.8)	(7.74)	(1.34)	(-7.1)			
	3	0.690***	0.000	0.000	0.357***	0.706**	-0.069***	0.21	15.75	1731
		(6.44)	(0.15)	(0.84)	(7.59)	(2.03)	(-6.98)			
	4	0.698***	0.000	0.000	0.379***	0.506	-0.067***	0.20	15.3	1730
		(5.62)	(1.36)	(0.49)	(6.04)	(0.97)	(-5.84)			
P/EBITDA Multiple	1	0.404***	0.000	0.000***	0.128***	-2.290**	-0.045***	0.15	10.8	1721
		(5.74)	(-0.75)	(3.32)	(4.32)	(-2.4)	(-6.95)			
	2	0.527***	0.000	0.001**	0.313***	0.595	-0.059***	0.20	15.32	1721
		(5.83)	(0.50)	(2.39)	(7.73)	(1.08)	(-7.06)			
	3	0.675***	0.000	0.001***	0.362***	0.698**	-0.066***	0.21	15.74	1721
		(6.36)	(0.22)	(2.57)	(7.8)	(2.03)	(-6.78)			
	4	0.682***	0.000	0.001**	0.375***	0.381	-0.064***	0.20	15.16	1720
		(5.53)	(-0.39)	(2.04)	(6.06)	(0.74)	(-5.63)			
P/E Multiple	1	0.406***	0.000	0.001***	0.132***	-1.856*	-0.045***	0.15	10.87	1722
		(5.78)	(1.03)	(3.39)	(4.36)	(-1.93)	(-6.94)			
	2	0.519***	0.000	0.001***	0.354***	1.262**	-0.058***	0.21	16.14	1722
		(5.75)	(0.62)	(2.67)	(8.55)	(2.26)	(-7.02)			

	3	0.672***	0.000	0.001***	0.405***	0.950***	-0.067***	0.22	16.63	1722
		(6.29)	(0.8)	(2.7)	(8.46)	(2.72)	(-6.81)			
	4	0.664***	0.000	0.001**	0.460***	1.001*	-0.064***	0.21	15.99	1721
		(5.36)	(0.18)	(2.00)	(7.12)	(1.89)	(-5.61)			
***Panel E:* ΣR&D**										
P/S Multiple	1	0.000	0.000	0.000	0.000	-0.003	0.000	0.05	3.16	1731
		(0.29)	(-0.2)	(-0.07)	(0.07)	(-0.15)	(0.12)			
	2	0.001	0.000	0.000	-0.005***	-0.215***	0.000	0.13	9.39	1731
		(0.3)	(-0.35)	(0.25)	(-3.42)	(-11.1)	(-0.14)			
	3	0.005	0.000	0.000	-0.013***	-0.278***	0.000	0.22	17.35	1731
		(0.91)	(-0.35)	(0.32)	(-5.71)	(-16.9)	(-0.64)			
	4	0.001	0.000	0.000	0.002	-0.018	0.000	0.08	5.6	1730
		(0.15)	(-0.25)	(-0.1)	(0.66)	(-0.61)	(0.66)			
P/EBITDA	1	0.000	0.000	0.000	0.000	-0.003	0.000	0.05	3.15	1721
		(0.3)	(-0.25)	(0.21)	(0.07)	(-0.16)	(0.12)			
	2	0.001	0.000	0.000	-0.005***	-0.227***	0.000	0.15	10.3	1721
		(0.32)	(-0.45)	(0.17)	(-3.88)	(-11.93)	(-0.12)			
	3	0.004	0.000	0.000	-0.013***	-0.279****	0.000	0.23	18.28	1721
		(0.88)	(-0.54)	(0.25)	(-5.89)	(-17.38)	(-0.54)			
	4	0.001	0.000	0.000	0.001	-0.033	0.000	0.09	5.97	1720
		(0.17)	(-0.52)	(0.21)	(0.32)	(-1.11)	(0.73)			
P/E Multiple	1	0.000	0.000	0.000	0.000	-0.003	0.000	0.05	3.15	1722
		(0.31)	(0.53)	(0.07)	(0.08)	(-0.16)	(0.11)			
	2	0.001	0.000	0.000	-0.005***	-0.219***	0.000	0.13	9.42	1722
		(0.36)	(0.48)	(-0.08)	(-3.5)	(-11.11)	(-0.22)			
	3	0.005	0.000	0.000	-0.013***	-0.282***	0.000	0.22	17.36	1722
		(0.97)	(0.39)	(0.00)	(-5.85)	(-16.9)	(-0.69)			
	4	0.001	0.000	0.000	0.003	-0.017	0.000	0.08	5.58	1721
		(0.16)	(0.54)	(0.02)	(0.69)	(-0.54)	(0.66)			
***Panel F:* ΣDebt Reduction**										
P/S Multiple	1	0.012	0.000	0.000	0.009	0.106	0.002	0.01	0.62	1731
		(0.86)	(-0.65)	(-0.9)	(1.64)	(0.57)	(1.37)			
	2	0.005	0.000	0.000	0.021***	0.010	0.002	0.02	1.01	1731
		(0.28)	(-0.69)	(-1.12)	(2.65)	(0.09)	(1.37)			
	3	0.033	0.000	0.000	0.046***	0.049	0.001	0.03	2.05	1731
		(1.06)	(-0.62)	(-1.53)	(3.39)	(0.49)	(0.48)			
	4	0.084*	0.000	0.000	0.133***	0.546***	0.000	0.07	4.58	1730
		(1.71)	(-0.44)	(0.39)	(5.4)	(2.66)	(0.02)			
P/EBITDA Multiple	1	0.013	0.000	0.000	0.009	0.103	0.002	0.01	0.6	1721
		(0.92)	(0.9)	(0.17)	(1.53)	(0.55)	(1.29)			
	2	0.006	0.000	0.000	0.021**	0.009	0.002	0.02	0.95	1721
		(0.36)	(-0.01)	(-0.37)	(2.56)	(0.08)	(1.26)			
	3	0.034	0.000	0.000	0.044***	0.045	0.001	0.03	1.99	1721
		(1.08)	(-0.47)	(-0.21)	(3.29)	(0.45)	(0.42)			
	4	0.086**	0.000	0.000	0.136***	0.561***	0.000	0.07	4.62	1720
		(1.76)	(-0.62)	(0.76)	(5.5)	(2.73)	(-0.04)			
P/E Multiple	1	0.012	0.000	0.000	0.010	0.112	0.002	0.01	0.64	1722
		(0.85)	(0.98)	(0.89)	(1.61)	(0.6)	(1.36)			
	2	0.002	0.000	0.000	0.019**	0.096	0.003**	0.01	0.9	1722
		(0.11)	(-0.62)	(0.34)	(2.36)	(0.9)	(1.77)			
	3	0.031	0.000	0.000	0.040***	0.055	0.002	0.03	1.98	1722

