

BAM 2023 CONFERENCE

US
UNIVERSITY
OF SUSSEX

BUSINESS
SCHOOL

Divergence between stated plan and actual behavior: The effect of internal governance characteristics of IPO firms

Tatsuki Tachibana

Hitotsubashi University

Masaru Karube

Hitotsubashi University

Daisuke Uchida

Kyushu University

Divergence between stated plan and actual behavior:
The effect of internal governance characteristics of IPO firms

Tatsuki Tachibana

Hitotsubashi University, Email: bd221010@g.hit-u.ac.jp

Masaru Karube

Hitotsubashi University

Daisuke Uchida

Keio University

Contact Address: Naka 2-1 Kunitachi Tokyo Japan

Divergence between stated plan and actual behavior:
The effect of internal governance characteristics of IPO firms

Summary

The divergence between stated plans and actual behavior of IPO firms is an important theoretical and practical issue. Focusing on internal governance characteristics of such firms, we explore how a plan stated pre-IPO influences actual post-IPO behavior. Using data on Japanese firms that went public between 2010 and 2019 and performing hierarchical multiple regression analyses of these data, we find that firms generally allocate proceeds to investment as planned, even post-IPO. However, we also find that the involvement of entities with short time horizons (VCs) or a lack of ability to execute the plan (less legitimate TMTs) may change or terminate the pre-IPO plan for investment. Thus, we conclude that the internal governance characteristics of IPO firms affect the relationship between firms' plans stated pre-IPO and their actual post-IPO behavior, which has implications for firms aiming to grow through IPO funding.

Key words: IPO; Internal governance; Divergence; Intended uses plan; Actual behavior
Word count (excluding tables and references): 5,052 words

1. Introduction

Last July, JAL raised 138 billion yen through a public offering. This firm explained that the proceeds would be used to purchase aircraft, but some market participants have speculated that the company may have used the proceeds to pay off debt. (Cited in Hatanaka and Taguchi, 2007)

Firms can sell equity shares to public investors through initial public offerings (IPOs) and gain access to considerable financial resources. Firms can use these financial resources to purchase equipment for production, expand operations, conduct R&D, retire prior debt, build people and knowledge to realize future innovation and increase productivity to create value for investors and the stock market. In fact, most firms issue IPOs because they need cash (Pagano, Panetta and Zingales, 1998; Welbourne, Neck and Dale, 2012). Despite the proceeds they raise, however, IPO firms generally underperform in the market and often even fail in the years immediately following the IPO (Certo, Holcomb and Holmes, 2009).

The use of proceeds, that is, how cash should be allocated, has become a topic of widespread attention in the IPO literature because resource allocation is key to understanding a firm's competitive advantage and ability to grow. Indeed, when a firm files to go public, it must prepare a prospectus containing information about the intended use of proceeds, such as for future R&D, debt repayment, acquisitions, or general business purposes. Such information has been used by studies to examine IPO underpricing (Beatty and Ritter, 1986; Leone, Rock and Willenborg, 2007; Hanley and Hoberg, 2012), IPO survival (Wyatt, 2014; Amor and Kooli, 2017; Alyasa-Gan and Che-Yahya, 2022), post-IPO performance (Welbourne, Neck and Dale, 2012; Andriansyah and Messinis, 2016; Ahmad-Zaluki and Badru, 2021), withdrawal of IPOs (Busaba, Benveniste and Guo, 2001), and post-SEO or post-PIPE performance (Jeanneret, 2005; ; Walker and Yost, 2008; Autore, Bray and Peterson, 2009; Suzuki and Yamada, 2012; Silva and Belinski, 2015; Chin-Chi, 2020). These studies concerning the use of proceeds highlight the role of intended use of proceeds plans pre-IPO by pointing out that some IPO prospectuses include only general statements about the issuers' intended use of proceeds (e.g., Wyatt, 2014).

However, this information has not been exploited to investigate post-IPO actual investment behavior, because the existing studies implicitly assume that IPO firms comply with their plans stated in prospectuses on the intended use even after the IPO. To the best of our knowledge, no studies have examined the role of the intended use of proceeds stated pre-IPO on post-IPO behaviors. As quoted at the beginning of this section,

IPO firms may behave differently from what they planned pre-IPO. In addition, a divergence could occur between stated plans and actual behaviors because of changes in priorities and unforeseen contingencies (Certo, Holcomb and Holmes, 2009). Behaviors that differ from the pre-IPO plans may occur in response to unanticipated events. However, unscrupulous plans to use the IPO proceeds may increase investor uncertainty and damage overall market credibility. Therefore, it is necessary to study the antecedents and mechanisms of such divergences.

This study aims to fill this gap concerning this divergence by addressing the following research question suggested by Certo, Holcomb and Holmes (2009): *What [do] managers plan to do and actually do with IPO proceeds? What factors influence the correspondence between intended proceeds uses stated pre-IPO and actual post-IPO behaviors?* Answering these questions is critical to our understanding of IPO firms' behavior and processes behind post-IPO underperformance. Using a sample of Japanese IPO firms from 2010 to 2019, this study examines the effect of the intended proceeds uses stated pre-IPO on post-IPO behaviors. We find that IPO firms do allocate proceeds as planned, after the IPOs. Nonetheless, we also find that the effect of intended uses plan are weakened when a Venture Capitalist (VC) or a less legitimate top management team (TMT) was involved in the IPO firm. This result shows that the divergence between stated intentions and actual behaviors depends on internal governance characteristics of the IPO firms.

By embracing the possibilities of divergence between stated intentions and actual behaviors, this study contributes to the literature related to the use of IPO proceeds. Most importantly, it highlights the actual post-IPO behavior. Existing studies have overlooked the possibility that IPO firms may not comply with plans stated in prospectuses. This study is the first to empirically examine the relationship between intended proceeds uses stated pre-IPO and actual post-IPO behaviors.

