“Prospectus disclosure and the stock market performance of initial public offerings (IPOs): the case of Thailand”

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Prospectus disclosure and the stock market performance of initial public offerings (IPOs): the case of Thailand

Abstract

This study examines if the prospectus disclosure of the motives for an initial public offering (IPO) explains the long-run performance of equity issuers. It uses hand-collected data for 245 IPOs from the Stock Exchange of Thailand (SET), and also the Market for Alternative Investments (MAI), taken from the 12-year period between 2001 and 2012. The stock returns of the IPOs were investigated using cumulative abnormal return (CAR) and buy-and-hold abnormal return (BHAR). The authors find a significant impact for the level of use-of-proceeds disclosure on IPO underpricing, and further that the ex-ante uncertainty and signalling hypotheses explain the IPO underpricing phenomenon in the Thai IPO market. Furthermore, Thai firms citing investment needs show significant positive abnormal returns after the offering, but issuers that state general corporate purposes and debt payments motives underperform. The authors provide evidence that the offering size and bull-market conditions significantly affect both the IPO pricing and also the strategic disclosure of information in the prospectus. Our results are robust, having been subjected to a wide range of sensitivity checks.

Keywords: Prospectus disclosure, IPO performance, Thailand.
JEL Classification: G14, G30, G32.

Introduction

Security regulators in different countries require initial public offering (IPO) issuers, in accordance with the Securities and Exchange Commission (SEC) rules, to disclose the intended uses of proceeds in the IPO prospectus. Given that the prospectus is the primary source of information, and that investors can use it to evaluate specifically why firms issue equity and their prospects after the offering, it is fundamental to understand its usefulness.

Existing literature presents extensive empirical evidence from international markets to show that Initial Public Offerings (IPOs) outperform in the short run, especially on the first day of trading. This effect is commonly known as IPO underpricing (Ritter, 1991; Lee et al., 1996; Kooli and Suret, 2004; Álvarez and González, 2005; Akhigbe et al., 2006; Mazouz et al., 2008; Su and Bangassa, 2011; Thomadakis et al., 2012; Wen and Cao, 2013; Agathee et al., 2014)[1]. However, previous studies find no evidence that prospectus information on the issue motive can help investors predict post-issue performance in the developed markets (see for example, Dye, 2001; Ljungqvist and Wilhelm, 2003; Leone et al., 2007; Jenkinson and Ljungquist, 2001; Wyatt, 2014; Nielsen et al., 2015).

With regard to IPOs in Thailand, a few empirical studies have investigated IPO performance in the long-run in the Thai capital market (e.g. Allen et al., 1999; Chorruk and Worthington, 2010), but they have only used the Stock Exchange of Thailand (SET) index as a benchmark. For the level of intended use-of-proceeds disclosures in the IPO prospectus, to the best of our knowledge, this paper we write here is the first time that such investigation has been conducted for the Thai stock market. In addition, we formulate the intended use-of-proceeds disclosure index for measuring the level of the disclosure and also draw on hand-collected unique data on IPO subscription rates by foreigners and institutional investors as our additional proxies, sourcing these from electronic documents in the SEC library. These data reveal a number of differences compared to past empirical literature that focuses on the presence or absence of forecast disclosure. Importantly, our paper provides a more extensive contribution to the literature by both using a more up-to-date dataset than the data samples used in previous studies on the Thai IPO market, and also by analyzing the intended use-of-proceeds and IPO performance in two stock market segments, namely, SET and MAI.

Our findings suggest that Thai firms citing investment needs show significant positive abnormal performance after the offering, but issuers that state general corporate purposes and debt payments motives underperform. We provide evidence that the offering size and bull-market conditions significantly affect the IPO pricing and the strategic disclosure of information in the prospectus.

In terms of the value of investigating the Thai case and the contribution of our study, the Thai IPO stock market is particularly interesting to analyze for a number of reasons. First, compared to other coun-

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[1] IPO underpricing is determined by the percentage difference between the offer price and the closing price on the first trading day. In general, the underpricing is estimated as the percentage difference between the share price at which IPO stocks were sold to investors and the stock price at which the shares subsequently traded in the market.

tries that have established markets, such as the USA, the UK, Japan, Hong Kong, Singapore and others, the SET is a relatively new stock exchange. As a result, there are not yet many public companies listed on the Thai market. One of the ambitions of SET, therefore, is to stimulate market activity and increase the number of IPOs in Thailand. Second, the size of IPOs in Thailand is moderately small, and also the SET requirements to list IPOs differ from those in other countries. This may cause different patterns in the Thai IPOs' pricing, and consequently lead todifferent price dynamics over time. Third, Thailand has recently joined the ASEAN exchange. The ASEAN trading link system was established in 2012 and is designed to enable investors to trade stocks from one exchange to another more easily. There are now three exchanges that are connected to the ASEAN link system: the Bursa Malaysia, the Singapore Exchange and the Stock Exchange of Thailand (SET). As a result, through their local brokers, investors in Malaysia and Singapore can, for instance, conveniently trade in SET and MAI stocks, including Thai IPOs. In the future, it is expected that Indonesia, the Philippines and Vietnam will also gain access to the ASEAN link system. Fourth, Thailand is a relatively small and thinly traded market but it is quite well integrated into the global financial system. Hence, our results presented in this study may have broader implications for many other small and thin emerging markets similar to Thailand, which are also trying to go global by implementing economic, trade and financial reforms. Our findings may, therefore, be useful for investors and regulators in other emerging markets beyond Thailand.

The remainder of this paper is structured as follows. Section 1 is a brief literature review of studies that have considered the endogenous disclosure of intended use-of-proceeds. Section 2 provides details of the data, methodology, and models. Section 3 presents the empirical results, and final section concludes the paper, stating the significance of the main findings and suggesting avenues for future research.

1. Literature review and hypotheses development

Our paper is related to the following four strands of literature on the performance of IPOs: (i) intended use-of-proceeds disclosure and the long-run Performance of Initial Equity Issuers; (ii) use-of-proceeds purposes and IPO performance; (iii) ex-ante uncertainty, information disclosure and IPO discount; and (iv) signalling and Impresario hypotheses for IPOs.

1.1. Intended use-of-proceeds disclosure and cost of capital. One strand of the existing studies has focused on the level of use-of-proceeds disclosures on the stock market performance of IPOs. For example, Loughran and Ritter (1997) examined the role of agency problems and information asymmetry between management and investors in explaining IPOs long-run underperformance. They argue that managers influence investors' expectations about future performance through the level and type of information disclosed to investors. Similarly, using the stated use of the proceeds disclosed on the issuers' registration statements (S-3 form), Walker and Yost (2008) investigated investor reaction to announcements of 438 equity offerings in the US, and found that investors react more favorably to issue announcements for firms stating investment reasons than for firms that are vague and state general corporate purposes as the issue motive. This implies that the intended use of the issue proceeds allows investors to assess the quality of the offering, and also that the market perceives firms stating general motives for the issue as being more likely to engage in value destroying projects. In another study, Jenkinson and Ljungquist (2001) claim that information asymmetry and disclosure are used as proxies for reducing ex-ante uncertainty, and suggest that new issuers disclosing vague information about the use-of-proceeds results in a higher IPO discount rate. Overall, however, the literature contains mixed findings focusing on the roles of information disclosure in the use-of-proceeds section in prospectuses (see, for example, Beatty and Ritter, 1986; Beatty and Welch, 1996; Healey and Palepu, 2001; Schrand and Verrecchia, 2002; Schrand and Verrecchia, 2002; Leone et al., 2007; Bessler and Bittelmeyer, 2008; Chahine and Filatochev, 2008; Nielsen et al., 2015).

From the above analysis, it can be expected that companies that disclose substantial amounts of information on use-of-proceeds will reduce the cost of equity and will be associated with higher transparency, andtherefore also have a better long-term performance. Hence, the first hypothesis can be identified as follows.

H1 The level of intended use-of-IPO proceeds disclosure has a positive impact on firms' long-term performance of the stock price.