	(1.02)	(0.04)	(1.45)	(2.94)	(0.55)	(0.63)			
4	0.081*	0.000	0.000*	0.139***	0.618***	0.000	0.07	4.66	1721
	(1.65)	(0.04)	(1.65)	(5.46)	(2.96)	(0.11)			
Industry and Time FE	Yes								

Notes: This table reports the regression results for IPOs showing the impact of two components of *M/B* ratio – *M/V* and *V/B* (computed on the basis of *P/S, P/EBITDA and P/E* multiples on an industry peer) on the post-issue changes in assets and expenditures. We regress changes in six accounting variables *i.e.* cash, inventory, total assets, capital expenditure, R&D and reduction in long-term debt measured over four years post-issue, +1, +2, +3, and +4 year. Precisely, the equation is stated as follows:

$$Y_{it} = \alpha + \beta_1(M/V)_i + \beta_2(V/B)_i + \beta_3 ln[(\frac{PC_i}{A_{i0}}) + 1] + \beta_4 \ln[\left(\frac{OSC_i}{A_{i0}}\right) + 1] + \beta_5 In[A_{i0}] + D_T + D_I + \varepsilon_i$$

Where Y_{it} = $((S_{it} - S_{i0})/A_{i0})$ for S_{it} = inventory, cash and total assets, for i^{th} firm and for t=1 to 4 years. Y_{it} = $(\sum_{j=1}^{4} S_{ij}/A_{i0})$ for S_i = Capital expenditures, R&D and long-term debt reduction, for i^{th} firm and for j =1 to 4 years. $(M/V)_i$ and $(V/B)_i$ are price-to-value and value-to-book components of the IPO firm *i* that are computed based on pricing multiples of the industry peer. PC_i = Primary Capital raised (Offer Price * No. of shares issued) for i^{th} firm, OSC_i = Other sources of capital (Total Funds – PC_i) for i^{th} firm. Total sources of funds are sum of funds from operations, financing and investment activities. A_{i0} = Total Assets at time zero for i^{th} firm. *T* and *I* are year and industry dummies respectively. $Ln[(PC_i/A_{i0})+1]$, $Ln[(OSC_i/A_{i0})+1]$ and $Ln[A_{i0}]$ are controls variables in the regression. T-statistics are reported in parenthesis below the co-efficient value and have been estimated using clustered standard errors. ***, ** and * represent significance at 1%, 5% and 10% level. *N* is the number of SEOs in a yearly regression.

Table 5
Effect of mispricing and growth opportunities on post-issue changes in assets and expenditures for Indian SEOs

Y	*t*	α	*M/V* β_1	*V/B* β_2	*Primary Capital* β_3	*Other Capital* β_4	*LnTA* β_5	Adj. R^2	F-Value	N
ΔTotal Assets	1	0.259***	0.000	0.009**	0.507***	6.241***	-0.008	0.26	7.28	633
		(3.33)	(0.09)	(2.44)	(7.61)	(3.75)	(-1.58)			
	2	0.412***	0.000	0.016***	0.732***	4.659***	-0.013	0.24	6.71	633
		(3.63)	(-1.57)	(3.08)	(7.75)	(4.52)	-1.7600			
	3	0.366**	0.000	0.027***	0.923***	3.280***	-0.011	0.27	7.45	626
		(2.49)	(-0.94)	(4.13)	(8.29)	(4.89)	(-1.15)			
	4	0.637***	0.000	0.020**	0.687***	1.194***	-0.018	0.26	4.85	425
		(3.07)	(`0.07)	(2.21)	(4.86)	(2.72)	(-1.3)			
ΔInventory	1	0.295	-0.001*	0.012	-0.109	-8.172*	-0.030**	0.10	1.92	558
		(1.43)	(-1.93)	(1.28)	(-0.59)	(-1.93)	(-2.21)			
	2	0.870***	-0.001	0.007	-0.555**	-2.938	-0.075***	0.09	1.71	558
		(2.9)	(-1.14)	(0.55)	(-2.11)	(-1.12)	(-3.71)			
	3	1.017***	-0.001	0.021	0.235	0.321	-0.067***	0.10	2.02	549
		(2.91)	(-0.52)	(1.25)	(0.78)	(0.21)	(-3.00)			
	4	0.972**	0.000	-0.013	0.405	0.774	-0.050*	0.16	2.3	371
		(2.26)	(0.00)	(-0.58)	(1.14)	(0.81)	(-1.75)			
ΔCash	1	-0.047	0.000	-0.001	1.558***	28.814***	0.018	0.10	2.27	631
		(-0.13)	(-0.41)	(-0.07)	(5.01)	(3.71)	(0.76)			
	2	-0.008	0.000	0.008	1.180***	9.051***	0.023	0.09	2.15	631
		(-0.02)	(-0.43)	(0.42)	(3.64)	(2.56)	(0.88)			
	3	-0.481	0.000	0.019	1.836***	7.437***	0.028	0.13	3.15	622
		(-1.08)	(0.5)	(0.94)	(5.49)	(3.69)	(0.99)			
	4	-1.196**	0.001**	0.029	1.997***	3.224**	0.080**	0.16	2.63	423
		(-1.96)	(2.25)	(1.09)	(4.84)	(2.51)	(2.00)			
ΣCAPEX	1	0.124**	0.000	0.004*	0.173***	2.970***	-0.005	0.13	3.04	633
		(2.55)	(-1.54)	(1.92)	(4.13)	(2.83)	(-1.47)			
	2	0.264***	0.001*	0.004	0.248***	1.917***	-0.015***	0.19	4.88	633
		(3.77)	(1.78)	(1.07)	(4.24)	(3.01)	(-3.25)			
	3	0.360***	0.000	0.005	0.303***	1.384***	-0.021***	0.22	5.97	633
		(4.28)	(-1.59)	(1.16)	(4.52)	(3.42)	(-3.8)			
	4	0.452***	0.001*	0.005	0.325***	0.837***	-0.027***	0.27	7.87	633
		(4.93)	(1.85)	(1.25)	(4.71)	(3.51)	(-4.42)			
ΣR&D	1	0.014**	0.000	0.000	0.005	0.139	-0.001**	0.04	0.87	633
		(1.99)	(-0.81)	(0.28)	(0.87)	(0.94)	(-2.11)			
	2	0.025*	0.000	0.000	0.007	0.082	-0.002*	0.04	0.91	633
		(1.88)	(-0.76)	(0.32)	(0.64)	(0.67)	(-1.94)			
	3	0.031*	0.000	0.000	0.008	0.049	-0.002	0.05	1.01	633
		(1.63)	(-0.7)	(0.28)	(0.54)	(0.54)	(-1.57)			
	4	0.024	0.000	0.000	0.008	0.027	-0.001	0.06	1.31	633
		(1.20)	(-0.62)	(0.22)	(0.55)	(0.52)	(-1.00)			
ΣDebt Reduction	1	0.046***	0.000	-0.001	0.006	0.213	-0.002**	0.11	2.69	633
		(3.26)	(-0.42)	(-1.12)	(0.49)	(0.7)	(-2.46)			