We also contribute to research on internal governance theory by theorizing how entities such as VCs and TMTs affect a firm's resource allocation behavior, especially during the years following an IPO. The results of this study suggest that the involvement of entities with short time horizons or a lack of ability to execute plans may delay or even eliminate long-term investments, even those planned pre-IPO.

The remainder of this paper is organized as follows. Section 2 presents a literature review followed by the hypotheses developed in the study. Section 3 describes the data collected and procedures carried out. Section 4 explains the analysis results followed by Section 5 that discusses these results and presents the main conclusions and implications of the study.

2. Literature review and development of the hypotheses

Firm's investment behavior post-IPO

Long-term investments such as marketing and R&D expenditure in the current accounting period reduce short-term profitability. Due to this, managers in firms struggle to strike a balance in investments even when they raise funds through IPOs (Lévesque, Joglekar and Davies, 2012). The resources and capacity to generate long-term benefits require considerable money and time. Therefore, resource allocation for growth purposes is particularly important following IPOs that infuse cash into firms who then make decisions aimed at fostering growth (Jain, Jayaraman and Kini, 2008).

Most existing studies on IPOs examine post-IPO stock prices and performance. Few examine post-IPO investment behavior. Studies examining post-IPO investment behavior mainly examine the change in investment behavior after an IPO from that before (Pagano, Panetta and Zingales, 1998; Asker, Farre-Mensa and Ljungqvist, 2015), or the correlation between the amounts of proceeds raised through IPOs and subsequent capital investments, R&D investments, and other activities (Kim and Weisbach, 2008). Pagano, Panetta and Zingales (1998) address the issue of why companies go public by comparing the ex-ante and ex-post characteristics of IPO firms with those of private firms. They find that companies are more likely to reduce their leverage and investment after the IPO. These findings suggest that the reason firms go public is to rebalance their accounts rather than to finance future investments and growth. Asker, Farre-Mensa and Ljungqvist (2015) also find that a firm's investment (CAPEX and R&D) levels decline significantly after it goes public, by analyzing changes in investment behavior from before to after the IPOs using the U.S. company data from 2001 to 2007. By contrast, Kim and Weisbach (2008) examine the motivation for IPOs by analyzing the use of proceeds (total assets, inventory, capital expenditures, acquisitions, R&D, cash holdings, and long-term debt reduction) raised in both initial and further public offerings using data collected from 38 countries between 1990 and 2003. They show that cash holdings increase after IPOs and that these funds are spent on various projects, such as capital expenditure and R&D. This result suggests that firms spend proceeds on both capital expenditure and R&D.

However, none of these studies provides an empirical link between an intended uses plan stated pre-IPO and the subsequent actual investment behavior of a firm, because they focus primarily on the motivation for initial offerings. Indeed, the literature is remarkably silent on the issue of divergence between plans and actual behaviors. This study addresses this divergence by proposing hypotheses from an internal governance perspective in the

following sections.

Focus of this study

Most firms go public to fund a planned increase in investment (Brau and Fawcett 2006) and continue their growth (Certo, Holcomb and Holmes, 2009). Allocating more proceeds from an IPO to future growth is necessary to build the internal resource base of a firm for long-term survival. In fact, existing studies reveal that firms that have a specific use plan for investments to enhance their post-IPO stock and operating performance (Welbourne, Neck and Dale, 2012; Andriansyah and Messinis 2016; Chin-Chi, 2020). Therefore, we focus on two types of investments for future growth. These are plant and equipment (Plant&Equipment) and research and development (R&D) because they could contribute more to long-term performance than other uses of proceeds could, such as for debt repayment and general business purposes. Furthermore, because these are specifically stated in prospectuses as intended uses of the proceeds, using them enables us to examine the divergence between plans and actual behavior by combining accounting data for both.

Relationship between plan and actual behavior

Are proceeds generated by firms that have recently issued IPOs used for investment, as planned pre-IPO? Firms may change their plans and behave differently from pre-IPO plans because of changes in priorities and unforeseen contingencies (Certo, Holcomb and Holmes, 2009).

Nevertheless, this study assumes that firms generally behave as planned even post-IPO, for several reasons. First, firms are required to explain how they use their proceeds so as not to adversely affect stock prices. If the management of a firm makes poor choices about where to spend the cash from an IPO, investors will lose interest in the firm, and the stock price will decline (Welbourne, Neck and Dale, 2012). Second, an IPO by a venture is more likely the first step in a funding series (Leone, Rock and Willenborg, 2007). Firms may, therefore, have a high incentive to disclose the specific use of the proceeds and behave as planned in anticipation of subsequent offerings. Finally, market participants such as underwriters, auditors, and analysts may serve as monitors. In particular, underwriters and auditors may monitor an IPO firm's post-IPO behavior because of the potential for a reputational damage if the firm underperforms by breaking its intended uses plan post-IPO.

Thus, firms are more likely to invest post-IPO as they planned pre-IPO. Therefore, we hypothesize:

H1a : The pre-IPO planned amount of plant equipment expenditure is positively related to the actual amount of post-IPO investment in plant equipment.

H1b : The pre-IPO planned amount of R&D expenditure is positively related to the actual amount of post-IPO investment in R&D.

Effect of internal governance characteristics

We have presented above our hypotheses on how the plan for plant equipment and R&D expenditures pre-IPO directly affects actual post-IPO investment behavior. We posit that firms generally behave as planned, even post-IPO. However, internal governance characteristics may influence how the pre-IPO plan affects post-IPO investment behavior. Internal corporate governance characteristics include board composition, shareholder involvement, management incentives, and leadership characteristics (Filatotchev and Nakajima, 2010). They play a role in reducing agency costs and improving efficiency and firms' financial performance. They may, by contrast, also have a negative effect on firms. We argue that pre-IPO planning may be impeded and have a wider gap from actual behavior due to entities with short time horizons or a lack of ability to execute the plan. In this study, we focus on two such types of internal governance entities: VCs and TMTs. They are likely to influence a firm's investment behavior— VCs are entities with a short time horizons, especially in an IPO, and TMTs are entities responsible for the execution of the pre-IPO plans.