1.2 Use-of-proceeds purposes and IPO performance. According to Wyatt (2014), using proceeds to pay loans sends out a negative signal that may increase the ex-ante uncertainty of their offerings and the subsequent uncertainty associated with expected future cash flows. In this line, Pagano et al. (1998) and Leone et al. (2007) showed that firms using their proceeds to repay debt tend to be large and mature companies with growth opportunities, or companies that are going public to exploit mispricing. Furthermore, firms stating their use-of-proceeds to be for debt repayment may take advantage of overvalued stocks by timing IPOs

during periods of high returns (Autore et al., 2009). As a consequence, they are more likely to underperform in the long-run. In contrast, companies stating investment as the intended use-of-proceeds were able to signal their future investment opportunities more clearly (Autore et al., 2009; Hertzel and Li, 2007). Hence, it should not be expected they would be underperforming in the long-run. However, Jeanneret (2005) examined the relationship between the long-term performance of French SEOs and their intended use-of-proceeds. This study found that firms citing investment needs actually do show underperformance in the long-run, but there was no abnormal performance for firms whose stated purpose was to proceed as recapitalization. In the same vein, Ljungqvist and Wilhelm (2003) suggested that companies intending to use their proceeds for operating expenses rather than for investment and debt repayment were potentially riskier. Elsewhere, Ngatuni et al. (2007) argue that prospectus disclosure of the intended use of proceeds does not predict variation in SEO post-issue performance in the UK. The findings of these studies suggest a need to revisit this research question using a more recent sample period and alternative research design methods. Therefore, the second hypothesis is defined as:

H2 The intended use of IPO proceeds for repaying debt (investment) is inversely (positively) related to the long-run performance of IPOs.

1.3. Ex-ante uncertainty, information disclosure and IPO under-pricing. In an extension of Rock's (1986)[1] model of underpricing, Beatty and Ritter (1986), demonstrated that greater ex-ante uncertainty regarding a new issue is related to greater information asymmetry, which, then, results in higher underpricing. They also suggested that issues that are subject to information asymmetry, such as those from a small company, will tend to be underpriced. Consequently, such companies then have to face the problem of having to retain the shares themselves. Similarly, Rock (1986), Ritter (1998) and Ritter and Welch (2002) suggested that ex-ante uncertainty about future cash flows is related to a lower offer price than would otherwise be expected, and to more severe IPO underpricing. Thus, company characteristics, including age and size, are common proxies of IPO underpricing (Ljungqvist, 2007). Similarly, Chi and Padgett (2005), Cheung et al. (2009), Su and Bangassa (2011) and Lin and Tian (2012) found that the offering size or the flotation size of an IPO has a negative effect on an IPO's underpricing. In terms of drawing on publicly available information, many researchers have used the age of a firm at the time of offering as a proxy for measuring the *ex-ante* uncertainty of the IPOs (see for example, Diamond and Verrecchia, 1991; Carter et al., 1998; Chen et al., 2004; Kirkulak and Davis, 2005; Yu and Tse, 2006; Sullivan and Unite, 2009).

In this paper, we argue that disclosing information on the offer size and age of the firm has a negative impact on uncertainties and reducing initial returns. Hence, the hypotheses can be stated as follows:

H3 The information on offer size and age of the firm is negatively related to level of uncertainty and IPO underpricing.

It has been documented in previous studies that the time gap between the offer date and the first day of trading may affect the level of *ex-ante* uncertainty and IPO underpricing. For example, those firms that have an extended period of time (from the establishment date to the IPO offer date) have less information asymmetry. This argument has been theoretically developed by Chowdhry and Sherman (1996) and Su and Fleisher (1999). Indeed, the time-lag represents a return for the marketability risk of equity. For example, Chen et al. (2004) indicate that a long time-lag increases the risk to IPO subscribers because investors are not informed about the share value. Similarly, Yu and Tse (2006) and Uddin (2008) demonstrated that an extended time-lagis associated with IPO underpricing and high ex-ante uncertainty. Hence, H4 is stated as:

H4 The information disclosure on time-lag between the IPO date and the first trading date is positively related to IPO underpricing.

1.4. Signalling and impresario hypotheses for IPOs. Another strand of literature has placed emphasis on the relationship between signalling and the Impresario hypotheses, and the information disclosure of initial public offering (IPO). For example, Allen and Faulhaber (1989), Grinblatt and Hwang (1989) and Welch (1989) proposed the IPO 'signaling' hypotheses, stating that through 'signalling', good-quality firms are able to distinguish themselves from bad-quality ones by underpricing their new issues[2]. Consequently, a vast body of literaturehas extended the 'signalling' model and indicated that government affiliation has an impact on IPO underpricing (Chen et al., 2004[3]; Yu and Tse, 2006; Gao, 2010; Marisetty and Marti, 2010). Notably, the 'signalling' hypothesis assumes that the underpric-

[1] 'The 'winner's curse model' by Rock (1986) and Chen and Sherif (2016) assume that informed investors, such as issuing firms and their underwriters, have an informational advantage, compared to general and retail investors regarding the firms' present value and the risk of the future cash flows. Hence, informed investors invest only in attractively priced IPOs, while uninformed investors invest randomly. In order to attract less informed investors to preempt the new IPO, shares must on average be underpriced. "The uninformed compete with the informed, and the issuer must, ultimately, compensate them for their disadvantage" (Rock, 1986, p. 207).

[2] A good firm can leave a good impression with investors or use high underpricing in order to attract investors who will then subsequently subscribe to seasoned equity offerings (SEO).

[3] Chen et al. (2004) indicated that high government ownership is perceived as an increasing agency cost for private stockholders. However, there are marketability and liquidity problems when IPOs start trading if many shares are held by the state. The same researchers also found that government ownership is positively related to the initial return.

ing is a deliberate attempt by the issuer to signal its quality to the market' (Chi and Padgett 2005, p. 85). According to Welch's model (1989), a higher-quality firm would be more underpriced. In another study, Chen et al. (2004) suggested that firms with high profitability and growth rate are of interest to investors. This implies that the IPO underpricing should is greater when there is higher investor demand. Similarly, Cheung et al. (2009) and Su and Bangassa (2011) found a positive relationship between a firm's performance and IPOs underpricing. Also, Komenkul et al. (2016) examined the signalling effects for the detection of speculation of stocks in relation to the degree of their prior IPO underpricing. They found a significant positive relationship between the magnitudes of the IPO underpricing and the probability of an IPO firm being classified officially as speculative on the Turnover List (TOL), and government owned IPOs were found to be negatively related to the probability of appearing on the TOL. Therefore, we favour the arguments for a positive relationship between the shares owned by the government and the firm's performance and IPO underpricing:

H5 The percentage of shares owned by the government is positively related to IPO underpricing and to the long-run performance.

Moreover, Ritter (1998) found that only 26% of individual investors analyzed fundamental discrepancies between the intrinsic value and the offer price of IPOs. For edxample, Eng and Aw (2000) reported that retail investors do not pay attention to the fundamental aspects of IPOs. We can therefore conclude that individual and foreign investors are uninformed investors. In contrast, Lonkani and Firth (2005) and Marisetty and Subrahmanyam (2010) have suggested that institutional investors are better informed about IPO quality. Similarly, Rock (1986) and Beatty and Ritter (1986) demonstrated that informed investors always subscribe to the shares that are underpriced, whereas uninformed investors tend to receive a larger proportion of the overpriced issues. Hence, hypothesis (H6) can be stated as follows:

H6 The proportion of issues subscribed by foreigners (institutions) is negatively (positively) related to the initial return.

Table 1. Testable Hypotheses to Explain Underpricing and Long-run Performance

Hypothesis	Explanatory variable	Variable name	IPO underpricing	Long-run performance
			Expected sign	Expected sign
1. Use of IPO Proceeds	Use-of-proceed disclosure index	*UDI*	(-)	(+)
	Intended use of IPO proceeds for repaying debt	*DEBT*	(+)	(-)
	Intended use of IPO proceeds for working capital and investment	*INV*	(-)	(+)
2. *Ex-ante* uncertainty	The offer size of IPO firm	*SIZE*	(-)	
	The age of IPO firm	*AGE*	(-)	
	The time-lag between the firm establish date and the first trading date	*LAG*	(+)	
3. Signalling	The proportion of IPO shares owned by government	*GOV*	(+)	(+)
	Change in the earnings per share from the IPO issue date to the date just prior to the listing date	*EPS*	(+)	
	Return on asset	*ROA*	(+)	
	The proportion of issues subscribed by foreigner	*PFS*	(-)	
	The proportion of issues subscribed by institution	*INS*	(+)	
4. Impresario	Market-Adjusted Initial Return or IPO underpricing	*MAIR*		(-)

Note: The variables below are employed in the literature and in this study as explanations for the IPO underpricing in Thailand. Sections 3 and 4 of this paper provide further detailed definitions of the explanatory variables.

2. Data and methodology

2.1. Data. Our database consists of all IPOs listed on the Stock Exchange of Thailand (SET) and Market for Alternative Investments (MAI) during the period from January 2001 to April 2012. Notably, the listing criteria and regulations are more flexible in the MAI market compared to the SET market. We start our sample from 2001 because the annual volume of the IPO issues in the earlier years was very low, in particular, in the years from 1997 to 1999 when there were no IPOs issued at all in Thailand.

The sources of information about the issued IPOs are the official prospectus filing forms (Form 69-1) available from the IPO filing database provided by the Securities and Exchange Commission (SEC) in Thailand[1]. The information concerning IPO companies listed on the SET and MAI during the period 2001 to 2012 was obtained from several other sources including SEC, Thailand database, SET database and SETSMART. We obtained stock prices and stock market indices from DataStream.