2	0.085***	0.001**	0.000	0.044***	-0.108	-0.005***	0.16	3.84	633
	(4.17)	(2.13)	(-0.26)	(2.59)	(-0.58)	(-3.63)			
3	0.168***	0.000	-0.001	0.052**	0.059	-0.011***	0.13	2.97	633
	(5.61)	(0.35)	(-0.96)	(2.2)	(0.41)	(-5.42)			
4	0.184***	0.000	-0.001	0.030	-0.003	-0.012***	0.17	4.14	633
	(5.51)	(0.17)	(-0.54)	(1.21)	(-0.03)	(-5.48)			
Industry and Time FE	Yes								

Notes: This table reports the regression results for SEOs showing the impact of two components of *M/B* ratio – *M/V* and *V/B* (computed on the basis of Ohlson (1990) and Elliot et al. (2008) Residual Income Model) on the post-issue changes in assets and expenditures. We regress changes in six accounting variables *i.e.* cash, inventory, total assets, capital expenditure, R&D and reduction in long-term debt measured over four years post-issue, +1, +2, +3, and +4 year. Fair value of equity is calculated by using residual income model. Precisely, the equation is stated as follows:

$$Y_{it} = \alpha + \beta_1(M/V)_i + \beta_2(V/B)_i + \beta_3 ln[(\frac{PC_i}{A_{i0}}) + 1] + \beta_4 \ln[\left(\frac{OSC_i}{A_{i0}}\right) + 1] + \beta_5 In[A_{i0}] + D_T + D_I + \varepsilon_i$$

Where Y_{it} = $((S_{it} - S_{i0})/A_{i0})$ for S_{it} = inventory, cash and total assets, for i^{th} firm and for t=1 to 4 years. Y_{it} = $(\sum_{j=1}^{4} S_{ij}/A_{i0})$ for S_i = Capital expenditures, R&D and long-term debt reduction, for i^{th} firm and for j =1 to 4 years. $(M/V)_i$ and $(V/B)_i$ are price-to-value and value-to-book components of IPO firm i that are computed based on pricing multiples of the industry peer. PC_i = Primary Capital raised (Offer Price * No. of shares issued) for i^{th} firm, OSC_i = Other sources of capital (Total Funds – PC_i) for i^{th} firm. Total sources of funds are sum of funds from operations, financing and investment activities. A_{i0} = Total Assets at time zero for i^{th} firm. T and I are year and industry dummies respectively. $Ln[(PC_i/A_{i0})+1]$, $Ln[(OSC_i/A_{i0})+1]$ and $Ln[A_{i0}]$ are controls variables in the regression. T-statistics are reported in parenthesis below the co-efficient value and have been estimated using clustered standard errors. ***, ** and * represent significance at 1%, 5% and 10% level. *N* is the number of SEOs in a yearly regression.

Table 6
Calendar time factor regressions of high *vs.* low mispriced (market-to-value – *M/V*) Indian IPOs based on price multiples of their industry peers

Panel A	**1**			**2**			**3**		
	High M/V based on P/S multiple			**Low M/V based on P/S multiple**			**Difference between High M/V and Low M/V based on P/S multiple**		
	CAPM	**Fama French**	**Carhart**	**CAPM**	**Fama French**	**Carhart**	**CAPM**	**Fama French**	**Carhart**
Intercept	-0.06	-0.04	-0.04	-0.07	-0.04	-0.04	-0.01	-0.01	-0.01
	(-4.70)***	(-3.64)***	(-3.16)***	(-3.68)***	(38.91)***	(-2.77)***	(-1.38)	(-1.60)	(-1.64)
R_m-R_f	0.93	0.96	0.97	0.92	0.96	0.96	-0.01	-0.02	-0.02
	(52.86)***	68.02)***	(65.85)***	(28.72)***	(-3.03)***	(41.08)***	(-0.79)	(-0.96)	(-1.08)
SMB		-0.14	-0.13		-0.17	-0.16		0.01	0.01
		(-7.19)***	(-5.77)***		(-4.16)***	(-4.27)***		(0.52)	0.59
HML		-0.07	-0.06		-0.09	-0.08		0.01	(0.01)
		(-3.36)***	(-2.19)**		(-1.73)*	(-1.63)		(0.40)	0.53
MOM			0.10			0.10			(0.01)
			(1.35)			(0.75)			0.13
Adj. R^2	0.953	0.962	0.963	0.859	0.870	0.871	0.002	0.003	0.003
F-Statistic	2809.63	1663.11	1161.03	827.9	635.93	451.17	0.63	0.51	0.41
Panel B	**1**			**2**			**3**		
	High M/V based on P/EBITDA multiple			**Low M/V based on P/EBITDA multiple**			**Difference between High M/V and Low M/V based on P/EBITDA multiple**		
	CAPM	**Fama French**	**Carhart**	**CAPM**	**Fama French**	**Carhart**	**CAPM**	**Fama French**	**Carhart**
Intercept	-0.08	-0.04	-0.04	-0.06	-0.04	-0.03	-0.02	-0.01	-0.01
	(-4.78)***	(-3.72)***	(-3.30)***	(-3.69)***	(-2.74)***	(-2.55)**	(-2.09)**	(-0.94)	(-1.06)
R_m-R_f	0.91	0.95	0.96	0.94	0.97	0.97	-0.02	-0.01	-0.01
	(44.80)***	(60.39)***	(58.16)***	(42.14)***	(48.07)***	(49.15)***	(-1.77)*	(-1.08)	(-1.34)
SMB		-0.18	-0.16		-0.11	-0.10		-0.06	-0.06
		(-5.76)***	(-4.85)***		(-5.02)***	(-4.32)***		(-2.18)**	(-1.99)**
HML		-0.06	-0.05		-0.08	-0.07		0.02	0.02
		(-2.52)**	(-1.61)		(-2.53)**	(-2.39)**		(0.76)	(0.74)
MOM			0.10			0.08			0.00

