



How a pre-IPO audit committee improves IPO pricing efficiency in an economy with little value uncertainty and information asymmetry

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ABSTRACT

We examine the effect of a pre-IPO audit committee on IPO pricing from the perspectives of information asymmetry and agency problems. We propose a bargaining power hypothesis to disentangle the information asymmetry explanation (financial reporting quality) from the agency problems explanation (underwriter bargaining power) on IPO pricing. IPO underpricing can be reduced by increasing the financial reporting quality under information asymmetry and/or by decreasing the underwriter bargaining power under agency problems. An audit committee can raise the quality of financial reporting and reduce the bargaining power of underwriters. With a pre-IPO market, the IPO markets in Taiwan have little information asymmetry, thus leading to the weak importance of reducing information asymmetry. We show that the establishment of a pre-IPO audit committee improves IPO pricing efficiency by reducing underwriter bargaining power rather than by raising the quality of financial reporting in Taiwan.

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1. Introduction

An initial public offering (IPO) is the process of offering shares of a firm that is transitioning from private to public status by selling stocks to a large number of diversified investors. Although information is disclosed in the IPO prospectus, it is still difficult to value an IPO because no price history is available for firms before going public. Because of the value uncertainty of IPO firms, investors cannot fully identify high-value IPOs from low-value IPOs.

Leland and Pyle (1977) argue that investors benefit from knowing the true information of the issuers. However, moral hazard hampers the truthful release of information from issuers to investors. Issuers gain substantial rewards by exaggerating positive information. To overcome the existence of substantial information asymmetry between them and investors, issuers must reveal information and credible signals to the market.

The best-known anomaly of IPOs is the underpricing of IPO shares that are listed for the first time. Lowry et al. (2017) indicate that most of the fundamental models of IPO underpricing focus on information asymmetry. Because of the heterogeneity of skills among investors, some investors obtain more

information on the issuing firms than do other investors (Rock (1986); Amihud et al. (2003)). The role of underwriters constitutes the second component of most fundamental models of IPO underpricing. The possible conflicts of interests between issuers and underwriters cause IPO underpricing. Underwriters might underprice IPOs to spend less effort in marketing the offerings (Baron and Holmström (1980); Baron (1982)). The underwriter–investor relation causes IPO share allocation in a manner that is not beneficial to issuers (Ljungqvist and Wilhelm (2003); Ritter and Zhang (2007); Liu and Ritter (2010)). In the Taiwanese IPO market, IPO firms are required to join a trading platform before admission to the trading. Accordingly, we have a unique opportunity to disentangle the effects of information asymmetry and agency problems on IPO underpricing.

Previous studies such as Bédard et al. (2008) and Venkataraman et al. (2008) document that an audit committee reduces information asymmetry by raising the quality of financial reporting to improve the IPO pricing efficiency. However, we are curious whether an audit committee still improves IPO pricing efficiency in an IPO market with little information asymmetry. In this paper, we examine the establishment of a pre-IPO audit committee and its effect on the pricing efficiency of IPO firms with little information asymmetry. We propose a bargaining power hypothesis, based on the role of an audit committee, to help disentangle the information asymmetry explanation from the bargaining explanation in IPO pricing.

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Aussenegg et al. (2006), Derrien and Kecskés (2007), and Chang et al. (2017) study the Alternative Investment Market in London,² European grey markets, Indian when-issued market, and Taiwanese Emerging Stock Market (ESM) and indicate that pre-market prices are informative about post-market prices. The existence of a pre-IPO market reduces value uncertainty and information asymmetry and improves pricing efficiency during an IPO. However, Aussenegg et al. (2006) state that when-issued trading restricts the coverage of short sales and that these short sales can result in a lower offer price and proceeds. Hong (2012) indicates that pre-IPO trading prices reduce the interest of venture capitalists in new issuances.

In this study, we use data from Taiwan for the following reasons: IPO investors in most countries are expected to experience severe information asymmetry because no price history is available before issuance. However, the pre-IPO market in Taiwan provides trading information before issuance. Taiwan established a trading platform for unlisted stocks, called the Emerging Stock Market, in 2002. Chang et al. (2017) show that ESM prices are informative for IPO prices in the aftermarket, thus leading to little value uncertainty and information asymmetry. Even with little information asymmetry, IPOs in Taiwan remain significantly underpriced. Chang et al. (2017) attribute the underpricing of IPOs in Taiwan to the bargaining power of the underwriter, instead of information asymmetry.