[1] The listed companies are obliged to publish a prospectus detailing to all investors their company profiles, including the history of the firm, the organizational structure, the offer size, the proportion of shareholders, the financial statements covering 5-year periods and the risks involved in their operations etc. We obtained the prospectuses for all the IPOs in our sample from the SEC (http://sec.or.th). Additional information about the IPOs in our database was obtained from the SET website (http://set.or.th). Further data was obtained from the SET SMART website (http://www.setsmart.com).

2.2. Use-of-proceeds disclosure index[1]. The focus of this study is on the effect of all types of information contained in the narrative use-of-proceeds section of the IPO prospectus. However, for the SEC, Thailand Database, the IPO prospectus is provided in the Thai language version only. Therefore, we construct a disclosure index for measuring the levels of use-of-proceeds information reported in the unique Thai prospectuses. Firstly, we extend the disclosure of non-accounting information by classifying the intended use-of-proceeds into six major different issues, namely, working capital, general operation issues, research and development, service improvement, expanding businesses and paying down loans. Furthermore, we place importance on the magnitude of use-of-proceeds disclosure. We also subdivide the information level related to working capital and loan repayment to 2 levels (high and low) and investment to 3 levels (high, moderate and low) of disclosures (see more details in Table 2).

The contents of each use-of-proceeds were compared to the items on the disclosure scoreboard and coded as 1 or 0, depending on whether the IPO prospectus contained the voluntary disclosure. For example, if a company revealed the use-of-proceeds to be for a specific investment project and an amount of money to be for expanding their business as well, we gave 3 scores for the level of disclosure. The intended use-of-proceeds index was quantified as the percentage of recorded information items reported on the prospectus. The following formula is then used to calculate the index score of each IPO company.

$$UDI_i = \left(\frac{1}{n}\sum_{i=1}^{n} D_i\right) \times 100 \quad (1)$$

where D_i expresses item i with the value found in the IPO prospectus in use-of-proceeds section, otherwise 0. n is the maximum number of a uses-of-proceed total score in the IPO, which could be 10 scores.

Table 2. The percentage of IPO companies disclosing use-of-proceeds information

Use-of-Proceed items		%
1.	Working capital (WC) without details	72.7
2.	Working capital with details (including the amount money and the proportion of IPO proceeds used for WC)	20.4
3.	General operation issues (e.g. sales and marketing supports and factories and equipment)	48.2
4.	Research and development	13.5
5.	Service improvement	10.6
6.	Expanding business without or low details	64.5
7.	Expanding business with moderate details (e.g. use the IPO proceeds for which projects)	47.3
8.	Expanding business with more details (e.g. use the IPO proceeds for which projects with amount money)	15.5
9.	Paying down loans without details	43.7
10.	Paying down loans with more details (including the amount money and the proportion of IPO proceeds allocated for debt repayment)	11.0

Table 3 Panel *A* summarises the sample by exchange and by year of listing. We find approximately 65% (159 out of 245 total IPOs) of IPO listings are on the SET market, whereas only 35% are listed on the MAI market. Next, we report the number of IPOs by industry category in Panel B, and most of the IPOs in our sample pertained to the property andconstruction sector (47 firms). For the SET market, we show that approximately19% is dominated by firms from the service sector, 14% by financial sector firms, and 11.95% and 11.32% by industrial and technological sector firms respectively. For the MAI, the majority of IPOs are dominated by service and industrial sector firms.

Table 3. Sample Size

Panel A: sample size disaggregated by exchange and by IPO offering year						
Year	Stock exchange of Thailand (SET)		Market for alternative investment (MAI)		Total	
	Number	%	Number	%	Number	%
2001	6	3.77	3	3.49	9	3.67
2002	19	11.95	3	3.49	22	8.98
2003	21	13.21	6	6.98	27	11.02
2004	37	23.27	12	13.95	49	20.00
2005	31	19.50	14	1 6.28	45	18.37
2006	10	6.29	5	5.81	15	6.12
2007	6	3.77	6	6.98	12	4.90

[1] Details about how the disclosure instrument was developed and scored and the steps that were taken to ensure the validity and reliability of the scoring are available from authors upon request. In particular we provide 3 examples translated from Thai into English of how the disclosure was derived.

Table 3 (cont.). Sample Size

2008	8	5.03	3	3.49	11	4.49
2009	5	3.14	11	12.79	16	6.53
2010	4	2.52	7	8.14	11	4.49
2011	3	1.89	7	8.14	10	4.08
2012	9	5.66	9	10.46	18	7.35
Total	159	100.00	86	100.00	245	100.00
Panel B: sample size disaggregated by exchange and by industry group						
Industry	Stock exchange of Thailand (SET)		Market for alternative investment (MAI)		Total	
	Number	%	Number	%	Number	%
Agro & Food Industry	7	4.40	3	3.49	10	4.08
Consumer Products	3	1.89	11	12.79	14	5.71
Financial	22	13.84	1	1.16	23	9.39
Industrial	19	11.95	25	29.07	44	17.96
Property & Construction	46	28.93	10	11.63	56	22.86
Resources	14	8.81	2	2.33	16	6.53
Services	30	18.87	25	29.07	55	22.45
Technology	18	11.32	9	10.46	27	11.02
Total	159	100.00	86	100.00	245	100.00

In addition, we divide our full sample into two categories according to the purposes of the use-of-proceeds; namely, investment (153 IPOs) and debt repayment (92 IPOs). While the firms in the 'Investment' sample explicitly state that their main motives for issuingequity are to expand their factories or subsidiaries, including working capital and general operation issues, the main motives for 'Debt repayment' use -of- proceeds are stated to pay loans. Figure 1 plots the composition of the use of IPO proceeds for each year.

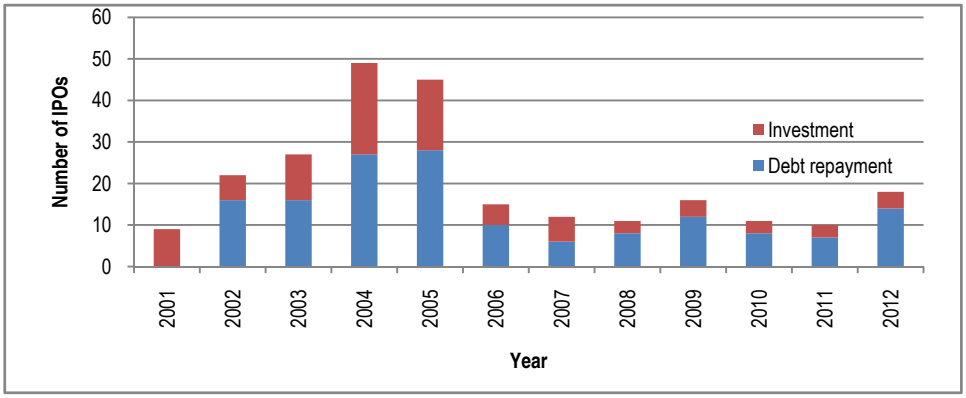

Fig. 1. Initial Public Offerings (IPOs) with intended use of the proceeds in Thailand between 2001 and 2012

2.3. Research Methodology. *2.3.1. Measuring the Intended Use-of-Proceeds on Under-pricing.* In order to measure the intended use-of-proceeds and factors affecting IPOs issue discounts, a panel linear regression model was used to test the ex-ante uncertainty, signalling and impresario hypotheses, as well as the factors known to affect under-pricing. The model takes the following form:

$$MAIR_i = \beta_0 + \beta_1 DEBT_i + \beta_2 INV_i + \beta_3 UDI_i + \beta_4 \ln SIZE_i + \beta_5 \ln AGE_i + \beta_6 LAG_i + \beta_7 EPS_i + \beta_8 ROA_i + \beta_9 ROE_i + \beta_{10} DE_i + \beta_{11} PFS_i + \beta_{12} INS_i + \beta_{13} GOV_i + \beta_{14} BULL_i + \sum_{j=15}^{21} \beta_j Industry_j + \sum_{j=22}^{32} \beta_j Year_j + \varepsilon_i \quad (2),$$

where $MAIR_i$ is the market-adjusted initial return $MAIR_i$ or the IPO underpricing calculated by $[(P_{i,1} - P_{i,0})/P_{i,0}] - R_{i,m}$ or percentage change between offer price and IPO closing price on the first trading day; $P_{i,1}$ is the closing price on the first day of trading; $P_{i,0}$ is the IPO offering price; and $R_{i,m}$ is the stock market index return from the IPO date to the first trading date[1]. $DEBT_i(INV_i)$ is a dummy variable equal to 1 if the IPO reported use-of-

[1] $R_{i,m}$ is calculated by $(SET_1\text{-}SET_0)/SET_0$ or $(MAI_1\text{-}MAI_0)/MAI_0$. SET_1 (MAI_1) is the closing price of the Stock Exchange of Thailand (Market for Alternative Investment) index on the first trading date and SET_0 (MAI_0) is the closing price of the Stock Exchange of Thailand (Market for Alternative Investment) index on the IPO date.

proceeds is for repaying debt (investment), and 0 otherwise respectively; UDI_i is the use-of-proceeds disclosure index.