VCs.

Conflicts may arise among firm owners (principals) because they often have heterogeneous interests (Dalziel, White and Arthurs, 2011). A pre-IPO principal who has a short-term orientation is likely to seek to induce firm agents to act in ways that run counter to the interests of principals with a long-term orientation. In such cases, even if a firm has plans for long-term investments pre-IPO, these plans may be prompted to change.

VCs, in particular, have short investment horizons at the time of an IPO so that they can show the returns to their own investors and syndicate stakeholders (De Clercq, Sapienza and Zaheer, 2008). Indeed, previous studies have shown that VCs may sometimes use their influence on the board to encourage IPO underpricing. In addition, VCs prefer to sell their shares at times of high stock value. As short-term profitability declines if a firm uses the proceeds raised from an IPO for long-term investments such as plant and equipment or R&D, VCs may constrain such behaviors of firms that would reduce their short-term profitability.

Therefore, when VCs (entities with short time horizons) are involved in IPO firms, they prompt them to change their long-term investment plans, reducing the likelihood that firms behave as planned pre-IPO. Thus, we hypothesize:

H2a : When an IPO firm is funded by a VC, the positive relationship between the pre-IPO planned amount of plant equipment expenditure and the actual amount of post-IPO investment in plant equipment is weaker.

H2b : When an IPO firm is funded by a VC, the positive relationship between the pre-IPO planned amount of R&D expenditure and the actual amount of post-IPO investment in R&D is weaker.

TMTs.

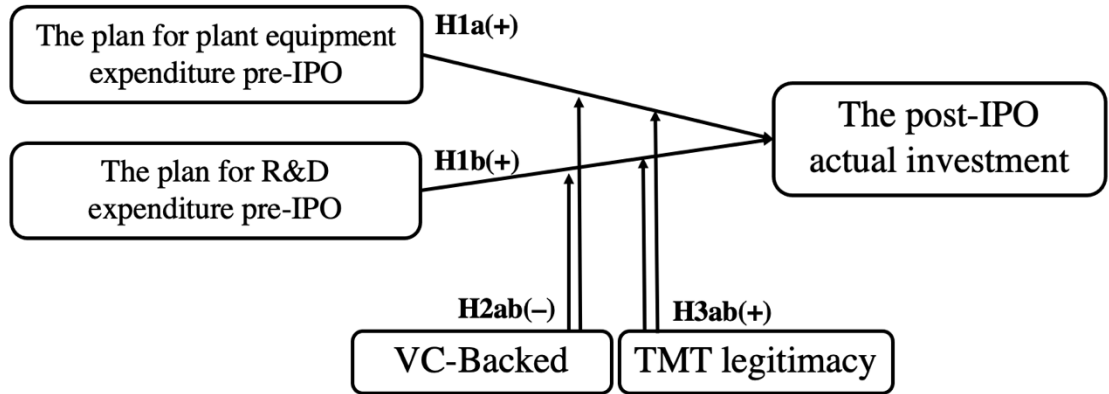
Since the TMT is the entity that executes a firm's plan, it deserves attention in this study, as the study examines the relationship between plans and behaviors and the divergence between the two. In previous IPO studies, the most legitimate managers are seen as signals of viable business strategies and substantial economic potential (Cohen and Dean, 2005). Cohen and Dean (2005) find that better managerial qualifications (e.g., prior TMT experience, industry experience, age, and educational background) are positively associated with reduced investor uncertainty and IPO underpricing, suggesting that top managers can indicate the value of an organization. Thus, legitimate managers are capable of executing plans. In addition, firms with legitimate managers tend to be highly evaluated by investors, so these managers may behave as per the pre-IPO plans after the IPO to meet investor expectations.

Based on these arguments, we assume that firms with legitimate managers are more likely to execute their plans as is. By contrast, firms with less legitimate managers are less likely to execute their plans as is because of their lower capabilities. Thus, we hypothesize:

H3a : The greater the TMT legitimacy, the stronger is the positive relationship between the pre-IPO planned amount of plant equipment expenditure and the actual amount of post-IPO investment in plant equipment.

H3b : The greater the TMT legitimacy, the stronger is the positive relationship between the pre-IPO planned amount of R&D expenditure and the actual amount of post-IPO investment in R&D.

Figure 1. Relationships between variables in hypotheses in this study



3. Data and Methodology

Sample and data collection

The sample used in this study comprised firms that issued IPOs in the Japanese market during January 1, 2010–December 31, 2019. We excluded financial firms and foreign firms that issued IPOs in the Japanese market and the initial sample of 543 firms was reduced to 526. The sample was further reduced in each analysis phase due to the elimination of firms with missing data as accounting data from pre-IPO to post-IPO are required for analysis.

The primary source of data used in this study is a firm's IPO prospectus. We manually collected the IPO firms' stated intended uses of proceeds plans from IPO prospectuses. IPO prospectuses disclose information such as a firm's products, operating history, employees, compensation, ownership structure, director's background, and the intended uses of IPO proceeds. Therefore, an IPO prospectus was an important document in our analysis. We also collected financial data, which were used as the dependent and control variables, from the SPEEDA database and the Initial Public Offering White Paper.

Methodology

We used Stata/MP 17 to perform hierarchical multiple regression analyses using the Ordinary Least Squares method to test the hypotheses. Stata's robust option for regression analysis enabled the computation of robust standard errors. Table 1 summarizes the variables used in this study.