			(1.14)			(0.72)			(0.03)
Adj. R^2	0.932	0.945	0.946	0.939	0.945	0.946	0.010	0.060	0.060
F-Statistic	2017.19	1331.49	903.7	1782.86	809.16	617.9	3.17	7.43	5.7
Panel C		**1**			**2**			**3**	
	High M/V based on P/E multiple			**Low M/V based on P/E multiple**			**Difference between High M/V and Low M/V based on P/E multiple**		
	CAPM	**Fama French**	**Carhart**	**CAPM**	**Fama French**	**Carhart**	**CAPM**	**Fama French**	**Carhart**
Intercept	-0.07	-0.04	-0.04	-0.07	-0.04	-0.03	0.00	0.00	0.00
	(-4.78)***	(-3.73)***	(-3.42)***	(-4.03)***	(-2.98)***	(-2.61)***	(-0.20)	(-0.35)	(-0.33)
R_m-R_f	0.92	0.95	0.95	0.93	0.96	0.97	-0.01	-0.01	-0.01
	(48.63)***	(60.02)***	(58.34)***	(40.34)***	(49.46)***	(47.64)***	(-0.77)	(-1.01)	(-0.92)
SMB		-0.14	-0.13		-0.15	-0.13		0.01	0.01
		(-6.04)***	(-5.44)***		(-4.77)***	(-4.59)***		(0.20)	(0.22)
HML		-0.05	-0.04		-0.09	-0.08		0.04	0.04
		(-2.42)**	(-1.65)		(-2.51)**	(-2.13)**		(1.13)	(1.25)
MOM			0.07			0.11			0.00
			(1.06)			(0.86)			(0.00)
Adj. R^2	0.941	0.949	0.950	0.932	0.942	0.943	0.002	0.012	0.012
F-Statistic	2376.13	1277.07	991.01	1634.31	885.18	581.84	0.6	1.37	1.2

Notes: Panels A1, B1 and C1 and Panel A2, B2 and C2 of this table reports the regression results of the following equation for high *M/V* IPOs and low *M/V* IPOs respectively, computed on the basis of *P/S* (Panel A), *P/EBITDA* (Panel B) and *P/E* (Panel C) multiple of industry peer:

$$R_{pt} - R_{ft} = \alpha + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 MOM_t + \varepsilon_t$$

Panels A3, B3 and C3 of this table reports the regression results of the following regression for the difference in the performance of high and low *M/V* IPOs computed on the basis of *P/S* (Panel A), *P/EBITDA* (Panel B) and *P/E* (Panel C) multiple of industry peer:

$$IPO\_H_{pt} - IPO\_L_{pt} = \alpha + \beta(R_{mt} - R_{ft}) + s\,SMB_t + h\,HML_t + m\,MOM_t + \varepsilon_t$$

R_{pt} is the monthly portfolio returns calculated for the month *t* and R_{ft} is the one year risk-free rate. We construct equally-weighted portfolios of firms that issued IPOs in the previous three years and belong to a specific median for every month from 1991 to 2012. $(R_{mt} - R_{ft})$ is the market risk premium, R_{mt} is the market return for the month *t*, which is CNX Nifty Index return. SMB_t is the monthly return on the portfolio of small stocks minus large stocks. HML_t is the monthly return on the portfolio of high book-to-market minus low book-to-market returns. MOM_t is the momentum factor which is returns on the portfolio of high momentum stocks (high past returns i.e. winners) minus low momentum stocks (low past returns i.e. losers). Momentum is computed on the basis of previous one year returns. IPO_H_{pt} is the monthly portfolio returns of IPOs having high *M/V* ratio for the month *t*. IPO_L_{pt} is the monthly portfolio returns of IPOs having low *M/V* ratio for the month *t*. T-statistics are reported in parenthesis below the co-efficient value and have been estimated using clustered standard errors. ***, ** and * represent significance at 1%, 5% and 10% level.

Table 7
Calendar time factor regressions of high *vs.* low growth (value-to-book – *V/B*) Indian IPOs based on price multiples of their industry peers

Panel A	**1**			**2**			**3**		
	High V/B based on P/S multiple			**Low V/B based on P/S multiple**			**Difference between High V/B and Low V/B based on P/S multiple**		
	CAPM	**Fama French**	**Carhart**	**CAPM**	**Fama French**	**Carhart**	**CAPM**	**Fama French**	**Carhart**
Intercept	-0.07	-0.04	-0.04	-0.06	-0.04	-0.03	0.01	0.01	0.01
	(-4.09)***	(-2.64)***	(-2.12)**	(-4.37)***	(-3.55)***	(-3.09)***	(1.17)	(1.42)	(1.47)
R_m-R_f	0.92	0.96	0.97	0.94	0.96	0.97	0.02	0.02	0.02
	(30.05)***	(34.51)****	(34.20)***	(53.46)***	(69.28)***	(65.72)***	(0.87)	(0.88)	(1.02)
SMB		-0.17	-0.15		-0.14	-0.12		-0.01	0.00
		(-5.30)***	(-4.20)***		(-5.44)***	(-4.73)***		(-0.36)	(-0.11)
HML		-0.10	-0.08		-0.07	-0.06		-0.01	0.00
		(-2.85)***	(-2.07)**		(-2.21)**	(-1.71)*		(-0.30)	(-0.12)
MOM			0.17			0.08			0.04
			(1.05)			(1.12)			(0.42)
Adj. R^2	0.835	0.845	0.848	0.954	0.962	0.962	0.002	0.002	0.003
F-Statistic	906.93	418.7	320.57	2871.31	1688.8	1105.34	0.76	0.29	0.31
Panel B	**1**			**2**			**3**		
	High V/B based on P/EBITDA multiple			**Low V/B based on P/EBITDA multiple**			**Difference between High V/B and Low V/B based on P/EBITDA multiple**		
	CAPM	**Fama French**	**Carhart**	**CAPM**	**Fama French**	**Carhart**	**CAPM**	**Fama French**	**Carhart**
Intercept	-0.08	-0.05	-0.04	-0.06	-0.04	-0.03	-0.01	-0.02	-0.02
	(-3.54)***	(-2.41)**	(-2.19)**	(-4.70)***	(-3.44)***	(-3.10)***	(-0.88)	(-1.07)	(-1.04)
R_m-R_f	0.91	0.95	0.97	0.93	0.96	0.97	0.00	-0.01	-0.01
	(27.44)***	(31.49)***	(33.99)***	(52.87)***	(66.50)***	(63.33)***	(-0.08)	(-0.39)	(-0.27)
SMB		-0.16	-0.13		-0.15	-0.14		0.04	0.05
		(-4.24)***	(-3.30)***		(-5.27)***	(-4.48)***		(1.38)	(1.37)
HML		-0.17	-0.15		-0.05	-0.04		-0.03	-0.03
		(-3.40)***	(-3.04)***		(-1.59)	(-1.21)		(-1.40)	(-1.19)
MOM			0.18			0.07			0.05