The proxies for *ex-ante* uncertainty are $SIZE_i$ and AGE_i; where $SIZE_i$ is the number of shares offered at the IPO multiplied by the IPO offer price, and AGE_i is the age of a firm in years from the establishment date to the date of the IPO. LAG_i is the time-lag between the IPO date and the first trading date or; GOV_i is the government ownership; EPS_i, ROA_i, ROE_i and DE_i are firm performance measures; PFS_i and INS_i are percentages of foreign and institutional investors subscribing for the IPOs respectively. $DEBT_i$ and INV_i are the types of intended use-of-proceeds. Other variables include $BULL_i$, $Industry_j$ and $Year_j$ are control variables for bull market conditions, industry and year effects; and ε_i is the regression error term.

2.3.2. Measuring the intended use of proceeds on the long-run performance of IPOs. The literature contains mixed suggestions on whether to use cumulative abnormal returns ($CAR_{i,t}$) or buy-and-hold abnormal return ($BHAR_{i,t}$) to measure the IPO performance in the long-run. For example, Barber and Lyon (1997), and Lyon et al. (1999) indicated that to compare the $CARs$ against market performance may result in misspecification. However, in contrast, Fama (1998) in particular argues in favour of the use of $CARs$ rather than $BHARs$. Hence, we consider both, and our model is identified as follows:

$$BHAR_i(CAR_i) = \delta_0 + \delta_1 DEBT_i + \\ +\delta_2 INV_i + \delta_3 UDI_i + \sum_{j=4}^{k} \delta_j X_{ij} + \xi_i \quad (3)$$

where $BHAR_i$ and CAR_i are measures of 3-year post abnormal IPOs returns, respectively; UDI_i is the use-of-proceeds disclosure index; $DEBT_i$ (INV_i) is a dummy variable equal to 1 if the IPOstated use-of-proceed is for repaying debt (investment) and 0 otherwise. $X_{i,j}$ is a vector of factors including IPO underpricing known to define the long-run performance of IPOs; we also use a range of dummy variables to control the market movement and industry effects as shown in equation (2).

The dependent variable in (3) has been calculated as follows:

$$\mathrm{BHAR}_{i,t} = \prod_{t=1}^{T}(1+\mathrm{R}_{i,t}) - \prod_{t=1}^{T}(1+\mathrm{R}_{m,t}) \quad (4)$$

where $R_{i,t}$ and $R_{m,t}$ are the monthly returns on stock i and the market index in the event month t respectively.

The market-adjusted abnormal returns of company i in event month t($AR_{i,t}$)are calculated for each event month t as follows: $AR_{i,t} = R_{i,t} - R_{m,t}$. Thus, $R_{i,t} = (P_{i,t} - P_{i,t-1})/P_{i,t-1}$, where $P_{i,t}$ is the last traded price of the company in event month t and $P_{i,t-1}$is the last traded price of the company in event month t-1. $R_{m,t}$ is the return on the market index (SET or MAI indices) in month t and is calculated as $R_{m,t} = (P_{m,t} - P_{i,m-1})/P_{m,t-1}$ where $P_{m,t}$ is the last closed stock market index in month t and $P_{m,t-1}$is the last closed market index in event month t-1.

The average market-adjusted return for a sample of n firms in month t is defined as follows:

$$\overline{AR}_{i,t} = \frac{1}{n}\sum_{i=1}^{n} AR_{i,t} \quad (5)$$

The cumulative average abnormal return of company i from event month 1 to event month T is defined as follows:

$$\overline{CAR}_{i,t} = \sum_{i=1}^{T} \overline{AR}_{i,t} \quad (6)$$

We use the 'Robust Standard Errors' in finite samples to overcome the heteroscedasticity problem referred to as Huber/White estimators. For the robust standard errors[1], an apparent improvement is possible. For example, Davidson and MacKinnon (1993) report two variance-covariance estimation methods that seem, at least in their Monte Carlo simulations, to converge more quickly as sample size n increases, to the correct variance/covariance estimates. Thus their methods seem valid, although they require more computational time problems. Overall, the use of robust S.E. does not change the coefficient estimates, but it makes changes in the standard errors and provides reasonably accurate p-values.

3. Empirical results and discussion

3.1. Descriptive statistic. We start our analysis by reporting the descriptive statistics. Table 4 (see Appendix) presents the IPO transactions disaggregated by stock market and by the IPO offering year, and provides a snapshot of the annual variation in issuing firm characteristics between 2001 and 2012. We also test the significance of changes over time by using the non-parametric test for trends across different groupings. As seen from Table 4, the average SET issuer was approximately 11 to 28 years old compared to7 to 28 years for the average MAI issuer. The mean offering size nearly tripled over the period (328 million Baht in 2001 versus 1,110 million Baht in 2012). It can clearly be seen in the MAI IPOs that use the IPO proceed for investment (about 70% of IPOs exceeds the use of debt repayment

[1] For more details on Huber/White estimators see White, H. (1980).

(30%). The use-of-proceeds disclosure indices are on average, 31.57%, 31.38% and 31.92% for the entire, SET and MAI samples respectively.

Furthermore, the IPO underpricing is evident across almost all the years in our sample period and across both stock markets. We find that the means of IPOs underpricing are 25.36%, 20.61% and 34.16% for entire, SET and MAI samples respectively. These findings indicate that the underpricing is more intense in the MAI compared to SET. The lower proportion of institution and foreign investors subscribing toIPOs indicate that there are many uninformed investors, both retail and individual, in the submarket. This indeed requires a higher degree of underpricing in order to attract uninformed investors to subscribe for MAI IPOs. We believe that the lower underpricing in SET is justified, as the size of firms in the SET is larger than those in the MAI. In line with previous literature, a higher offer size was related to lower IPO underpricing as a result of asymmetric information (Carter et al., 1998; Chen et al., 2004; Chi and Padgett, 2005; Yu and Tse, 2006; Cheung et al., 2009; Sullivan and Unite, 2009; Su and Bangassa, 2011). For the Thai IPO market trends across different time periods, we found that the initial return was, on average, negative or as low as -1.01% only in 2006, whereas it is positive for the other year-periods, in particular the average IPO underpricing turns to be significantly higher in 2011 and 2012 (73.82%). This is clearly an indication of the impact of information disclosure (amount and type) on underpricing.

Table 5 (see Appendix) shows the estimates associated with the type of disclosure (investment and loan as the intended use-of-proceeds). It is worth noting that 152 of Thai IPOs (62.04%) have disclosed information in the intended use-of-proceeds section for investment including working capital and general corporate purposes and 38% have done so for the use of debt repayment. Based on the disclosure index (*UDI*), the IPOs stated use-of-proceeds for investment disclose more information (38.71%) than debt repayment IPOs (20.35%). For the average issue size, we found that the size of IPO firms that use disclosure for repaying debt as the use-of-proceeds is smaller than those associated with investment use-of-proceeds. The subscription details for IPOs for foreign and institutional investors are also reported in Tables 4 and 5 for each individual market and for the full sample respectively. However, based on the average foreigner and institutional participation percentage, the dataclearly indicates that such investors prefer to preempt the IPOs in the SET rather than in the MAI. The average foreigner and institutional investors' subscriptions for SET are 9.82% and 20.52%, but are only 4.83% and 7.99% in the MAI respectively. Notably, there is a significant increase in the number of investors that subscribed for new issues between 2005 and 2006. In contrast, the proportion of foreign (institutional) investors subscribing for IPOs rapidly decreased over time, from 9.42% (16.16%) in 2007 to 2.63% (4.15%) in 2012.

In terms of the underpricing and long-run IPOs returns, the first two columns of Table 5 show the means and medians of both sub-samples. The findings show that the average market-adjusted initial return of IPOs stated use-of-proceeds for investment (25.79%) is slightly higher than those for debt repayment (24.67%). We also found that 6-month, 1-, 2- and 3-year *BHARs* of IPOs that stated using IPO proceeds for investment are 5.41%, 16.51%, 14.58% and 13.70% respectively, and all are statistically significant at 1% higher than those *BHARs* of IPOs that stated using IPO proceeds for repaying debt (-10.55%, -11.64%, -36.15% and -45.04% respectively). For CARs the same pattern of results holds. It can be clearly seen that the initial return and the long-run returns of the 'Investment' IPOs are higher than those of the 'Debt repayment' IPOs. These findings are in line with Autoreet al. (2009) who reported that issuers stated use-of-proceeds for investments perform better than those for recapitalization in the long-run. For firms' characteristic, we found only insignificant differences between the two types of intended use-of-proceeds.