Firms with audit committees have increased bargaining power over the underwriters. In Taiwan, firms going public must have the approval of the audit committee, if it is established. In Hong Kong, the audit committee may even own veto powers on issuance decisions. Therefore, we conjecture that the formation of a pre-IPO audit committee does not reduce the underpricing of IPOs in Taiwan by reducing information asymmetry through increased financial reporting quality. A pre-IPO audit committee in Taiwan instead reduces IPO underpricing by mitigating agency problems through reduced underwriter bargaining power.

Studies have yet to examine the role of a pre-IPO audit committee in IPO pricing from the perspective of the agency problems. In most IPO markets worldwide, an audit committee assures the fairness and informativeness of the financial reports to reduce information asymmetry. This paper contributes to the literature by providing new evidence regarding the role of a pre-IPO audit committee in reducing agency problems between issuers and underwriters.

This paper is organized as follows: In Section 2, we review the related literature. We describe institutional features and the IPO process in Taiwan in Section 3. We present the data and define the variables in Section 4. Section 5 discusses the informativeness of ESM prices. The formation of a pre-IPO audit committee and its effect on IPO prices are discussed in Section 6. In Section 7, we present the conclusions derived from this study.

2. Literature review

In this section, we primarily review the literature on IPO underpricing from the perspective of information asymmetry between the investors and the issuers and the agency conflicts between the underwriters and the issuers. We also review how an audit committee reduces information asymmetry and agency conflicts.

2.1. Underpricing due to information asymmetry and agency problems

Information asymmetry between investors and issuers is the major cause of IPO underpricing. Rock (1986), Michaely and Shaw (1994), Amihud et al. (2003), and many others show that IPO underpricing occurs to compensate for the extent of information asymmetry. The features that reduce information asymmetry also contribute to reducing IPO underpricing. For example, Carter and Manaster (1990) and Michaely and Shaw (1994) show that IPOs underwritten by prestigious underwriters are less underpriced. Titman and Trueman (1986) show that information asymmetry is reduced when a reputable auditor is hired.

The agency problems between underwriters and issuers also lead to IPO underpricing. Even though the underwriting fees are proportional to IPO proceeds, Baron (1982) indicates that underwriters benefit from underpricing. Ljungqvist and Wilhelm (2003) indicate that IPO underpricing increases with agency conflicts between underwriters and issuers. Ljungqvist (2007) argues that the private benefits that underwriters derive from underpricing typically exceed the implied loss of underwriting fees.

Lowry et al. (2017) indicate that reducing information asymmetry between investors and issuers and reducing agency conflicts between underwriters and issuers contribute to the reduction of IPO underpricing.

2.2. Information asymmetry and agency problems related to audit committee

Why do firms form an audit committee? One of the primary functions of an audit committee is to improve the quality of financial reporting. Beasley (1996), Klein (1998), and the Securities and Exchange Commission (1999) suggest that an audit committee oversees and monitors the management, protects the independence of auditors, and imposes discipline during the financial reporting process. Pincus et al. (1989), Bradbury (1990), Beasley and Salterio (2001), and Bédard et al. (2008) show that audit committees improve the credibility, quality, and quantity of financial and nonfinancial information.

The quality of financial reporting increases with the independence of an audit committee. Board independence is a major concern while monitoring corporate financial reporting to ensure that the economic reality of the firm is reflected. Klein (2002) and Bédard et al. (2004) show that firms with independent audit committees are less likely to engage in earnings management. Abbott and Parker (2000) and Beasley et al. (2000) show that firms who have independent directors in their audit committees are less likely to face lawsuits for misleading or fraudulent financial reports.

By improving the financial reporting quality, an audit committee mitigates information asymmetry between the investors and the issuers, particularly for IPO firms. Venkataraman et al. (2008) indicate that abnormal accounting accruals are negatively related to a pre-IPO audit committee. Bédard et al. (2008) show that an audit committee with a majority of independent members and at least one financial expert can reduce IPO underpricing. However, Ettredge et al. (2018) show that the presence of an audit committee is not associated with the underpricing of IPOs with a newly established audit committee.

Agency problems encourage the need for monitoring by an audit committee to improve firm performance. From the resource-based perspective, Filatotchev and Bishop (2002) and Bédard et al. (2008) argue that nonexecutive directors provide firms with increased bargaining power over the underwriters to reduce agency conflicts.

² Chang et al. (2017) indicate that the Alternative Investment Market in London is not a pre-IPO market per se because most firms instead to have a conventional IPO instead.