			(1.21)			(0.78)			(0.58)
Adj. R^2	0.858	0.872	0.875	0.950	0.960	0.960	0.000	0.024	0.026
F-Statistic	755.37	439.29	419.71	2810.5	1526.29	1040.78	0.01	1.92	1.35
Panel C		**1**			**2**			**3**	
	High V/B based on P/E multiple			**Low V/B based on P/E multiple**			**Difference between High V/B and Low V/B based on P/E multiple**		
	CAPM	**Fama French**	**Carhart**	**CAPM**	**Fama French**	**Carhart**	**CAPM**	**Fama French**	**Carhart**
Intercept	-0.07	-0.05	-0.05	-0.07	-0.04	-0.03	0.00	-0.01	-0.01
	(-3.67)***	(-2.65)***	(-2.57)**	(-4.75)***	(-3.59)***	(-3.03)***	(-0.20)	(-0.81)	(-0.92)
R_m-R_f	0.93	0.96	0.96	0.93	0.96	0.97	0.01	0.00	0.00
	(31.82)***	(34.77)***	(36.20)***	(52.51)***	(68.77)***	(61.80)***	(0.53)	(-0.07)	(-0.17)
SMB		-0.14	-0.13		-0.16	-0.14		0.05	0.05
		(-4.60)***	(-4.46)***		(-5.67)***	(-4.57)***		(1.51)	(1.34)
HML		-0.09	-0.08		-0.07	-0.05		0.01	0.01
		(-2.66)***	(-2.51)**		(-2.21)**	(-1.61)		(0.59)	(0.49)
MOM			0.07			0.10			-0.03
			(0.59)			(1.10)			(-0.28)
Adj. R^2	0.914	0.922	0.922	0.948	0.958	0.959	0.001	0.025	0.026
F-Statistic	1015.65	416.48	404.99	2771.85	1612.46	988.36	0.29	1.2	0.88

Notes: Panels A1, B1 and C1 and Panel A2, B2 and C2 of this table reports the regression results of the following equation for high *M/V* IPOs and low *M/V* IPOs respectively, computed on the basis of *P/S* (Panel A), *P/EBITDA* (Panel B) and *P/E* (Panel C) multiple of industry peer:

$$R_{pt} - R_{ft} = \alpha + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 MOM_t + \varepsilon_t$$

Panels A3, B3 and C3 of this table reports the regression results of the following regression for the difference in the performance of high and low *V/B* IPOs computed on the basis of *P/S* (Panel A), *P/EBITDA* (Panel B) and *P/E* (Panel C) multiple of industry peer:

$$IPO\_H_{pt} - IPO\_L_{pt} = \alpha + \beta\,(R_{mt} - R_{ft}) + s\,SMB_t + h\,HML_t + m\,MOM_t + \varepsilon_t$$

R_{pt} is the monthly portfolio returns calculated for the month *t* and R_{ft} is the one year risk-free rate. We construct equally-weighted portfolios of firms that issued IPOs in the previous three years and belong to a specific median for every month from 1991 to 2012. $(R_{mt} - R_{ft})$ is the market risk premium, R_{mt} is the market return for the month *t*, which is CNX Nifty Index return. SMB_t is the monthly return on the portfolio of small stocks minus large stocks. HML_t is the monthly return on the portfolio of high book-to-market minus low book-to-market returns. MOM_t is the momentum factor which is returns on the portfolio of high momentum stocks (high past returns i.e. winners) minus low momentum stocks (low past returns i.e. losers). Momentum is computed on the basis of previous one year returns. IPO_H_{pt} is the monthly portfolio returns of IPOs having high *V/B* ratio for the month *t*. IPO_L_{pt} is the monthly portfolio returns of IPOs having low *V/B* ratio for the month *t*. T-statistics are reported in parenthesis below the co-efficient value and have been estimated using clustered standard errors. ***, ** and * represent significance at 1%, 5% and 10% level.

Table 8
Calendar time factor regressions of high *vs.* low misprice (market-to-value – *M/V*) and high *vs.* low growth (value-to-book – *V/B*) Indian SEOs

Panel A	**1**			**2**			**3**		
	High M/V SEOs			**Low M/V SEOs**			**Difference between High M/V and Low M/V SEOs**		
	CAPM	**Fama French**	**Carhart**	**CAPM**	**Fama French**	**Carhart**	**CAPM**	**Fama French**	**Carhart**
Intercept	-0.13	-0.10	-0.10	-0.01	0.01	0.01	-0.02	-0.02	-0.02
	(-2.54)**	(-1.83)*	(-1.84)*	(-0.39)	(0.38)	(0.41)	(-0.85)	(-0.74)	(-0.72)
R_m-R_f	0.77	0.80	0.80	1.01	1.03	1.03	-0.01	-0.01	0.00
	(9.85)***	(9.95)***	(9.78)***	(44.48)***	(44.03)***	(43.39)***	(-0.26)	(-0.16)	(-0.13)
SMB		-0.19	-0.19		-0.07	-0.07		-0.01	-0.01
		(-1.6)	(-1.58)		(-2.03)**	(-1.84)*		(-0.16)	(-0.1)
HML		-0.14	-0.14		0.05	0.05		-0.09	-0.08
		(-1.24)	(-1.25)		(1.52)	(1.54)		(-1.76)*	(-1.65)
MOM			-0.05			0.02			0.02
			(-0.21)			(0.29)			(0.17)
Adj. R^2	0.2902	0.293	0.2901	0.8934	0.8974	0.897	-0.004	0.0027	-0.0015
F-Statistic	97.08	33.46	25.00	1978.42	689.3	514.96	0.07	1.22	0.91
Panel B	**1**			**2**			**3**		
	High V/B SEOs			**Low V/B SEOs**			**Difference between High V/B and Low V/B SEOs**		
	CAPM	**Fama-French**	**Carhart**	**CAPM**	**Fama-French**	**Carhart**	**CAPM**	**Fama French**	**Carhart**
Intercept	0.01	0.02	0.02	-0.04	-0.02	-0.02	0.01	0.02	0.02
	(1.02)	(1.37)	(1.46)	(-2.7)***	(-1.7)**	(-1.71)*	(0.41)	(1.08)	(1.36)
R_m-R_f	1.03	1.04	1.05	0.99	1.00	1.00	-0.02	-0.01	0.00
	(48.71)***	(47.41)***	(47.29)***	(49.43)***	(48.38)***	(47.44)***	(-1)	(-0.37)	(0.13)
SMB		-0.04	-0.02		-0.07	-0.07		-0.07	-0.05
		(-1.19)	(-0.65)		(-2.16)**	(-2.13)**		(-1.95)*	(-1.23)
HML		-0.01	0.01		0.02	0.02		-0.10	-0.08
		(-0.25)	(0.16)		(0.76)	(0.7)		(-2.79)***	(-2.17)**