Overall, we found no convincing evidence or statistical difference between intended use-of-proceeds for 'Investment' and 'Debt repayment' IPOs based on the magnitudes of IPO underpricing. However, we found evidence supporting the claim that 'Investment' IPO firms perform better than 'Debt repayment' IPO firms in the long-run.

3.2. Determinants of IPO Underpricing. The results from Equation (2) for the full sample are presented in Table 6 (see Appendix). Overall, we find that the models (1)-(9) with a representative profile of IPO underpricing in the stock market of Thailand explain about 38.5% to 50.99% of variations in the IPO underpricing[1]. The Robust standard error is further employed both to ensure that all regression models do not suffer from the heteroskedasticity problem and also to improve the small-sample robust estimators for OLS. In order to detect the potential influence of multicollinearity in the regression, we used the Variance Inflation Factors (VIFs)[2], and found that none of the estimates ex-

[1] We further use a simple regression of initial returns on intended use-of-proceed dummy variables for 'Investment' and 'Debt repayment' IPOs. The univariate results are not reported on this paper. However, we find that there is no statistically significant between use of proceeds disclosure and the IPO underpricing.

[2] VIF is calculated as $1/(1 - R^2)$ where R^2 is obtained from the regression of the variable on all other regressors specified in the model.

ceeded the accepted threshold of 10 (Neter et al., 1985). Thus, there is no clear evidence of multicollinearity in our data.

We first examined the relationship between the levels of intended use-of-proceeds disclosures and IPO pricing. Our findings support ***H1*** and imply that firm managers can indeed reduce underpricing (cost of equity capital) by disclosing more information. To confirm this finding, we constructed the use-of-proceeds disclosure index (UDI) for Thai data and inserted it into our model. The results show that the UDI has a statistical negative impact on the IPO underpricing. This is consistent with the results from previous empirical studies (e.g., Schrand and Verrecchia, 2002; Healey and Palepu, 2001; Leone et al., 2007; Chahine and Filatochev, 2008). Our study also considered the types of use-of-proceeds affecting the cost of equity. We therefore examined the relationship between 'Investment' use-of-proceeds and IPO underpricing. Our findings show that INV has a negative effect on IPO underpricing. Furthermore, in line with Leone et al. (2007) we found that use-of-proceeds disclosure assists investors in evaluating IPOs by narrowing their estimate of the dispersion of the stock's secondary value. This implies a reduction in ex-ante uncertainty, and IPOs with such disclosures go public at offering prices closer to 'intrinsic' values and, as a result, are related to less IPO underpricing onthe first trading day (Beatty and Ritter, 1986; Leone et al., 2007).

Our findings also support ***H2*** that when issuers disclose investment information, operating expenses, expanding factories and subsidiaries or working capital, there is lower *ex-ante* uncertainty. In contrast, for the use-of-proceeds for debt repayment, $DEBT$, we found that $DEBT$ is positively related to underpricing, and is significant. Once issuers intend to use the IPO proceeds for recapitalization (repaying their debts), there is greater uncertainty about the financial sustainability of their business model. A possible justification for the difference between 'Investment' and 'Debt repayment' IPOs in terms of underpricing is that the Thai IPO companies which intend to use the proceeds for investment disclose more information on their future operation proposals than the 'debt repayment' IPO companies as thesemerely provide information on their use of proceeds for repaying short-term or long-term debts. Consequently, the equity capital is costly (leaving more money on the table with discount IPO issues at the higher rate) for the latter.

For firm characteristics, we found that the offer size ($lnSIZE$) of IPO firms is negatively related to IPO underpricing and is significant at the 1% and 5% levels of significance for the entire SET and MAI IPOs markets, which support ***H2***,that the coefficient on $lnSIZE$ is negative and significant. These findings are in line with Rock (1986), Beatty and Ritter (1986), Vichakorn and Kennedy (2005), Yu and Tse (2006), Chin and Padgett (2005), Guo and Brooks (2008), Arthurs et al. (2009), Su and Bangassa (2011) and Lin and Tian (2012). Other variables (lnAGE and lag LAG) failed to yield reasonablysignificant parameters, which does not support ***H3***. These results are in contrast to the findings of Sullivan and Unite (1999), Chen et al. (2004), Kirkulak and Davis (2005), Yu and Tse (2006), Uddin (2008) and Ekkayokkaya and Pengniti (2012), amongst others. For the signalling hypothesis measured by GOV, EPS, ROE, PFS and INS and the degree of underpricing, we found an insignificant relationship in the Thai market, leading us to reject ***H4-H5***. Nevertheless, the ROA variable has a significantly positive coefficient in models (5) and (6), confirming that return on asset has a significant influence on underpricing in the SET.

For market sentiments (bull-market dummy variable BULL), as shown in Table 6 (across models (1) through (3)), we find a positive relationship with the IPO underpricing for the entire SET and MAI IPOs. This is in line with the previous literature that finds a correlation between IPO underpricing and market sentiment and movement (Loughran and Ritter, 2002; Su, 2004; Yu and Tse, 2006; Kirkulak and Davis, 2005; Ekkayokkaya and Pengniti, 2012)[1]. Furthermore, we found that DE has a negative impact on the magnitude of IPO underpricing for the entire and the SET IPOs.

Using bootstrap standard error, the findings in Table 6 indicate that the bootstrap simulation produces a similar pattern of results, where the intended use-of-proceeds for investment (debt repayment) has a negative (positive) impact on the IPO underpricing, and also insignificant results for the majority of other controlling variables.

3.3. Multivariate analysis of use of the proceeds and long-term performance of IPOs. Controlling for a fixed set of firm and offer characteristics, Table 7 (see Appendix) presents OLS estimates using the three-year buy-and-hold abnormal return ($BHAR$) as the dependent variable. We found that the disclosure index (UDI) is positively related to the three-year aftermarket return and is statistically significant compared tothe MAI IPOs. Our finding is in line with ***H1*** and supports previous accounting studies that intellectual capital disclosure in IPO prospectuses are significant factors and have a positive effect on the long-run financial performance of firms (see for example,Guo et al., 2004; Bessler and

[1] Caglayan and Xu (2016) found that changes in sentiment and its volatility affect bank lending negatively.

Bittelmeyer, 2008; Neilson et al., 2015). This finding implies that a Thai company that discloses substantial amounts of information on the intended use-of-proceeds will be associated with higher transparency and thus perform better in the long-run.

In addition, the findings shown support ***H2***, that $DEBT$ is negatively related to the $BHAR$ and is statistically significant. This indicates that those companies whostated their intended use-of-proceeds to be for repaying debt experience long-run underperformance after going public. These findings are in line with Autore et al. (2009), that the issuers stating debt repayment (making no mention of investment) as their intended use-of-proceeds experienceunderperformance in the long-run. Hence IPO companies benefit from overvalued stocks by timing IPOs for periods of high returns to pay debt. As a consequence, they are more likely to underperform in the long-run.

We found that while the INV is positively related to the three-year aftermarket return and strongly statistically significant, the intended use-of-proceeds for debt repayment is either ambiguous or without any clear specification. This implies that the increased investment expenditures should be viewed favourably, as they are associated with higher investment opportunities. These findings are in line with Autore et al. (2009) that underperformance is stronger when debt repayment is the intended purpose.

In addition, we found that $lnSIZE$ and $lnAGE$ are not statistically significant for the performance of SET IPOs in the long-run. These findings are in line with Su and Bangassa (2011), who found no relationship between offer size and three-year $BHAR$ based on an event-time approach. For MAI IPOs, we found that the offering size of IPOs had an inverse relationship with long-run IPO performance. However, we argue that whilst IPO underpricing is negatively and significantly related to 3-year BHAR for the entire sample and for the SET sample, it is only insignificant for MAI. This suggests that during the first three years after going public, the larger the initial return of IPOs is, the lower is its accumulated after-market return. In particular, a 1% increase in MAIR leads to a decrease of about 0.54% and 0.57% for the Thai IPOs in the 3-year after-market return. The findings of Ritter (1991, 1998) and Bradley et al. (2009). Thus, our findings lead us to accept ***H7***, as well as the impresario hypothesis. These results are in contrast to the findings of Su (2004), who found that the degree of IPO underpricing is positively related to the after-market return for 250 trading days.