Dependent variables

Post-IPO Investments. Following prior studies on investment behavior post-IPO

(Kim and Weisbach, 2008), we measured expenditures (plant and equipment, and R&D) as the log of 0.01 plus the accumulation in each variable since the IPO, normalized by total assets prior to the IPO. To minimize the impact of outliers, each variable was measured as a natural logarithm. The dependent variables were created using the cumulative expenditures for each investment from the first to third period after the IPO. These variables were regarded as post-IPO investment behavior.

$$Y = \ln \left[\left(\sum_{i=1}^{t+3} V_i / \text{total assets}_0 \right) + 0.01 \right]$$

V = Amount of actual investment for plant and equipment / R&D

where V is the measured variable, year 0 denotes the fiscal year-end just prior to the IPO, and year t denotes the number of years after year 0.

Independent variables

Pre-IPO Use of Proceeds Plan. Consistent with prior studies, we coded independent variables from the “Proceeds” section of a prospectus, which describes how an issuing firm plans to spend cash received from the IPO. Issuers are required to disclose the intended use of proceeds when they announce new issues in Japan (Suzuki and Yamada, 2012). We considered the amount of money a firm stated that it would spend in each category and used it in the data analysis. Prior studies consider the pre-IPO use of proceeds plan as the percentage of total proceeds spent on each category divided by the amount of offer proceeds expected to be raised (e.g., Welbourne, Neck and Dale, 2012; Wyatt, 2014). However, this study used amounts because the study is interested in the effect of the size of the plan for each category on the actual investment behavior. The following categories were used in the analysis.

- . proceeds allocated to plant and equipment, and
- . proceeds allocated to R&D.

$$X = \ln[(V_0 / \text{total assets}_0) + 0.01]$$

V = Planned amount of plant and equipment/R&D expenditure

where V is the variable being measured and year 0 denotes the fiscal year-end just prior to the IPO.

Moderators

VC-Backed. We use a dichotomous variable with value 1 if the deal was backed by

a venture capitalist (Venture Capital-Backed), and 0 otherwise.

TMT Legitimacy. TMT legitimacy was determined using Cohen and Dean's (2005) approach. TMT was defined as the board of directors as described in a prospectus because a board of directors in Japan is small, resembling the top management team of a U.S. firm, and has executive roles in the firm it controls (Nakauchi and Wiersema, 2015). However, auditors and non-executive directors were excluded to focus on the TMT members involved in the organization's strategy and decision making. Cohen and Dean (2005) measured TMT legitimacy as the logged sum of (1) the number of top managers with industry experience, (2) the number of top managers with prior top management experience, (3) the number of top managers aged 40 or over, and (4) the number of top managers with advanced degrees (master's degree or equivalent). We used this formula to measure TMT legitimacy.

Control variables

New capital from primary shares sold through an IPO (Primary) and incremental funds from other sources (Others) have separate effects on post-IPO investment behavior (Kim and Weisbach, 2008), and these variables were controlled in the analysis. To minimize the effect of outliers, we normalized each source of funds by total assets and took the log of 0.01 plus.

$$\text{Primary} = \ln \left[\left(\frac{\text{primary capital}}{\text{total assets}_0} \right) + 0.01 \right]$$

$$\text{Others} = \ln \left[\left(\frac{\text{Other sources}}{\text{total assets}_0} \right) + 0.01 \right]$$

$$\text{Other sources} = \ln[(\text{total sources of funds}_1 - \text{primary capital}) + 0.01]$$

where total sources of funds are the sum of cash flows from a firm's continuing operations and other sources of funds such as investment and financing activities.

Firm characteristics may also affect post-IPO investment behavior. To control for the firm-size effect, this study also includes the Log of Total Assets and Firm Age. To control for financial conditions, Debt Ratio was included. Finally, we use IPO year Dummies, Industry Dummies, and Market Dummies to control for each possible effect.

Table 1 Measurement of variables

Variables	Measured as
Dependent Variables	
ln_ΣPlantEquipment	Accumulated expenditures for acquisition cost of fixed assets post-IPO [t+1 ~ t+3] / Total assets [t-1]
ln_ΣR&D	Accumulated expenditures for R&D post-IPO [t+1 ~ t+3] / Total assets [t-1]
Independent Variables	
ln_Plan_PlantEquipment	Amount of the use of proceeds for acquisition cost of fixed assets in the prospectus / Total assets [t-1]
ln_Plan_R&D	Amount of the use of proceeds for R&D in the prospectus / Total assets [t-1]
Moderating Variables	
VC-Backed	1 if the deal was backed by VC and 0 if otherwise
TMT Legitimacy	Logged sum of below four independent variables # of top managers with industry experience # of top managers with prior top management experience # of top managers aged 40 or over # of top managers with advanced degrees (master or above)
Control Variables	
Primary	Offering price × Number of shares offered / Total assets [t-1]
Others	Other cash [t+1] / Total Assets [t-1]
ln_Totalassets	Total assets [t-1]
Debt_ratio	Debt [t-1]/total assets [t-1]
Firm Age	Number of years from founding to IPO

4. Results

Tables 2 and 3 present the means and standard deviations of the study variables as well as correlations among the variables. IPO year, industry, and market dummies were included in our analyses, but are not reported in the descriptive statistics.