Rogers and Stocken (2005) indicate that the threats of securities lawsuits prompt firms to have audit committees that include accounting financial experts to reduce the risk of litigation. Krishnan and Lee (2009) argue that firms with higher litigation risk are increasingly likely to have accounting financial experts on their audit committees. To comply with the market regulations in Taiwan, audit committees in Taiwan must include at least one accounting financial expert.

According to statistics of the Taiwan Stock Exchange, more than 50% of the transactions in Taiwan are completed by retail investors during the past decade. In Taiwan, the Securities and Futures Investors Protection Center (hereafter referred to as the Center) was founded in 2003 to provide litigation services on behalf of investors, particularly retail investors. With the help of the Center, retail investors in Taiwan are more likely to sue directors and officers. According to reports from the Center, the number of cases filed by the Center increases dramatically yearly. The possibility of being sued induces audit committee members to forgo underwriter bargaining power.

Among the firms listed in Hong Kong Stock Exchange, many firms formally confer their audit committees with veto rights for listing rules. For example, OneForce Holdings Limited formally included veto rights in the Terms of References of the Audit Committee of the Board of Directors. Unlike Hong Kong, audit committees of listed firms in Taiwan do not necessarily have formal veto rights. However, Huang (2011) notes that audit committees in Taiwan can have informal veto rights. The board of directors typically does not approve an issue that is vetoed by their audit committee. Article 6 of the Regulations Governing the Exercise of Powers by Audit Committees of Public Companies in Taiwan states the following: "Matters shall be subject to the consent of one-half or more of the entire membership of the audit committee and then be submitted to the board of directors for a resolution. If a matter has not been consented to by one-half or more of the entire membership of the audit committee, it may be adopted with the consent of two-thirds or more of the entire board of directors." Regulations and evidence confirm the bargaining power over underwriters in the presence of an audit committee. In Taiwan, the informal veto powers of an audit committee and the probability of litigation and lawsuits imply that an audit committee provides an issuer with increased bargaining power over the underwriter to reduce agency problems.

A pre-IPO audit committee can improve IPO pricing efficiency by reducing information asymmetry (through increasing financial reporting quality) or by addressing the agency problem (through reducing underwriter bargaining power). Although increasing financial reporting quality to reduce information asymmetry is a crucial function of a pre-IPO audit committee in most economies worldwide, the reduction of information asymmetry should not dominate in an economy with little information asymmetry. Instead, an increasingly influential role of audit committees in the IPO market in Taiwan—in the context of pricing efficiency—is to limit the bargaining power of the underwriter. Therefore, we conjecture that the formation of a pre-IPO audit committee can improve IPO prices in Taiwan by reducing underwriter bargaining power rather than by reducing information asymmetry.

3. Institutional features and the role of audit committees in Taiwan

3.1. ESM and hybrid IPO process in Taiwan

The ESM in Taiwan, established in January 2002, serves as a trading platform for unlisted stocks. Onto comply with market regulations, since 2005, IPOs in Taiwan must be traded in the ESM for at least 6 months before going public. The trading information in

ESM is available for underwriters as a guide to set the prices of an IPO and for investors to bid or subscribe to the IPO.

The hybrid book-building method (a book-building and a public subscription tranche) has been the dominant IPO method in Taiwan since 2005. The book-building process begins with an initial price range and typically lasts 4 business days, whereas the public subscription process often starts 1 day later and ends when book-building does. The final offer price must be within the price range. The book-building tranche is open for institutional and large individual investors. By contrast, the public subscription tranche is open to the general public. Book-building investors bid with price–quantity combinations. Allocations to book-building bidders are determined discretionarily by underwriters. In the public subscription tranche, each subscriber can subscribe to an IPO for only one lot composed of a thousand shares. When IPOs are oversubscribed, allocations for public subscription are determined by a lottery draw. Subscribers pay in advance at the high-limit of the initial price range while subscribing. Subscribing winners receive an allocation of IPO shares and receive a refund of the difference between the final offer price and the high-limit of the initial price range. Fig. 1 illustrates the timeline of the IPO process in Taiwan (Fig. 2).³

Bidding information through the book-building process, subscription information from public subscription, and trading information in the ESM during the waiting period are resources available for setting the final offer price of IPOs. Therefore, price revision in IPOs in Taiwan can be attributed to the information arising from the bidders (institutional investors or professional investors), retail subscribers, and ESM trading. During the book-building process, the book information is unavailable; therefore, we cannot measure the demands of institutional or professional investors in the IPOs.