For models (10)-(15), we found that the information of government ownership reported in the prospectus is significantly positive, a 1% increase in government ownership leads to an increase of approximately 1.50% and 1% in 3-year buy-and-hold abnormal returns for the entire sample and for the SET sample respectively. This finding implies that issuers with higher government ownership have, on average, a higher performance in the long-run. Thus, the government ownership at the IPO time can be a signal of long-run performance for SET IPOs. As can beseen in Table 7, there is evidence indicating that the proportions of Thai IPOs subscribed to by foreign (PFS) and institutionalinvestors (INS) have no effect on the long-run performance of IPOs. For CAR, the same patterns of results hold[1].

Conclusions

This paper examined the impact of endogenous disclosure on the stock market performance of initial public offering (IPO) firms. To do this it used hand-collected data for 245 IPOs from the main Stock Exchange of Thailand (SET) and also from the alternative investment market (MAI) over the period 2001 and 2012.

Our initial investigation suggests a significant impact for the level of use-of-proceeds disclosure on IPO under-pricing, and further that the ex-ante uncertainty and signalling hypotheses explain the IPO under-pricing phenomenon in the Thai IPO market. Further, we demonstrated that the use of IPOs use-of-proceeds to disclose information about investment has a positive impact on the performance of Thai listed companies in both the main and alternative stock markets. In contrast, we found a significant and inverse relationship with the long-run IPO performance when new issuers intend to use the proceeds to repay bank loans. In addition, we found that the government or state ownership in the IPO filing period has a positive impact on the long-run performance of SET IPOs. Importantly, we demonstrated that the size of the issue, the return on equity, and the bull-market conditions appear to be the significant factors that influence the Thai IPO under-pricing.

These findings have important implications for academic research into the performance of initial public offerings and for practical information disclosure alike. The Thai stock market is a relatively small and thinly traded market but it is relatively well integrated into the global financial system. Hence, our findings may have broader implications for many other small emerging markets, in particular when using the endogenous information disclosure of 'Intended Use-of-Proceeds' as a signalling factor. Our findings could also be of interest to policy-makers who are continually adopting regulations to curb possible conflicts of interest.

[1] We provide more robustness analysis by investigating endogeneity considerations and identification problems. Results are avaible upon request.

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Appendix

Table 4. Summary statistics for Thai IPOs

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2001-2012	Trend Sig.
Stock Exchange of Thailand														
Use-of-proceeds disclosure index (%)	15.15	29.18	30.30	29.23	36.36	30.90	21.21	35.22	27.27	34.09	54.54	38.38	31.38	***
Intended use-of-proceeds for investment	0	13	12	19	20	5	2	6	3	3	2	7	92	*
Intended use-of-proceeds for debt repayment	6	6	9	18	11	5	4	2	2	1	1	2	67	-
Average offering size (million Baht)	489	506	821	2050	854	3,520	1,800	2,910	879	1,510	1,260	1,940	1,630	***
Average firm age (year)	13.40	10.60	14.33	12.49	17.55	12.70	14.17	25.62	27	14.75	21.67	12.88	14.97	**
Average foreigner investor subscription (%)	3.50	7.94	7.45	12.52	12.68	16.73	11.55	9.36	3.26	1.06	2.66	4.00	9.82	***
Average institution investor subscription (%)	10.80	18.17	21.75	24.53	25.81	27.78	20.98	17.00	8.52	8.16	3.33	7.11	20.52	***
IPO underpricing (%)	43.47	14.34	50.21	12.46	8.24	4.28	27.41	3.88	1.90	27.75	12.94	63.99	20.61	**
Market for Alternative Investment														
Use-of-proceeds disclosure index (%)	21.21	42.42	25.75	34.09	24.02	32.72	28.78	33.33	32.23	41.55	28.57	41.41	31.92	*
Intended use-of-proceeds for investment	0	3	4	8	8	5	4	2	9	5	5	7	60	-
Intended use-of-proceeds for debt repayment	3	0	2	4	6	0	2	1	2	2	2	2	26	-
Average offering size (million Baht)	43.76	72.06	127	107	130	149	128	125	119	98.42	166	463	156	***
Average firm age (year)	7.39	28.11	12.33	11.17	13.28	19.80	13.83	17.33	13.18	20.43	13.57	24.11	15.52	**
Average foreigner investor subscription (%)	12.33	1.94	5.19	8.11	10.63	4.06	7.29	0.41	1.27	0.32	0.26	1.26	4.83	***
Average institution investor subscription (%)	1.66	0.66	5.48	13.45	19.36	12.36	11.35	15.67	1.64	0.57	0.71	1.19	7.99	***
IPO underpricing (%)	15.76	-0.04	56.66	33.44	2.73	-11.61	33.17	24.70	16.58	49.62	87.59	83.64	34.16	***
Entire sample														
Use-of-proceeds disclosure index (%)	17.17	30.99	29.29	30.42	32.52	31.51	25.00	34.71	30.68	38.84	36.36	39.89	31.57	***
Intended use-of-proceeds for investment	0	16	16	27	28	10	6	8	12	8	7	14	152	***
Intended use-of-proceeds for debt repayment	9	6	11	22	17	5	6	3	4	3	3	4	93	*
Average offering size (million Baht)	328	447	667	1,570	629	2,390	963	2,150	357	613	495	1200	1,110	***
Average firm age (year)	11.39	12.98	13.88	12.16	16.22	15.06	14.00	23.36	17.50	18.36	16.00	18.50	15.16	***
Average foreigner investor subscription (%)	6.47	7.12	6.94	11.44	12.04	12.51	9.42	6.91	1.89	0.5	0.98	2.63	8.06	***

Table 4. (cont.). Summary statistics for Thai IPOs

Average institution investor subscription (%)	7.74	15.78	18.13	21.81	23.80	22.64	16.16	16.63	3.78	3.33	1.50	4.15	16.12	***
IPO underpricing (%)	34.23	12.37	51.64	17.59	6.52	-1.01	30.29	9.55	11.99	41.67	65.19	73.82	25.36	***

Note: this table summarizes the data on 245 initial public offerings (IPOs) issued in Thailand between 2001 and 2012. The data are classified into 2 groups, based on the stock market listing: Stock Exchange of Thailand and Market for Alternative Investment groups. The issued size of IPOs is presented in Thai Baht. The non-parametric test for trend across ordered groups, which is an extension of the Wilcoxon rank-sum test, is employed.Lack of significance is indicated as -. * Statistically significant at the 0.10 level. ** Statistically significant at the 0.05 level. *** Statistically significant at the 0.01 level.

Table 5. Descriptive Statistics of the Main Variables

Variable	Intended uses of IPO proceeds for 'Investment'					Intended uses of IPO proceeds for 'Debt repayment'					Different	
	Mean	Median	Std.	*N*		Mean	Median	Std.	*N*		*t*-stats	*z*-stats
UDI	38.71	36.36	0.94	152		20.35	18.18	1.22	93		-11.87***	-9.88***
MAIR	25.79	8.88	47.28	152		24.67	9.94	40.42	93		-0.20	-0.14
6-month *BHAR*	5.41	-3.26	3.48	140		-10.55	-15.44	38.11	88		-2.98***	-3.23***
1-year *BHAR*	16.51	-4.70	77.06	132		-11.64	-22.34	72.07	86		-2.91***	-3.60***
2-year *BHAR*	14.58	-2.47	100.15	125		-36.15	-41.30	61.48	84		-4.53***	-4.03***
3-year *BHAR*	13.7	-3.60	108.86	117		-45.04	-48.61	73.22	80		-4.52***	-4.06***
6-month *CAR*	5.50	-0.30	38.34	140		-1.46	-14.76	42.00	88		-2.90***	-3.06***
1-year *CAR*	10.64	3.91	57.80	132		-2.66	-18.71	55.29	86		-3.65***	-3.86***
2-year *CAR*	3.18	4.02	74.15	125		-19.18	-38.12	69.88	84		-4.82***	-4.54***
3-year *CAR*	8.97	9.66	89.79	117		-14.48	-38.95	73.31	80		-4.55***	-4.13***
AGE	15.13	13.00	11.07	152		15.2	12.00	12.98	93		0.04	-0.01
SIZE	1,137.85	235.40	3,885.2	152		1,073.9	300.00	3,215.86	93		0.13	1.50
LAG	12.34	11.00	5.57	152		12.62	11.00	8.29	93		0.28	-0.76
EPS	55.32	0.03	616.45	152		127.59	0.13	381.11	93		1.02	1.01
ROA	14.84	0.10	20.01	152		13.65	0.09	26.11	93		-0.37	-0.83
DE	1.71	1.50	1.36	146		3.49	2.07	5.45	91		3.06***	3.82***
GOV	2.06	0.03	12.18	152		2.03	0.03	11.6	93		-0.02	0.25
PFS	7.5	0.06	11.46	152		8.99	0.12	14.43	93		0.85	0.44
INS	15.36	0.00	19.01	152		17.37	0.00	18.14	93		0.82	1.16

Note: The sample consists of 245 IPOs made during the entire sample period (2001-2012). The significance of the difference in mean and median between 'Investment' IPOs and 'Debt repayment' IPOs. See Table 4.