Table 2. Means, standard deviations, and correlations (DV= $\ln\Sigma\text{PlantEquipment}$)

	Mean	SD	1	2	3	4	5	6	7	8	9
1 $\ln\Sigma\text{PlantEquipment}$	-0.81	1.26									
2 $\ln\text{Plan_PlantEquipment}$	-3.26	1.44	0.26								
3 $\ln\text{Plan_R\&D}$	-4	1.41	0.02	-0.02							
4 Primary	0.58	1.13	0.11	0.16	0.52						
5 Others	0.41	0.76	0.24	0.11	0.05	0.18					
6 $\ln\text{TotalAssets}$	7.51	1.04	-0.12	-0.10	-0.18	-0.36	-0.18				
7 Debt_ratio	56.11	22.38	0.09	0.03	-0.36	-0.18	0.03	0.31			
8 Firm Age	16.53	12.6	-0.13	-0.04	-0.15	-0.23	-0.15	0.32	0.11		
9 VC-Backed	0.62	0.49	0.15	-0.01	0.09	0.11	0.06	-0.12	-0.07	-0.20	
10 $\ln\text{TMTlegitimacy}$	-0.06	0.95	-0.04	-0.08	-0.01	-0.11	-0.10	0.25	0.11	0.15	-0.06

Table 3. Means, standard deviations, and correlations (DV= $\ln\Sigma\text{R\&D}$)

	Mean	SD	1	2	3	4	5	6	7	8	9
1 $\ln\Sigma\text{R\&D}$	-3.49	1.79									
2 $\ln\text{Plan_R\&D}$	-4	1.41	0.55								
3 $\ln\text{Plan_PlantEquipment}$	-3.26	1.44	0.04	-0.02							
4 Primary	0.58	1.13	0.38	0.52	0.16						
5 Others	0.41	0.76	0.08	0.05	0.11	0.18					
6 $\ln\text{TotalAssets}$	7.51	1.04	-0.14	-0.18	-0.1	-0.36	-0.18				
7 Debt_ratio	56.11	22.38	-0.31	-0.36	0.03	-0.18	0.03	0.31			
8 Firm Age	16.53	12.6	-0.08	-0.15	-0.04	-0.23	-0.15	0.32	0.11		
9 VC-Backed	0.62	0.49	0.18	0.09	-0.01	0.11	0.06	-0.12	-0.07	-0.2	
10 $\ln\text{TMTlegitimacy}$	-0.06	0.95	0.11	-0.01	-0.08	-0.11	-0.1	0.25	0.11	0.15	-0.06

Tables 4 and 5 show the results of the regression analyses predicting post-IPO investments in plant equipment and R&D, respectively. Model 1 presents the first step of the model using only the control variables. Model 2 presents the results of the second step of the estimation of independent variables, including the planned amounts of plant equipment and R&D expenditures. As stated in Hypothesis 1, we found that the pre-IPO planned amount of plant equipment and R&D expenditure had a positive significant relationship (coefficient 0.180 / 0.380) with post-IPO investment in plant equipment and R&D. Therefore, we conclude that Hypotheses 1a and 1b are supported by this analysis:

(H1a) The pre-IPO planned amount of plant equipment expenditure is positively related to the actual amount of post-IPO investment in plant equipment. (H1b) The pre-IPO planned amount of R&D expenditure is positively related to the actual amount of post-IPO investment in R&D.

Model 3 presents the results of the third step of the estimation of interaction terms between VC-Backed and independent variables (the planned amounts of plant equipment and R&D expenditures). As shown in Model 3 of Table 4, the interaction term between VC-Backed and the planned amount of plant equipment expenditure was negative and significant, as predicted. However, Model 3 of Table 5 shows that the interaction term between VC-Backed and the planned amount of R&D expenditure was insignificant. To illustrate these results, we plotted the moderating effects of VC-Backed on the planned plant equipment expenditure based on the coefficient estimates in Model 3 of Table 4. Figure 2 shows that the effect of the planned amount of plant equipment expenditure becomes weaker when a VC is involved in the firm. Therefore, we conclude that only Hypothesis 2a is supported by this analysis: (H2a) When an IPO firm is funded by a VC, the positive relationship between the pre-IPO planned amount of plant equipment expenditure and the actual amount of post-IPO investment in plant equipment is weaker.

Model 3 presents the results of the fourth step of the estimation of interaction terms between TMT legitimacy and independent variables (the planned amounts of plant equipment and R&D expenditures). As shown in Model 4 of Table 4, the interaction term between TMT legitimacy and the planned amount of plant equipment expenditure was insignificant. However, Model 4 of Table 5 shows that the interaction term between TMT legitimacy and the planned amount of R&D expenditure was positive and significant, as predicted. Figure 3 shows that the planned amount of R&D expenditure has a greater positive effect on the post-IPO investment by firms with high TMT legitimacy than that on the post-IPO investment by firms with low TMT legitimacy. Therefore, we conclude that only Hypothesis 3b is supported by this analysis: (H3b) The greater the TMT legitimacy, the stronger is the positive relationship between the pre-IPO planned amount of R&D expenditure and the actual amount of post-IPO investment in R&D.