3.2. Audit committee in Taiwan

The Financial Supervisory Commission (FSC) in Taiwan mandates that in a listed firm, an audit committee must play a monitoring role that focuses on the following topics: (1) Fairness and informativeness of financial reports; (2) Selection and independence of outside auditors; (3) Effectiveness of internal control; (4) Legal compliance; and (5) Management of existing and potential risks for the firm, particularly for raising capital.

Prominent corporate financial activities, including acquisitions and disposals of assets, trading in financial derivatives, raising capitals, and lending to others must be approved by the audit committee. The Regulations Governing the Exercise of Power of Audit Committee of Public Companies necessitate that only independent directors can serve as audit committee members and that at least one of the audit committee members must be a financial expert.

The Company Act in Taiwan empowers an audit committee with legal power in lawsuits. An audit committee can act on behalf of the company in a lawsuit. Stockholders can request audit committee members to institute an action against a company director. Audit committee members may call a meeting of shareholders for the benefit of the company. Articles related to the Company Act are presented in the Appendix.

3.3. Other hybrid IPO markets

Similar to Taiwan, Hong Kong, Italy, and Poland have also adopted a dual-tranche IPO mechanism. Hong Kong and Italy have adopted a public subscription tranche for retail investors

³ This figure is reproduced from Internet Appendix A of Chang et al. (2017) (<https://site.warrington.ufl.edu/ritter/published-articles>).

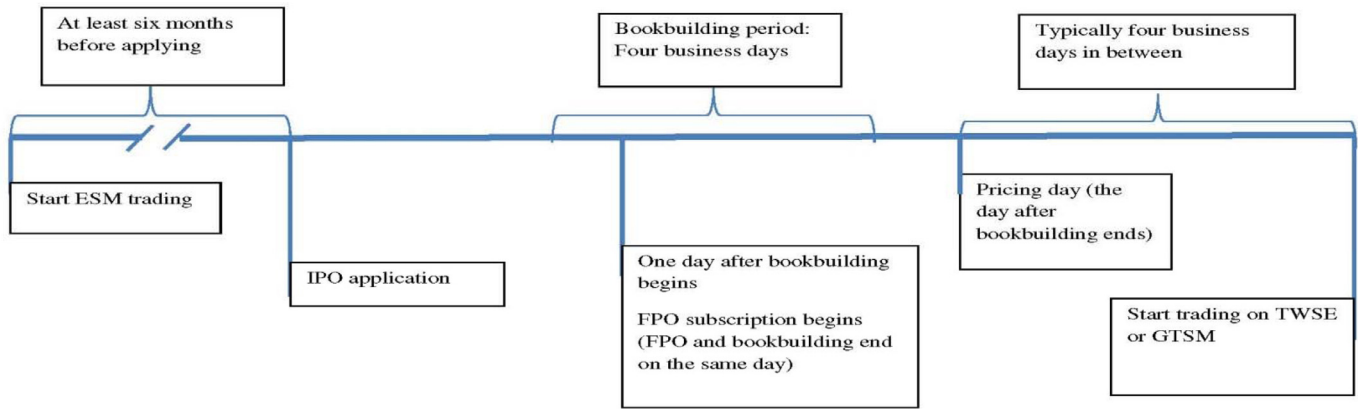


Fig. 1. The time line of IPO process in Taiwan (reproduced from Internet Appendix A of Chang et al. (2017)). Figure IA-1: A Time Line of the IPO process.