Table 6. OLS Estimates-Robust and Bootstrap Standard Errors (MAIR)

Variables	Entire IPOs							SET IPOs							MAI IPOs					
	(1) OLS		(2) OLS		(3) OLS			(4) OLS		(5) OLS		(6) OLS			(7) OLS		(8) OLS		(9) OLS	
	β	(RSE) [BSE]	β	(RSE) [BSE]	β	(RSE) [BSE]		β	(RSE) [BSE]	β	(RSE) [BSE]	β	(RSE) [BSE]		β	(RSE) [BSE]	β	(RSE) [BSE]	β	(RSE) [BSE]
Constant	2.290	(0.580)***	2.358	(0.539) ***	2.309	(0.531)***		1.771	(0.867)**	1.917	(0.752)**	1.787	(0.730)**		3.518	(2.150)*	3.770	(1.651)**	3.759	(1.670)**
		[0.592]***		[0.573] ***		[0.546]***			[0.843]**		[0.818]**		[0.788]**			[2.083]*		[2.247]*		[2.413]*
UDI	-0.003	(0.002)**						-0.003	(0.002)						-0.004	(0.005)				
		[0.002]*							[0.002]							[0.005]				
INV			-0.094	(0.056) [0.057]						-0.166	(0.065)** [0.073]**						0.130	(0.140) [0.170]		
DEBT					0.096	(0.054)* [0.056]*						0.163	(0.062)*** [0.066]**						-0.088	(0.135) [0.185]
ln*SIZE*	-0.120	(0.029)***	-0.126	(0.027)***	-0.126	(0.027)***		-0.087	(0.042)**	-0.095	(0.037)**	-0.093	(0.037)**		-0.183	(0.112)*	-0.198	(0.088)**	-0.195	(0.087)**
		[0.030]***		[0.029] ***		[0.028]***			[0.042]**		[0.041]**		[0.041]**			[0.112]*		[0.115]*		[0.130]
ln*AGE*	0.048	(0.037)	0.041	(0.034)	0.041	(0.034)		0.056	(0.046)	0.041	(0.039)	0.039	(0.038)		-0.003	(0.082)	-0.022	(0.064)	-0.020	(0.064)
		[0.038]		[0.035]		[0.035]			[0.044]		[0.045]		[0.042]			[0.092]		[0.104]		[0.094]
LAG	-0.002	(0.005)	-0.003	(0.004)	-0.003	(0.004)		0.001	(0.007)	0.001	(0.006)	0.001	(0.006)		-0.002	(0.012)	-0.005	(0.007)	-0.004	(0.007)
		[0.004]		[0.005]		[0.005]			[0.009]		[0.008]		[0.008]			[0.013]		[0.015]		[0.015]
EPS	0.001	(0.007)	0.001	(0.005)	0.001	(0.005)		0.004	(0.008)	0.003	(0.005)	0.003	(0.005)		-0.024	(0.050)	-0.017	(0.044)	-0.021	(0.044)
		[0.006]		[0.006]		[0.007]			[0.007]		[0.008]		[0.007]			[0.059]		[0.052]		[0.058]
ROA	0.034	(0.186)	0.023	(0.160)	0.028	(0.157)		-0.290	(0.239)	-0.295	(0.138)**	-0.292	(0.138)*		0.153	(0.383)	0.211	(0.241)	0.190	(0.245)
		[0.236]		[0.190]		[0.180]			[0.240]		[0.214]		[0.211]			[0.486]		[0.524]		[0.580]
DE	-0.019	(0.008)**	-0.018	(0.006)***	-0.018	(0.006)***		-0.020	(0.009)**	-0.022	(0.008)***	-0.022	(0.008)***		-0.058	(0.051)	-0.033	(0.048)	-0.039	(0.048)
		[0.007]**		[0.009]**		[0.009]**			[0.010]*		[0.010]**		[0.010]**			[0.055]		[0.061]		[0.066]
PFS	0.144	(0.293)	0.180	(0.275)	0.177	(0.275)		-0.043	(0.405)	0.034	(0.346)	0.026	(0.348)		0.212	(1.526)	0.269	(0.559)	0.266	(0.588)
		[0.320]		[0.296]		[0.287]			[0.413]		[0.389]		[0.390]			[1.326]		[1.209]		[1.379]
INS	-0.001	(0.192)	-0.002	(0.187)	0.004	(0.188)		-0.011	(0.256)	-0.026	(0.220)	-0.016	(0.223)		-0.272	(0.499)	-0.138	(0.421)	-0.139	(0.416)
		[0.206]		[0.194]		[0.184]			[0.248]		[0.235]		[0.238]			[0.538]		[0.555]		[0.632]
GOV	0.345	(0.262)	0.359	(0.182)	0.360	(0.193)		0.196	(0.300)	0.223	(0.253)	0.204	(0.268)							
		[0.200]*		[0.282]		[0.279]			[0.354]		[0.334]		[0.397]							
BULL	0.127	(0.059)**	0.138	(0.057)**	0.139	(0.057)*		0.068	(0.074)	0.088	(0.063)	0.094	(0.063)		0.198	(0.128)	0.198	(0.114)*	0.198	(0.112)*
		[0.063]**		[0.058]**		[0.059]**			[0.074]		[0.069]		[0.067]			[0.140]		[0.147]		[0.143]
Year	Yes		Yes		Yes			Yes		Yes		Yes			Yes		Yes		Yes	
Industry	Yes		Yes		Yes			Yes		Yes		Yes			Yes		Yes		Yes	
N	237		237		237			153		153		153			84		84		84	
MAX VIF.	6.79		6.56		6.55			6.79		6.56		6.55			6.41		6.56		6.55	

Table 6. (cont.). OLS Estimates-Robust and Bootstrap Standard Errors (MAIR)

R^2 (%)	38.57	38.50	38.59		38.57	41.18	41.16		51.11	50.99	50.59
F-stats	3.15***	3.28***	3.27***		1.75	1.84**	1.80**		1.66*	1.96**	1.91**

Note: other estimators shown here include Davidson and MacKinnon's (1993) improved small-sample robust estimators for OLS, cluster-robust estimators useful when errors may be arbitrarily correlated within groups (one application is across time for an individual). Inflation Factor (VIF) is employed to detect the multicollinearity problem and is calculated as 1/(1 - R2) where R2 is obtained from the regression of the variable on all other regressors specified in the model. Robust standard errors (RSE) are reported in parentheses, and bootstrap standard errors (BSE) are reported within brackets.

Table 7. OLS Estimates-Robust and Bootstrap Standard Errors (BHARS)

Variables	Entire IPOs							SET IPOs							MAI IPOs					
	(10) OLS		(11) OLS		(12) OLS			(13) OLS		(14) OLS		(15) OLS			(16) OLS		(17) OLS		(18) OLS	
	β	(RSE) [BSE]	β	(RSE) [BSE]	β	(RSE) [BSE]		β	(RSE) [BSE]	β	(RSE) [BSE]	β	(RSE) [BSE]		β	(RSE) [BSE]	β	(RSE) [BSE]	β	(RSE) [BSE]
Constant	2.079	(1.837)	1.617	(1.769)	2.100	(1.817)		0.969	(2.558)	0.518	(2.565)	1.213	(2.754)		7.456	(5.998)	6.882	(6.401)	7.765	(5.590)
		[1.726]		[1.616]		[1.719]			[2.447]		[2.217]		[2.551]			[6.877]		[6.145]		[6.791]
UDI	0.009	(0.005)*						0.018	(0.006)***						-0.003	(0.018)				
		[0.005]*							[0.006]***							[0.019]				
INV			0.470	(0.149)*** [0.142]**						0.508	(0.196)*** [0.171]***						0.595	(0.399)** [0.413]		
DEBT					-0.333	(0.156)** [0.142]**						-0.280	(0.188)* [0.167]*						-0.667	(0.374)* [0.454]
MAIR	-0.622	(0.246)**	-0.542	(0.250)**	-0.568	(0.258)**		-0.701	(0.282)**	-0.586	(0.282)**	-0.657	(0.302)**		-0.478	(0.505)	-0.449	(0.527)	-0.411	(0.490)
		[0.224]***		[0.218]**		[0.221]**			[0.242]***		[0.247]**		[0.264]**			[0.636]		[0.448]		[0.465]
lnSIZE	-0.114	(0.085)	-0.086	(0.080)	-0.101	(0.082)		-0.047	(0.127)	-0.017	(0.123)	-0.042	(0.131)		-0.391	(0.316)	-0.367	(0.316)**	-0.394	(0.286)*
		[0.083]		[0.077]		[0.082]			[0.123]		[0.114]		[0.126]			[0.370]		[0.343]		[0.381]
lnAGE	0.043	(0.102)	0.071	(0.096)	0.071	(0.098)		0.052	(0.121)	0.095	(0.122)	0.077	(0.122)		0.198	(0.227)	0.135	(0.251)	0.117	(0.226)
		[0.094]		[0.095]		[0.092]			[0.113]		[0.121]		[0.122]			[0.289]		[0.263]		[0.277]
EPS	0.004	(0.010)	0.006	(0.013)	0.005	(0.012)		0.007	(0.017)	0.011	(0.014)	0.010	(0.012)		0.080	(0.123)	0.051	(0.217)	0.048	(0.133)
		[0.014]		[0.015]		[0.015]			[0.018]		[0.015]		[0.013]			[0.171]		[0.182]		[0.198]
ROA	-0.914	(0.865)	-0.847	(0.655)**	-0.886	(0.717)**		-1.048	(0.961)	-0.930	(0.854)**	-0.939	(0.933)**		0.394	(2.205)	0.455	(2.788)	0.095	(2.243)
		[0.719]		[0.683]		[0.721]			[0.873]		[0.869]		[0.901]			[3.012]		[2.504]		[2.703]