Table 4. OLS models predicting post-IPO investment in plant equipment

DV= $\ln \Sigma \text{PlantEquipment}[t+1 \sim t+3]$	Model 1	Model 2	Model 3	Model 4
$\ln \text{Plan_PlantEquipment}(H1)$		0.180*** (0.0416)	0.297*** (0.0700)	0.182*** (0.0416)
$\ln \text{Plan_PlantEquipment}(H2)$ X VC-Backed			-0.172** (0.0849)	
$\ln \text{Plan_PlantEquipment}(H3)$ X $\ln \text{TMTlegitimacy}$				0.0299 (0.0386)
$\ln \text{Plan_R\&D}$		-0.0485 (0.0530)	-0.0418 (0.0539)	-0.0514 (0.0534)
Primary	0.00142 (0.0489)	0.00835 (0.0545)	0.0204 (0.0556)	0.0109 (0.0548)
Others	0.336** (0.147)	0.325** (0.158)	0.329** (0.154)	0.327** (0.160)
$\ln \text{TotalAssets}$	-0.106 (0.0818)	-0.0644 (0.0816)	-0.0581 (0.0819)	-0.0625 (0.0819)
Debt_ratio	0.0103*** (0.00265)	0.00874*** (0.00275)	0.00826*** (0.00274)	0.00871*** (0.00275)
Firm Age	-0.00103 (0.00491)	-0.00145 (0.00486)	-0.00113 (0.00486)	-0.00111 (0.00490)
VC-Backed	0.139 (0.128)	0.171 (0.127)	0.165 (0.127)	0.176 (0.127)
$\ln \text{TMTlegitimacy}$	-0.00824 (0.0676)	0.00202 (0.0658)	-0.000603 (0.0660)	-0.00476 (0.0705)
IPO year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Market dummies	Yes	Yes	Yes	Yes
Constant	-1.539* (0.815)	-1.468* (0.835)	-2.071** (0.857)	-2.093** (0.849)
Observations	437	437	437	437
R-squared	0.194	0.235	0.242	0.236
Adj R-squared	0.139	0.178	0.184	0.177

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Figure 2. Interaction effect on post-IPO investment in plant equipment

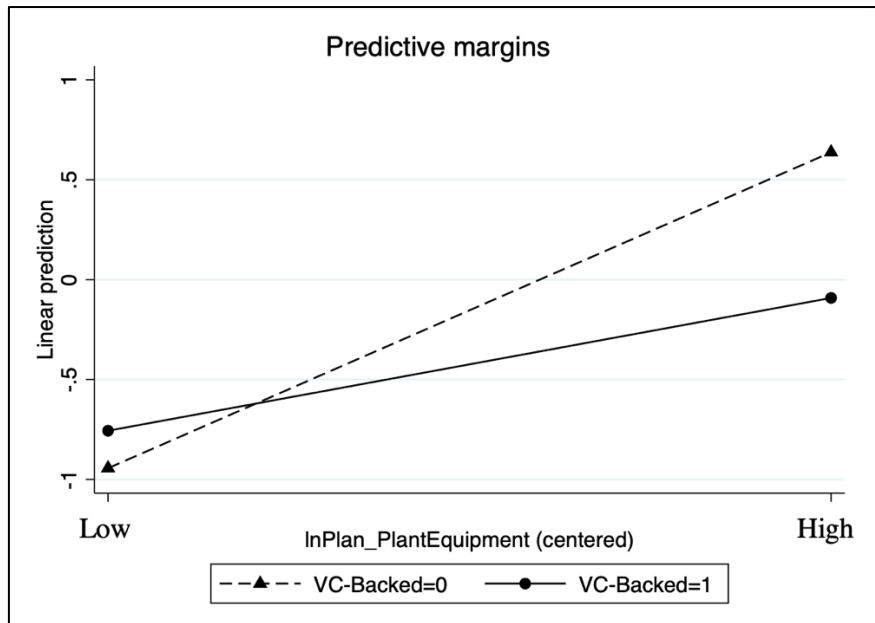


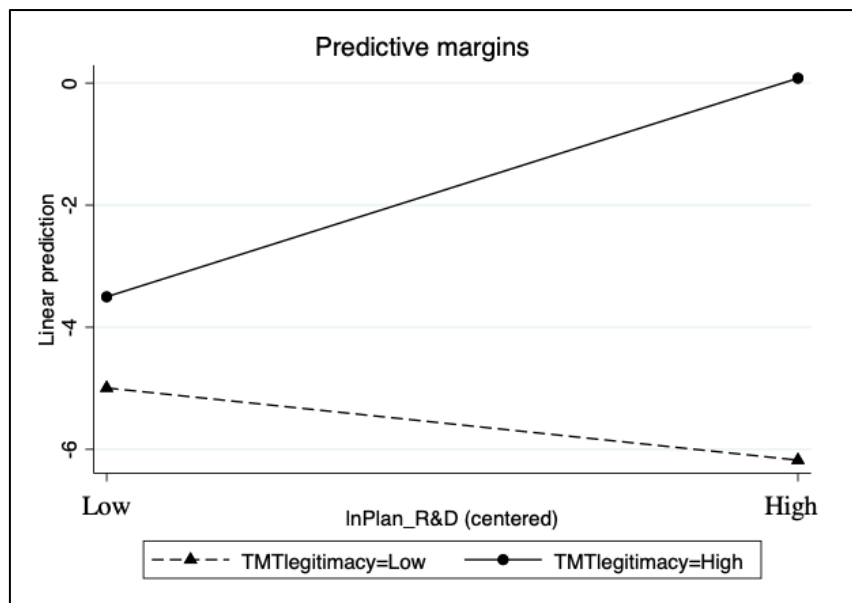
Table 5. OLS models predicting post-IPO investment in R&D

DV= lnΣR&D[t+1~t+3]	Model 1	Model 2	Model 3	Model 4
lnPlan_R&D(H1)		0.380*** (0.0810)	0.340*** (0.130)	0.395*** (0.0803)
lnPlan_R&D (H2)			0.0564 (0.149)	
X VC-Backed				0.0873** (0.0363)
lnPlan_R&D (H3)				0.0147 (0.0535)
X lnTMTlegitimacy		0.0212 (0.0535)	0.0188 (0.0536)	
lnPlantEquipment				0.132** (0.0585)
Primary	0.317*** (0.0517)	0.130** (0.0609)	0.127** (0.0618)	0.112 (0.0827)
Others	0.0820 (0.0838)	0.0894 (0.0835)	0.0940 (0.0841)	-0.0503 (0.0779)
lnTotalAssets	-0.0453 (0.0824)	-0.0534 (0.0782)	-0.0534 (0.0779)	-0.00704** (0.00337)
Debt_ratio	-0.0120*** (0.00339)	-0.00691** (0.00338)	-0.00698** (0.00338)	-0.00523 (0.00481)
Firm Age	-0.00779 (0.00492)	-0.00551 (0.00488)	-0.00523 (0.00496)	
VC-Backed	0.162 (0.149)	0.213 (0.146)	0.214 (0.146)	0.176 (0.146)
lnTMTlegitimacy	0.285*** (0.0620)	0.262*** (0.0595)	0.256*** (0.0598)	0.246*** (0.0544)
IPO year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Market dummies	Yes	Yes	Yes	Yes
Constant	-4.048*** (0.766)	-2.330*** (0.798)	-3.895*** (0.726)	-3.869*** (0.724)
Observations	438	438	438	438
R-squared	0.437	0.487	0.487	0.493
Adj R-squared	0.398	0.449	0.448	0.455