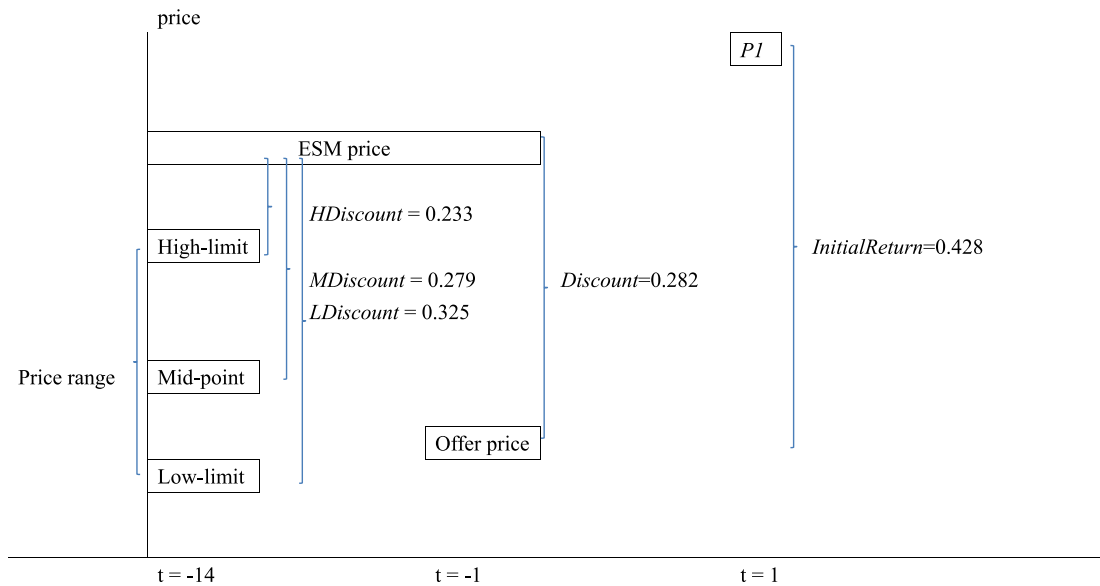


Fig. 2. A diagram of IPO pricing.

and a book-building tranche for institutional investors. Poland has adopted an auction tranche for individual investors and a book-building tranche for institutional investors. Literature relating to both Hong Kong and Poland shows that subscription from individual investors is a key feature of IPO underpricing (McGuinness (2009); Sieradzki (2013)). Literature regarding Italy shows that IPOs are more underpriced when institutional investors are favored over retail investors in the reallocation of shares (Bertoni and Giudici (2014)). In the IPO markets of Hong Kong and Taiwan, retail investors are favored in the reallocation when positive information is received from retail subscription; this is known as the clawback provision. However, in Italy, institutional investors are favored when positive information is received from book-building.

4. Data source and variable definitions

4.1. Data source

We collect IPOs issued in Taiwan from 2007 to 2015. FSC announced the Regulations Governing the Exercise of Powers by Audit Committees of Public Companies in Taiwan on March 28, 2006, with the effective date being January 1, 2007. The Taiwan Economic Journal (TEJ) has been reporting on the establishment of audit committees since 2006. We only include IPOs issued from 2007

because this study examines the establishment of audit committees one year before issuance by using the 2006 TEJ database. IPO data variables, including the initial price range, final offer price, number of shares offered, lead underwriters, venture capitalist, audit committee, accounting data, and ESM trading data, are collected from the TEJ database, the website of Taiwanese Securities Association, and the prospectus of IPOs available in the market observation post system of the Taiwan Stock exchange. Observations with missing values for variables are excluded from the sample, yielding a final study sample of 316 IPOs. Table 1 summarizes the sample selection.

4.2. Variable definitions

4.2.1. Price-earnings ratio of IPO prices and ESM prices

ESM provides trading information for IPO prices before issuance. If the ESM price is informative, the offer price should depend on the ESM price, and the aftermarket price should be significantly related to the ESM price. The increased informativeness of the ESM price in aftermarket pricing indicates that IPO prices should be close to the ESM price. We follow the method of Chang et al. (2017) to measure the price-earnings ratio of the mid-point of the price range, offer price, ESM price, and aftermarket price relative to the last available annual earnings before issuance. $P/E_{MidPoint}$, $P/E_{ESM_PriceRange}$,

Table 1
Sample selection.

Number of Taiwanese IPOs during 2007–2015	490
Less firms with missing value of audit committee variable	(22)
Less firms with missing values of IPO variables	(15)
Less firms with missing values of board variables	(16)
Less firms with missing value of pre-IPO prices	(109)
Less firms with missing value of accruals-based earnings management	(12)
Final sample	316

$P/E_ESM_OfferPrice$, $P/E_OfferPrice$, and P/E_P1 are the price-earnings ratio of the mid-point of price range, ESM price the trading day before the filing of the price range, ESM price the trading day before the filing of the offer price, offer price, and close price on the first trading day in the aftermarket to the last available annual earnings before issuance, respectively.

4.2.2. IPO characteristics

During the study period, the listed firms in Taiwan were recommended—but not required—to form an audit committee. We use a dummy variable, *AuditCommittee*, to measure the establishment of a pre-IPO audit committee: *AuditCommittee* = 1 if an IPO firm establishes an audit committee before going public and *AuditCommittee* = 0 otherwise. All audit committee members are also board directors and receive compensation from the company. *DirectorComp* is the annual compensation, including the salary and bonus for a board director of an IPO firm before issuance. *lnDirectorComp* is the logarithm of *DirectorComp*. Only independent directors serve as members of an audit committee. To differentiate the effect of board independence from the existence of an audit committee, we also measure board independence (*Independence*) as the percentage of independent board directors. *BoardSize* is the number of board directors, including the audit committee members.