Table 7. (cont.). OLS Estimates-Robust and bootstrap Standard Errors (BHARS)

DE	-0.006	(0.030)	0.001	(0.032)	-0.005	(0.030)		0.006	(0.029)	0.006	(0.036)	-0.002	(0.034)		-0.165	(0.146)	-0.067	(0.118)	-0.060	(0.109)
		[0.031]		[0.031]		[0.031]			[0.032]		[0.037]		[0.035]			[0.190]		[0.139]		[0.159]
PFS	-0.141	(0.610)	-0.250	(0.512)	-0.237	(0.503)		-0.397	(0.780)	-0.850	(0.798)	-0.733	(0.798)		-0.296	(1.579)	-0.153	(1.677)	-0.052	(1.459)
		[0.608]		[0.556]		[0.536]			[0.774]		[0.826]		[0.763]			[2.767]		[2.042]		[2.113]
INS	0.454	(0.532)	0.489	(0.510)	0.466	(0.520)		0.661	(0.561)	0.744	(0.640)	0.683	(0.641)		0.403	(1.941)	0.450	(1.990)	0.475	(1.735)
		[0.505]		[0.493]		[0.492]			[0.519]		[0.563]		[0.553]			[1.937]		[1.711]		[1.596]
GOV	1.473	(0.923)*	1.349	(0.937)*	1.444	(1.032)*		0.937	(0.676)*	0.942	(0.918)*	1.077	(1.006)*							
		[0.889]*		[0.947]		[1.048]			[0.863]		[0.870]		[1.045]							
Year	Yes		Yes		Yes			Yes		Yes		Yes			Yes		Yes		Yes	
Industry	Yes		Yes		Yes			Yes		Yes		Yes			Yes		Yes		Yes	
N	190		190		190			133		133		133			57		57		57	
MAX VIF.	5.78		6.05		6.05			5.78		6.05		6.05			5.78		5.81		5.81	
R^2(%)	26.41		29.06		27.14			41.79		41.86		38.73			66.81		71.45		72.88	
F-stats	1.73**		2.86***		2.68***			2.97***		4.42***		6.31***			1.83*		2.86***		3.07***	

Note: See Table 6.

Table 8. OLS estimates-robust and bootstrap standard errors (CARS)

Variables	Entire IPOs							SET IPOs							MAI IPOs					
	(19) OLS		(20) OLS		(21) OLS			(22) OLS		(23) OLS		(24) OLS			(25) OLS		(26) OLS		(27) OLS	
	β	(RSE) [BSE]	β	(RSE) [BSE]	β	(RSE) [BSE]		β	(RSE) [BSE]	β	(RSE) [BSE]	β	(RSE) [BSE]		β	(RSE) [BSE]	β	(RSE) [BSE]	β	(RSE) [BSE]
Constant	3.019	(1.577)*	2.682	(1.614)	3.118	(1.469)		0.073	(1.773)	-0.314	(1.599)	0.245	(1.639)		8.079	(5.214)	8.399	(5.353)*	9.333	(5.361)*
		[1.463]**		[1.448]*		[1.453]**			[1.762]		[1.837]		[1.792]			[4.973]		[5.307]		[5.475]*
UDI	0.014	(0.004)***						0.019	(0.005)***						0.012	(0.016)				
		[0.004]***							[0.005]***							[0.015]				
INV			0.478	(0.116)*** [0.111]***						0.484	(0.132)*** [0.142]***						0.692	(0.406)* [0.389]**		
DEBT					-0.417	(0.111)*** [0.119]***						-0.370	(0.131)*** [0.141]***						-0.648	(0.336)* [0.374]*
MAIR	-0.372	(0.185)**	-0.298	(0.173)*	-0.307	(0.164)*		-0.401	(0.206)**	-0.296	(0.179)*	-0.332	(0.188)*		-0.326	(0.554)	-0.377	(0.306)	-0.343	(0.389)
		[0.173]**		[0.157]*		[0.163]*			[0.193]**		[0.188]*		[0.203]*			[0.518]		[0.493]		[0.463]
lnSIZE	-0.135	(0.066)	-0.110	(0.067)	-0.120	(0.062)		0.018	(0.086)	0.045	(0.079)	0.027	(0.081)		-0.390	(0.244)*	-0.394	(0.211)*	-0.424	(0.294)*
		[0.066]		[0.065]*		[0.064]*			[0.089]		[0.093]		[0.091]			[0.276]		[0.288]		[0.292]
lnAGE	-0.033	(0.084)	0.008	(0.080)	0.010	(0.075)		-0.026	(0.105)	0.022	(0.100)	0.015	(0.103)		0.178	(0.224)	0.155	(0.128)	0.148	(0.211)

Table 8. OLS estimates-robust and bootstrap standard errors (CARS)

		[0.082]		[0.075]		[0.081]			[0.101]		[0.105]		[0.110]			[0.225]		[0.243]		[0.255]
EPS	0.000	(0.006)	0.002	(0.007)	0.002	(0.006)		0.007	(0.006)	0.01	(0.005)**	0.010	(0.005)**		0.030	(0.127)	0.001	(2.115)	0.004	(0.125)
		[0.011]		[0.013]		[0.011]			[0.010]		[0.010]		[0.009]			[0.144]		[0.157]		[0.145]
ROA	-0.927	(0.498)*	-0.833	(0.460)*	-0.882	(0.367)*		-1.412	(0.452)***	-1.304	(0.287)***	-1.309	(0.290)***		1.148	(2.896)	1.301	(0.769)	0.937	(1.910)
		[0.498]*		[0.470]*		[0.513]			[0.485]***		[0.466]***		[0.553]**			[2.701]		[2.659]		[2.519]
DE	-0.017	(0.028)	-0.016	(0.029)	-0.018	(0.021)		-0.005	(0.029)	-0.008	(0.018)	-0.012	(0.017)		-0.140	(0.145)	-0.093	(1.007)	-0.103	(0.102)
		[0.027]		[0.027]		[0.025]			[0.028]		[0.030]		[0.029]			[0.156]		[0.146]		[0.140]
PFS	0.631	(0.403)	0.437	(0.461)	0.458	(0.432)		-0.296	(0.652)	-0.824	(0.663)	-0.725	(0.666)		0.253	(2.205)	0.291	(1.768)	0.367	(0.871)
		[0.430]		[0.483]		[0.510]			[0.683]		[0.702]		[0.714]			[2.069]		[1.965]		[2.498]
INS	0.063	(0.383)	0.095	(0.391)	0.078	(0.361)		0.446	(0.389)	0.542	(0.388)	0.490	(0.394)		0.275	(1.635)	0.237	(0.353)	0.255	(1.712)
		[0.386]		[0.366]		[0.386]			[0.388]		[0.415]		[0.436]			[1.553]		[1.448]		[1.293]
GOV	0.952	(0.468)**	0.892	(0.550)*	0.956	(0.498)*		0.438	(0.335)	0.490	(0.307)*	0.580	(0.327)*							
		[0.558]*		[0.575]		[0.615]			[0.563]		[0.634]		[0.695]							
Year	Yes		Yes		Yes			Yes		Yes		Yes			Yes		Yes		Yes	
Industry	Yes		Yes		Yes			Yes		Yes		Yes			Yes		Yes		Yes	
N	190		190		190			133		133		133			57		57		57	
MAX VIF.	5.78		6.05		6.05			5.78		6.05		6.05			5.78		5.81		5.81	
R^2(%)	29.92		31.28		30.05			44.76		42.88		40.19			62.48		67.21		67.01	
F-stats	2.78***		3.41***		3.97***			5.26***		10.65***		20.24***			2.76***		1.87*		1.98**	

Note: See Table 6.