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Figure 3. Interaction effect on post-IPO investment in R&D



5. Discussion and conclusion

Findings

The research question of this study was " *What [do] managers plan to do and actually do with IPO proceeds? What factors influence the correspondence between intended proceeds uses stated pre-IPO and actual post-IPO behaviors?*". This study shows that firms generally allocate proceeds to investment as planned, even post-IPO. However, this study also shows that the involvement of entities with short time horizons (VCs) or a lack of ability to execute the plan (less legitimate TMTs) may change or terminate the pre-IPO plan for investment. This finding supports the hypothesis of this study that the internal governance characteristics, this is the involvement of entities with short time horizons or a lack of ability to execute the plan, make gap between plan and actual behavior.

Theoretical contributions

We contribute to prior IPO research in several ways. First, we hand-collected data on the intended use of proceeds from IPO prospectuses and examined the relationship between the plan for investment pre-IPO and actual post-IPO investment behavior. The findings of this study provide new insights into the debate on the divergence between stated plans and actual behavior suggested by Certo, Holcomb and Holmes (2009). Prior studies have directly focused on the role of intended use plans in IPO performance, but they implicitly assume that IPO firms implement their plans as is (e.g., Leone, Rock and Willenborg, 2007; Welbourne, Neck and Dale, 2012; Wyatt, 2014). However, the findings of this study suggest that IPO firms may behave differently from what they planned pre-IPO, depending on internal governance characteristics. Our study takes a step in this debate by empirically showing that IPO firms can take behavior that differ from the stated plan.

Second, our findings contribute to research on corporate governance by identifying the factors influencing the relationship between intended fund use plans stated pre-IPO and actual post-IPO behaviors. Both agency and principal issues arise in the IPO context. The results reveal that entities with short time horizons or a lack of ability to execute the plan may widen the divergence between the stated plan and actual behavior. In particular, while previous studies have shown that VCs may sometimes use their influence on the board to encourage IPO underpricing, this study suggests that VCs may make IPO firms delay long-term investments to protect short-term profits. Thus, rather than investigating the direct relationship between governance characteristics and performance, this study may contribute to the elucidation of the post-IPO underperformance mechanism in a

different way than prior studies by investigating the relationship between governance characteristics and firm behavior.

Practical contributions

Our findings also have contribution for management practice. Recently, there has been a large public outcry for increased the specificity of intended use of IPO proceeds for issuers. This is because nonspecific/nontransparent disclosures raise uncertainties for investors and the market regulator about the intentions of the issuers (Wyatt, 2014). In Japan, for example, the rules regarding IPOs became stricter in 2007, requiring detailed disclosure of the use of proceeds for issuers, following scandals by some initial public firms.

However, this study argues that not only the specificity of intended use proceeds, but also the divergence between plans and actual behavior can be a practical issue. In fact, based on the results of this study, the involvement of entities with short time horizons and a lack of ability to execute the plan may change the pre-IPO plan. The unscrupulous plans may also uncertainties for investors and the market regulator. What this suggests is that market participants such as security regulators and investors need to consider the divergence between plan and actual behavior as well.

Limitation and future research opportunities

Like all research, this study has some limitations. First, it focused on the effects of internal governance characteristics: VC backing and TMT legitimacy. However, there are other potentially diverse mechanisms that could lead to divergence between plans and actual behavior. For example, IPO firms might change their resource allocation because of changes in priorities and unforeseen contingencies (Certo, Holcomb and Holmes, 2009). By considering the characteristics of environmental and other factors, researchers can find new mechanisms behind a divergence between stated plans and actual behavior.

Second, this study considers two types of resource allocation: investment in plant and equipment and that in R&D. However, other uses of proceeds, such as debt repayment, acquisitions, or general business purposes, were also described in firms' IPO prospectuses. Future research can examine the relationships between these other uses of proceeds stated in plans and actual behavior post-IPO.

Last, while our study examines the factor influence the correspondence between pre-IPO plan and actual post-IPO behaviors, research on the consequences of the divergence between plan and actual behavior remains limited. Because the business environment of IPO firms changes rapidly, they sometimes must change their strategies

and plans. Acknowledging that the divergence between planning and execution does not always have a negative impact on IPO firms opens fruitful avenues for further research.

Conclusion

The divergence between the stated plan and the actual behavior of IPO firms is an important theoretical and practical issue. None of the prior studies provide an empirical link between the intended use of proceeds plans stated pre-IPO and the subsequent actual investment behavior of firms because they implicitly assume that IPO firms comply with these plans even after IPOs. Therefore, the motivation of this study was that IPO firms could take actions after IPOs that differ from the use plans of IPO proceeds pre-IPO. By analyzing Japanese IPO firms from 2010 to 2019, this study found that firms allocate IPO proceeds as planned to investments after IPOs. However, this study also found that the pre-IPO plans could change or be terminated because of the involvement of entities with short time horizons (VCs) or a lack of ability to execute the plans (less legitimate TMT). Overall, this study has significant theoretical implications in terms of arguments related to the use of IPO proceeds. Understanding how internal governance characteristics affect the divergence between planning and actual behavior is important for gaining a richer understanding of how IPO firms allocate resources for future growth and innovation.