The book-building process of IPOs in Taiwan begins with the setting of an initial price range. *LDiscount*, *MDiscount*, and *HDiscount* measure the price discounts of low-limit, mid-point, and high-limit of the price range, relative to the trading price in the ESM, before filing the price range as $1 - (\text{low-limit, mid-point, or high-limit of price range} / \text{ESM price})$. *ESMstd* is the standard deviation of daily stock returns in the ESM during $[-60, -30]$, which captures IPO uncertainty. Most studies use the standard deviation of daily returns in the early aftermarket to measure IPO uncertainty because no trading price information is available before issuance. Compared with the standard deviation of daily returns in the aftermarket, we can measure IPO uncertainty by using trading data before issuance because a pre-IPO market exists in Taiwan.

Agarwal et al. (2008) use subscription ratio to measure retail investor demand. *Subscription* is the ratio of number of shares subscribed to that offered. Jiang and Li (2013) examine retail investor behavior in a dual-tranche IPO market in Hong Kong. Jiang and Li also show that underwriters consider retail investor behavior while pricing an IPO and that retail investor behavior influences IPO prices in the aftermarket.

Discount measures the discount of the final offer price relative to the ESM trading price, before setting the final offer price as $1 - (\text{offer price} / \text{ESM price})$. Year 2011 (*Year2011*) marks the year when the regulation was passed requiring the final offer price to be higher than 70% of the average of ESM prices during the past 10 days before issuance. This regulation is referred to as Regulation 2011 hereafter. Most IPO research employs initial return (*InitialReturn*) as the measure of IPO underpricing. *InitialReturn* is measured as $(\text{close price of the first trading day in the aftermarket} - \text{offer price}) / (\text{offer price})$.⁴

⁴ Apart from the initial return, we use the market-adjusted initial return to adjust for the market return during the corresponding period as IPO underpricing and retrieve qualitatively similar results.

The other IPO firm characteristics used in this paper consist of the logarithm of IPO proceeds (*lnProceeds*), the logarithm of firm age when going public (*lnAge*), the logarithm of assets (*lnAsset*), director ownership (*DirectorOwn*), the proportion of IPO primary shares relative to the number of shares outstanding after issuance (*Float*), R&D expenditure (*RDA*), institutional ownership (*InstOwn*), underwriter prestige (*UW*), profitability (*ROA*), high tech industry (*TECH*), auditor expertise (*Auditor*), and venture capitalist (*VC*).

IPO proceeds size (*Proceeds*) is the product of the offer price and the number of shares offered to the public. *lnProceeds* is the logarithm of *Proceeds* to control for the proceeds size. *lnAsset* is the logarithm of total assets after issuance to control for firm size. *Age* is the age of an IPO at issuance. *lnAge* is the logarithm of *Age*. The cost of potential culture change because of a newly established audit committee increases with its age. *RDA* is the R&D expenditure during the year before issuance to lagged assets. R&D is risky and discretionary and is related to IPO uncertainty. *DirectorOwn* is the percentage of ownership of directors at the end of the year before issuance. *InstOwn* is the percentage of institutional holding at the end of the year before issuance. Director ownership and institutional ownership play a strong role in corporate governance and influence IPO pricing behavior. *ROA* is the operating income during the year before issuance to lagged assets. *ROA* measures the profitability and influences the decision of hiring directors. *TECH* is a dummy variable for IPOs in high-tech industries.⁵ Most IPOs are young and in high-tech industries. Underwriter prestige (*UW*) is measured based on the market share of the lead underwriter over the issuance year in the IPO markets.^{6,7} Auditor industry prestige (*Auditor*) is measured by the number of issuance by the same auditor in the year of issuance. Venture-backed IPO is measured as dummy variable *VC* = 1, and *VC* = 0 otherwise. Underwriter prestige, auditor industry prestige, and venture-back provide a certification role to signal the value of the offerings.