MOM			0.10			-0.01			0.19
			(1.51)			(-0.19)			(2.49)**
Adj. R^2	0.9095	0.9093	0.9098	0.9129	0.9154	0.915	0	0.0263	0.0477
F-Statistic	2372.54	789.71	596.07	2443.76	841.25	628.31	1.01	3.1	3.92

Notes: Panels A1 and B1 and Panels A2 and B2 of this table reports the following regression results of the equation for high and low *M/V* SEOs and high and low *V/B* SEOs respectively, computed on the basis of residual income model:

$$R_{pt} - R_{ft} = \alpha + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 MOM_t + \varepsilon_t$$

Panels A3 (and B3) of this table reports the regression results of the following regression for the difference in the performance of high *M/V* (and *V/B*) SEOs and low *M/V* (and *V/B*) SEOs:

$$SEO\_H_{pt} - SEO_{L_{pt}} = \alpha + \beta\,(R_{mt} - R_{ft}) + s\,SMB_t + h\,HML_t + m\,MOM_t + \varepsilon_t$$

R_{pt} is the monthly portfolio returns calculated for the month t and R_{ft} is the one year risk-free rate. We construct equally-weighted portfolios of firms that issued SEOs in the previous three years and belong to a specific median for every month from 1991 to 2012. $(R_{mt} - R_{ft})$ is the market risk premium, R_{mt} is the market return for the month *t,* which is CNX Nifty Index return. SMB_t is the monthly return on the portfolio of small stocks minus large stocks. HML_t is the monthly return on the portfolio of high book-to-market minus low book-to-market returns. MOM_t is the momentum factor which is returns on the portfolio of high momentum stocks (high past returns i.e. winners) minus low momentum stocks (low past returns i.e. losers). Momentum is computed on the basis of previous one year returns. SEO_H_{pt} is the monthly portfolio returns of SEOs having high *M/V* or *V/B* ratio for the month *t.* SEO_L_{pt} is the monthly portfolio returns of SEOs having low *M/V* or *V/B* ratio for the month *t.* T-statistics are reported in parenthesis below the co-efficient value and have been estimated using clustered standard errors. ***, ** and * represent significance at 1%, 5% and 10% level.

Table 9A
Effect of mispricing and growth opportunities on post-issue changes in assets and expenditures for Indian IPOs using residual income model when growth rate is 0%

			M/V	V/B	LnPC	LnOS	LnTA			
Y	*t*	α	β_1	β_2	β_3	β_4	β_5	R^2	F-Value	N
ΔTotal Assets	1	0.559***	-0.004***	0.001***	1.33***	13.299***	-0.073***	0.508	34.58	967
		(4.69)	(-3.46)	(3.38)	(20.39)	(7.52)	(-6.48)			
	2	0.793***	-0.006***	0.001***	1.528***	6.706***	-0.085***	0.504	34.05	967
		(5.45)	(-4.11)	(4.17)	(19.25)	(7.59)	(-6.18)			
	3	1.105***	-0.008***	0.001***	1.575***	6.815***	-0.098***	0.471	29.85	967
		(6.39)	(-4.24)	(4.65)	(16.68)	(6.49)	(-6.04)			
	4	1.289***	-0.009***	0.001***	1.601***	7.505***	-0.105***	0.437	25.19	937
		(6.41)	(-4.23)	(4.26)	(14.72)	(6.21)	(-5.6)			
ΔInventory	1	0.416*	-0.003	0.004***	0.415***	8.12	-0.051**	0.12	3.99	849
		(1.7)	(-0.52)	(6.50)	(2.71)	(1.14)	(-2.24)			
	2	1.074***	-0.007	0.005***	0.414**	6.233	-0.082***	0.126	4.21	847
		(3.57)	(-1.15)	(6.54)	(2.24)	(0.72)	(-2.96)			
	3	1.25***	-0.014**	0.005***	0.724***	13.1	-0.095***	0.152	5.2	842
		(3.72)	(-2.16)	(6.51)	(3.49)	(1.34)	(-3.11)			
	4	1.137***	-0.017**	0.005***	0.721***	5.13	-0.121***	0.147	4.84	817
		(2.96)	(-2.31)	(5.49)	(3.03)	(0.46)	(-3.44)			
ΔCash	1	-0.005	-0.009	0.000	3.844***	72.997***	-0.067	0.334	16.69	961
		(-0.01)	(-1.57)	(0.62)	(13.32)	(9.18)	(-1.34)			
	2	0.173	-0.011*	0.001	3.448***	62.867***	-0.066	0.284	13.21	961
		(0.31)	(-1.89)	(1.39)	(11.40)	(7.53)	(-1.26)			
	3	0.115	-0.015**	0.001	3.197***	54.209***	-0.036	0.25	11.08	960
		(0.2)	(-2.46)	(1.25)	(10.29)	(6.34)	(-0.67)			
	4	0.164	-0.015**	0.001	3.061***	62.171***	-0.093*	0.246	10.51	929
		(0.28)	(-2.54)	(1.91)	(9.70)	(7.20)	(-1.71)			
ΣCAPEX	1	0.356***	-0.001*	0.0004***	0.232***	-0.005	-0.045***	0.196	8.14	967
		(4.49)	(-1.73)	(4.19)	(5.35)	(0.00)	(-5.95)			
	2	0.445***	-0.003**	0.001***	0.493***	4.299***	-0.055***	0.271	12.43	967
		(4.42)	(-2.35)	(4.04)	(8.94)	(2.88)	(-5.81)			
	3	0.621***	-0.004***	0.001***	0.652***	7.918***	-0.073***	0.302	14.48	967
		(5.09)	(-2.8)	(5.07)	(9.76)	(4.37)	(-6.29)			
	4	0.709***	-0.005***	0.001***	0.764***	9.325***	-0.077***	0.289	13.64	967
		(4.79)	(-2.92)	(4.62)	(9.43)	(4.25)	(-5.54)			
ΣR&D	1	0.001	0.000	0.000	-0.001	-0.031	0.000	0.037	1.28	967
		(0.38)	(-0.09)	(-0.30)	(-0.58)	(-0.98)	(-0.09)			
	2	0.002	0.000	0.000	-0.008***	-0.698***	0.000	0.166	6.66	967
		(0.47)	(-0.35)	(-0.66)	(-3.39)	(-10.43)	(-0.62)			
	3	0.005	0.000	0.000	-0.017***	-1.456***	-0.001	0.258	11.62	967
		(0.67)	(-0.45)	(-0.80)	(-4.53)	(-14.24)	(-0.82)			
	4	0.007	0.000	0.000	-0.027***	-2.43***	-0.001	0.33	16.54	967
		(0.68)	(-0.55)	(-0.60)	(-4.99)	(-16.72)	(-0.63)			
ΣDebt Reduction	1	0.01	0.000	0.000	0.011	0.197	0.001	0.015	0.52	967
		(0.59)	(0.96)	(0.56)	(1.27)	(0.82)	(0.76)			