References:

- Ahmad-Zaluki, N. A., & Badru, B. O. (2021). Intended use of IPO proceeds and initial returns. *Journal of Financial Reporting and Accounting*, 19(2), 184-210.
- Amor, S. B., & Kooli, M. (2017). Intended use of proceeds and post-IPO performance. *The Quarterly Review of Economics and Finance*, 65, 168-181.
- Andriansyah, A., & Messinis, G. (2016). Intended use of IPO proceeds and firm performance: A quantile regression approach. *Pacific-Basin Finance Journal*, 36, 14-30.
- Alyasa-Gan, S. S., & Che-Yahya, N. (2022). Intended Use of IPO Proceeds and Survival of Listed Companies in Malaysia. *Journal of Risk and Financial Management*, 15(3), 145.
- Asker, J., Farre-Mensa, J., & Ljungqvist, A. (2015). Corporate investment and stock market listing: A puzzle?. *The Review of Financial Studies*, 28(2), 342-390.
- Autore, M. Don, Bray, D. E., & Peterson, D. R. (2009). Intended use of proceeds and the long-run performance of seasoned equity issuers. *Journal of Corporate Finance*, 15(3), 358-367.
- Beatty, R. P., & Ritter, J. R. (1986). Investment banking, reputation, and the underpricing of initial public offerings. *Journal of financial economics*, 15(1-2), 213-232.
- Brau, J. C., & Fawcett, S. E. (2006). Initial public offerings: An analysis of theory and practice. *The Journal of Finance*, 61(1), 399-436.
- Busaba, W. Y., Benveniste, L. M., & Guo, R. J. (2001). The option to withdraw IPOs during the premarket: empirical analysis. *Journal of Financial Economics*, 60(1), 73-102.
- Certo, S. T., Holcomb, T. R., & Holmes Jr, R. M. (2009). IPO research in management

- and entrepreneurship: Moving the agenda forward. *Journal of management*, 35(6), 1340-1378.
- Chin-Chi, L. (2020). Intended use of proceeds and long-run performance of reverse mergers: Evidence from Taiwan. *Journal of Economics and Management*, 16, 33-49.
- Cohen, B. D., & Dean, T. J. (2005). Information asymmetry and investor valuation of IPOs: Top management team legitimacy as a capital market signal. *Strategic Management Journal*, 26(7), 683-690.
- Dalziel, T., White, R. E., & Arthurs, J. D. (2011). Principal costs in initial public offerings. *Journal of Management Studies*, 48(6), 1346-1364.
- De Clercq, D., Sapienza, H. J., & Zaheer, A. (2008). Firm and group influences on venture capital firms' involvement in new ventures. *Journal of Management Studies*, 45(7), 1169-1194.
- Filatotchev, I., & Nakajima, C. (2010). Internal and external corporate governance: An interface between an organization and its environment. *British Journal of Management*, 21(3), 591-606.
- Hanley, K. W., & Hoberg, G. (2012). Litigation risk, strategic disclosure and the underpricing of initial public offerings. *Journal of Financial Economics*, 103(2), 235-254.
- Hatanaka, M. and Taguchi, Y. (2007). Nishokyo shihonchotatsu de shinru-ru kigyo nimo kiritsu motomeru [Japan Securities Dealers Association: New rules on raising capital, requiring firms discipline]. *Nikkei Kinyu Shinbun*, 23 February, 1.
- Jain, B. A., Jayaraman, N., & Kini, O. (2008). The path-to-profitability of Internet IPO firms. *Journal of Business Venturing*, 23(2), 165-194.
- Jeanneret, P. (2005). Use of the proceeds and long-term performance of French SEO firms.

European Financial Management, 11(1), 99-122.

- Kim, W., & Weisbach, M. S. (2008). Motivations for public equity offers: An international perspective. *Journal of Financial Economics*, 87(2), 281-307.
- Leone, A. J., Rock, S., & Willenborg, M. (2007). Disclosure of intended use of proceeds and underpricing in initial public offerings. *Journal of Accounting Research*, 45(1), 111-153.
- Lévesque, M., Joglekar, N., & Davies, J. (2012). A comparison of revenue growth at recent-IPO and established firms: The influence of SG&A, R&D and COGS. *Journal of Business Venturing*, 27(1), 47-61.
- Nakauchi, M., & Wiersema, M. F. (2015). Executive succession and strategic change in Japan. *Strategic Management Journal*, 36(2), 298-306.
- Pagano, M., Panetta, F., & Zingales, L. (1998). Why do companies go public? An empirical analysis. *The Journal of Finance*, 53(1), 27-64.
- Silva, A., & Bilinski, P. (2015). Intended use of proceeds, underwriter quality and the long-run performance of SEOs in the UK. *Journal of Business Finance & Accounting*, 42(9-10), 1282-1309.
- Suzuki, K., & Yamada, K. (2012). Do the use of proceeds disclosure and bank characteristics affect bank underwriters' certification roles?. *Journal of Business Finance & Accounting*, 39(7-8), 1102-1130.
- Walker, M. D., & Yost, K. (2008). Seasoned equity offerings: What firms say, do, and how the market reacts. *Journal of Corporate Finance*, 14(4), 376-386.
- Welbourne, T. M., Neck, H., & Dale Meyer, G. (2012). The entrepreneurial growth ceiling: using people and innovation to mitigate risk and break through the growth ceiling in initial public offerings. *Management Decision*, 50(5), 778-796.

Wyatt, A. (2014). Is there useful information in the 'use of proceeds' disclosures in IPO prospectuses?. *Accounting & Finance*, 54(2), 625-667.