4.2.3. Quality of financial reporting

Studies indicate that an audit committee conveys fair and informative financial reports to outside investors and use earnings quality as a proxy for the fairness and informativeness of financial reporting. Dechow et al. (2010) organize earnings quality into three categories: (1) earnings management; (2) earnings response coefficients; and (3) earnings misstatements. Before going public, private firms do not have sufficient stock return data to measure earnings response coefficient and are not required to report earnings misstatements. Therefore, the earnings response coefficients and earnings misstatements are unavailable. Therefore, we use earnings management as a proxy measure for the earnings quality of IPO firms. We adopt the Dechow–Dichev model used by

⁵ According to the categories of Ministry of Science and Technology Taiwan, pharmaceutical, OA, computer equipment, electronics and communications, medical equipment, precision machinery, optoelectronics equipment, and aerospace industry are defined as high-tech industries.

⁶ We use A Herfindahl–Hirschman index (HHI) to measure the competition of the market for underwriters in Taiwan. The HHI is the sum of the squares of underwriters' market shares based on IPO proceeds in the issuance year. During our sample, HHI is between 0.092 and 0.334, indicating that the market is competitive.

⁷ We also measure underwriter reputation by the market share of a certain underwriter one year ahead the issuance year and reach qualitatively similar results.

Dechow and Dichev (2002), McNichols (2002), and Stubben (2010) to measure the accruals-based earnings management (*AccrualEM*).

$$\text{Accruals}_{it} = \beta_0 + \beta_1 \Delta \text{REV}_{it} + \beta_2 \text{PPE}_{it} + \beta_3 \text{CFO}_{it-1} + \beta_4 \text{CFO}_{it} + \beta_5 \text{CFO}_{it+1} + \varepsilon_{it} \quad (1)$$

$$\text{AccrualEM}_{it} = \text{Accruals}_{it} - \hat{\beta}_0 - \hat{\beta}_1 \Delta \text{REV}_{it} - \hat{\beta}_2 \text{PPE}_{it} - \hat{\beta}_3 \text{CFO}_{it-1} - \hat{\beta}_4 \text{CFO}_{it} - \hat{\beta}_5 \text{CFO}_{it+1} \quad (2)$$

where,

Accruals = total accruals of a firm, calculated as the difference between income before extraordinary items and operating cash flows to lagged assets;

ΔREV = change in revenues to lagged assets;
 PPE = gross property plants and equipment to lagged assets;
 CFO = cash flows from operations to lagged assets.

For IPO i in year t , $\hat{\beta}_s$ are the parameters estimated from the cross-sectional regression of (1) by using an estimation sample of all the TWSE industry classification peers (IPOs are not included).

4.2.4. Underwriter bargaining power

Chang et al. (2017) argue that rent-seeking underwriters with higher bargaining power tend to reduce the offer price to increase IPO underpricing. Chang et al. (2017) design three tests to explore the cross-sectional differences in underwriter incentives or bargaining power: (1) the percentage of shares sold by lead underwriter (*LeadPct*); (2) the average price discount of IPOs in the

Table 2
Variable definition.