2	-0.003	0.000	0.000	0.028**	0.448	0.003	0.024	0.83	967
	(-0.14)	(0.83)	(0.03)	(2.47)	(1.47)	(1.60)			
3	0.004	0.000	0.000	0.079***	1.293***	0.005*	0.044	1.56	967
	(0.12)	(-0.14)	(-0.45)	(4.34)	(2.63)	(1.63)			
4	0.042	0.000	0.000	0.218***	3.967***	-0.001	0.109	4.09	967
	(0.75)	(-0.57)	(1.10)	(7.16)	(4.80)	(-0.10)			
Industry and Time FE	Yes								

Notes: This table reports the regression results for IPOs showing the impact of two components of *M/B* ratio – *M/V* and *V/B* on the post-issue changes in assets and expenditures. In the above table, the fundamental value of the stock i.e. *V* is computed using Ohlson's (1990) Residual Income Model with a constant discount rate of 13% and terminal growth rate i.e., g=0%. Under growth=0%, fair value is computed with the assumption of no earning growth after year 3. We regress changes in six accounting variables *i.e.* cash, inventory, total assets, capital expenditure, R&D and reduction in long-term debt measured over four years post-issue, +1, +2, +3, and +4 year. Precisely, the equation is stated as follows:

$$Y_{it} = \alpha + \beta_1 (M/V)_i + \beta_2 (V/B)_i + \beta_3 ln[(\frac{PC_i}{A_{i0}}) + 1] + \beta_4 \ln [(\frac{OSC_i}{A_{i0}}) + 1] + \beta_5 In[A_{i0}] + D_T + D_I + \varepsilon_i$$

Where Y_{it} = $((S_{it} - S_{i0})/A_{i0})$ for S_{it} = inventory, cash and total assets, for i^{th} firm and for t=1 to 4 years. Y_{it} = $(\sum_{j=1}^{4} S_{ij}/A_{i0})$ for S_i = Capital expenditures, R&D and long-term debt reduction, for i^{th} firm and for j =1 to 4 years. $(M/V)_i$ and $(V/B)_i$ are price-to-value and value-to-book components of IPO firm *i* that are computed based on pricing multiples of industry peer. PC_i = Primary Capital raised (Offer Price * No. of shares issued) for i^{th} firm, OSC_i = Other sources of capital (Total Funds – PC_i) for i^{th} firm. Total sources of funds are sum of funds from operations, financing and investment activities. A_{i0} = Total Assets at time zero for i^{th} firm. *T* and *I* are year and industry dummies respectively. $Ln[(PC_i/A_{i0})+1]$, $Ln[(OSC_i/A_{i0})+1]$ and $Ln[A_{i0}]$ are controls variables in the regression. T-statistics are reported in parenthesis below the co-efficient value and have been estimated using clustered standard errors. ***, ** and * represent significance at 1%, 5% and 10% level.

Table 9B
Effect of mispricing and growth opportunities on post-issue changes in assets and expenditures for Indian IPOs using residual income model when growth rate is 5%

			M/V	V/B	LnPC	LnOS	LnTA			
Y	*t*	α	β_1	β_2	β_3	β_4	β_5	R^2	F-Value	n
ΔTotal	1	0.644***	-0.013***	0.0003***	1.286***	11.606***	-0.08***	0.523	33.9	967
Assets		(5.18)	(-4.300	(3.30)	(19.72)	(6.66)	(-7.07)			
	2	0.941***	-0.019***	0.001***	1.498***	6.079***	-0.097***	0.53	34.9	967
		(6.27)	(-5.42)	(4.13)	(19.13)	(7.11)	(-7.09)			
	3	1.329***	-0.024***	0.001***	1.541***	6.174***	-0.115***	0.492	30.01	967
		(7.35)	(-5.77)	(4.53)	(16.35)	(6.00)	(-6.97)			
	4	1.501***	-0.027***	0.001***	1.574***	6.838***	-0.121***	0.454	24.93	937
		(7.08)	(-5.55)	(4.16)	(14.45)	(5.76)	(-6.34)			
ΔInventory	1	0.482*	-0.001	0.002***	0.422***	10.598	-0.059**	0.121	3.74	849
		(1.85)	(-0.15)	(6.50)	(2.65)	(1.43)	(-2.51)			
	2	1.346***	-0.016**	0.003***	0.492***	9.625	-0.103***	0.14	4.41	847
		(4.25)	(-2.38)	(6.44)	(2.58)	(1.07)	(-3.62)			
	3	1.333***	-0.025	0.003***	0.754***	17.447	-0.109***	0.156	4.98	842
		(3.72)	(-1.64)	(6.34)	(3.49)	(1.71)	(-3.40)			
	4	1.163***	-0.034*	0.003***	0.809***	11.634	-0.127***	0.148	4.52	817
		(2.84)	(-1.77)	(5.27)	(3.24)	(1.00)	(-3.45)			
ΔCash	1	0.091	-0.011	0.000	3.533***	65.392***	-0.081	0.315	14.16	961
		(0.16)	(-0.87)	(0.64)	(11.95)	(8.14)	(-1.59)			
	2	0.317	-0.007	0.001	3.183***	56.699***	-0.084	0.271	11.42	961
		(0.54)	(-0.52)	(1.40)	(10.36)	(6.78)	(-1.58)			
	3	0.273	-0.021	0.001	2.953***	48.107***	-0.046	0.233	9.34	960
		(0.45)	(-1.49)	(1.24)	(9.35)	(5.60)	(-0.83)			
	4	0.121	-0.022	0.001	2.862***	56.951****	-0.095	0.227	8.72	929
		(0.20)	(-1.53)	(1.85)	(8.86)	(6.53)	(-1.70)			
ΣCAPEX	1	0.380***	-0.005**	0.0002***	0.236***	0.095	-0.049***	0.211	8.26	967
		(4.50)	(-2.49)	(4.09)	(5.33)	(0.08)	(-6.32)			
	2	0.516***	-0.008***	0.0003***	0.497***	4.274***	-0.062***	0.283	12.18	967
		(4.77)	(-3.00)	(3.91)	(8.76)	(2.82)	(-6.31)			
	3	0.718***	-0.01***	0.001***	0.670***	8.021***	-0.081***	0.315	14.23	967
		(5.47)	(-3.21)	(4.92)	(9.73)	(4.36)	(-6.79)			
	4	0.831***	-0.013***	0.001***	0.799***	9.567***	-0.086***	0.301	13.29	967
		(5.20)	(-3.47)	(4.43)	(9.53)	(4.27)	(-5.90)			
ΣR&D	1	0.001	0.000	0.000	-0.001	-0.033	0.000	0.039	1.27	967
		(0.60)	(0.14)	(-0.29)	(-0.72)	(-0.98)	(-0.23)			
	2	0.003	0.000	0.000	-0.009***	-0.713***	0.000	0.168	6.26	967
		(0.64)	(-0.08)	(-0.62)	(-3.41)	(-10.09)	(-0.77)			

	3	0.007	0.000	0.000	-0.018***	-1.488***	-0.001	0.262	11.01	967
		(0.86)	(-0.18)	(-0.75)	(-4.57)	(-13.82)	(-1.01)			
	4	0.010	0.000	0.000	-0.029***	-2.487***	-0.001	0.338	15.81	967
		(0.94)	(-0.36)	(-0.56)	(-5.07)	(-16.3)	(-0.86)			
ΣDebt	1	0.000	0.000	0.000	0.011	0.154	0.002	0.014	0.45	967
Reduction		(0.01)	(0.09)	(0.69)	(1.31)	(0.66)	(1.11)			
	2	-0.013	0.000	0.000	0.029**	0.421	0.004*	0.024	0.76	967
		(-0.60)	(-0.13)	(0.05)	(2.57)	(1.39)	(1.82)			
	3	-0.012	0.001	0.000	0.082***	1.387***	0.006*	0.047	1.53	967
		(-0.34)	(1.01)	(-0.42)	(4.35)	(2.74)	(1.74)			
	4	0.034	0.000	0.000	0.228***	4.148***	-0.001	0.114	3.97	967
		(0.55)	(0.13)	(1.06)	(7.08)	(4.82)	(-0.26)			
Industry and Time FE					Yes					

Notes: This table reports the regression results for IPOs showing the impact of two components of *M/B* ratio – *M/V* and *V/B* on the post-issue changes in assets and expenditures. In the above table, the fundamental value of the stock i.e. *V* is computed using Ohlson's (1990) Residual Income Model with a constant discount rate of 13% and terminal growth rate i.e., g=5%. Under growth=5%, fair value is computed with the assumption of 5% indefinite earnings growth after year 3. We regress changes in six accounting variables *i.e.* cash, inventory, total assets, capital expenditure, R&D and reduction in long-term debt measured over four years post-issue, +1, +2, +3, and +4 year. Precisely, the equation is stated as follows:

$$Y_{it} = \alpha + \beta_1 (M/V)_i + \beta_2 (V/B)_i + \beta_3 ln[(\frac{PC_i}{A_{i0}}) + 1] + \beta_4 \ln [\left(\frac{OSC_i}{A_{i0}}\right) + 1] + \beta_5 In[A_{i0}] + D_T + D_I + \varepsilon_i$$

Where Y_{it} = $((S_{it} - S_{i0})/A_{i0})$ for S_{it} = inventory, cash and total assets, for i^{th} firm and for t=1 to 4 years. Y_{it} = $(\sum_{j=1}^{4} S_{ij}/A_{i0})$ for S_i = Capital expenditures, R&D and long-term debt reduction, for i^{th} firm and for j =1 to 4 years. $(M/V)_i$ and $(V/B)_i$ are price-to-value and value-to-book components of IPO firm *i* that are computed based on pricing multiples of industry peer. PC_i = Primary Capital raised (Offer Price * No. of shares issued) for i^{th} firm, OSC_i = Other sources of capital (Total Funds – PC_i) for i^{th} firm. Total sources of funds are sum of funds from operations, financing and investment activities. A_{i0} = Total Assets at time zero for i^{th} firm. *T* and *I* are year and industry dummies respectively. $Ln[(PC_i/A_{i0})+1]$, $Ln[(OSC_i/A_{i0})+1]$ and $Ln[A_{i0}]$ are controls variables in the regression. T-statistics are reported in parenthesis below the co-efficient value and have been estimated using clustered standard errors. ***, ** and * represent significance at 1%, 5% and 10% level.

Appendix A1
Listing time firm characteristics for IPO firms and their respective one-to-one matches

Variable	N	Mean of IPO firm	Mean of Match Firm	Difference	t-value	p-value
Sales (INR Millions)	1,856	1437.7	1124.8	312.9	1.51	0.132
Total Assets (INR Millions)	1,856	2784.4	2169.7	614.7	0.93	0.355
Market Cap (INR Millions)	1,856	3848.1	2898.7	949.4	1.63	0.113
EBIT (INR Millions)	1,856	326.7	209.6	117.1	1.60	0.110
EBIT to TA	1,856	0.104	0.101	0.003	0.65	0.513
Profit Margin	1,856	2.810	4.103	-1.293	-0.84	0.399

This table reports summary statistics for the set of proxy variables (firm characteristics) of newly listed 1,856 IPO firms and their respective identical one-to-one matched firms from 1991 to 2012. All data are sourced in PRIME database. Here 'Match Firms' refer to one-to-one matched firms using price multiple methodology outlined in Rhodes-Kropf et al. (2005). N refers to the number of observations available for the respective variable in each category. Mean is the arithmetic average value for each proxy variable. All the non-ratio proxy variables have been reported in Million Indian Rupees. We use the two-sample mean-comparison test (T-statistics) to test the significance of differences in mean values. 'Difference' refers to the difference in mean of IPO firms and their respective matched firms. 't-value' (p-value) refers to the respective T-statistics (P-Value) of the difference in mean.

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Wadhwa, K.

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