Variable	Definition
Panel A: Audit committee	
<i>AuditCommittee</i>	<i>AuditCommittee</i> =1 if an IPO forms an audit committee before going public; <i>AuditCommittee</i> =0 otherwise.
<i>BoardSize</i>	Number of directors on board.
<i>DirectorComp</i>	Average annual compensation for a director on board of an IPO firm before issuance.
<i>lnDirectorComp</i>	The logarithm of <i>DirectorComp</i> .
<i>Independence</i>	The percentage of independent directors on board.
Panel B: IPO characteristics	
<i>AccrualEM</i>	Accrual-based earnings management measured by Dechow-Dichev model.
<i>Age</i>	Age of an IPO at issuance.
<i>lnAge</i>	The logarithm of <i>Age</i> .
<i>Asset</i>	Total assets of an IPO at the end of the year before issuance.
<i>lnAsset</i>	The logarithm of <i>Asset</i> .
<i>Auditor</i>	Auditor industry prestige is measured by the number of issuance by the same auditor in a year.
<i>DebtAsset</i>	The ratio of total debt to total assets at the end of the year before issuance.
<i>DirectorOwn</i>	The percentage of director holding at the end of the year before issuance.
<i>ESMMV</i>	The market value of an IPO measured by the ESM price at the end of the year before issuance.
<i>lnESMMV</i>	The logarithm of <i>ESMMV</i> .
<i>ESMReturn</i>	Stock return measured by ESM price from filing price range to filing offer price.
<i>ESMstd</i>	The standard deviation of ESM daily stock returns during [-60, -30] to capture the uncertainty of IPOs.
<i>Float</i>	The percentage of primary shares of an IPO to the number of shares outstanding after issuance.
<i>InstOwn</i>	The percentage of institutional holding at the end of the year before issuance.
<i>MarketReturn</i>	Stock market return measured by market index from filing price range to filing offer price.
<i>Proceeds</i>	IPO proceeds.
<i>lnProceeds</i>	The logarithm of <i>Proceeds</i> .
<i>RDA</i>	The R&D expenditure during the year before issuance to lagged assets.
<i>ROA</i>	The operating income during the year before issuance to lagged assets.
<i>Subscription</i>	Subscription is measured by the ratio of number of shares subscribed to the number of shares offered.
<i>TECH</i>	<i>TECH</i> =1 if an IPO is in high-tech industries; <i>TECH</i> =0 otherwise.
<i>UW</i>	<i>UW</i> is measured by the market share of the lead underwriter over the sample period in the IPO market.
<i>VC</i>	<i>VC</i> =1 if an IPO is venture-backed; <i>VC</i> =0 otherwise.
<i>Year2011</i>	<i>Year2011</i> is a dummy variable to take care of Regulation 2011. <i>Year2011</i> =1 for IPOs issued under Regulation 2011; <i>Year2011</i> =0 otherwise.
<i>Year</i>	Year of IPO issuance.
Panel C: IPO price discount and underpricing	
<i>InitialReturn</i>	Initial return is measured as the return from the offer price to the first close price in the aftermarket to capture IPO underpricing.
<i>Discount</i>	Price discount of final offer price to the trading price in ESM right before the filing of the final offer price.
<i>HDiscount</i>	Price discount of high-limit of the price range to the trading price in ESM right before the filing of the initial price range.
<i>LDiscount</i>	Price discount of low-limit of the price range to the trading price in ESM right before the filing of the initial price range.
<i>MDiscount</i>	Price discount of mid-point of the price range to the trading price in ESM right before the filing of the initial price range.
Panel D: Price-earnings ratio	
<i>P/E_ESM_OfferPrice</i>	Price-earnings ratio of the ESM price right before the filing of the offer price to the last available annual earnings before going public.
<i>P/E_ESM_PriceRange</i>	Price-earnings ratio of the ESM price right before the filing of the price range to the last available annual earnings before going public.
<i>P/E_MidPoint</i>	Price-earnings ratio of midpoint of the price range to the last available annual earnings before going public.
<i>P/E_OfferPrice</i>	Price-earnings ratio of the offer price to the last available annual earnings before going public.
<i>P/E_P1</i>	Price-earnings ratio of the first close price after issuance to the last available annual earnings before going public.
Panel E: Underwriter bargaining characteristics	
<i>IssueAgain</i>	IPOs' security issuance after the IPO.
<i>LeadPct</i>	The percentage of shares sold by lead underwriter.
<i>PreDiscount</i>	Price discount of the previous IPOs underwritten by the same lead underwriter.
<i>UWfee</i>	IPO investor subscription fees and brokerage revenues collected by underwriters.
<i>YearProceed</i>	The ratio between the sum of proceeds yearly handled by the underwriter over the proceeds of each deal.
Panel F: Underwriter bargaining power indices	
<i>UWBP1</i>	Underwriter bargaining power measured by the sum of the five indicator variables of bargaining power characteristics with a range from 0 to 5.
<i>UWBP2</i>	Underwriter bargaining power measured by the first principal component of the five bargaining power characteristics.

Table 3

Descriptive statistics.

Descriptive statistics for the variables of 316 IPO firms issued during 2007–2015.

Variable	mean	std	min	median	max
Panel A: Audit committee					
<i>AuditCommittee</i>	0.133	0.310	0.000	0.000	1.000
<i>BoardSize</i>	7.268	1.384	4	7	13
<i>DirectorComp(000)</i>	5418	5415	285	4311	66096
<i>Independence</i>	0.342	0.085	0	0.333	0.600
Panel B: IPO characteristics					
<i>AccrualEM</i>	0.016	0.141	-0.577	0.007	0.448
<i>Age(year)</i>	15.215	9.216	0.860	12.533	60.490
<i>Asset(000)</i>	2279388	3029903	252790	1218132	30048753
<i>Auditor</i>	12.184	7.291	1.000	13.000	28.000
<i>DebtAsset</i>	0.356	0.152	0.017	0.348	0.767
<i>DirectorOwn</i>	0.287	0.157	0.042	0.235	0.980
<i>ESMReturn</i>	0.009	0.119	-0.258	-0.011	0.809
<i>ESMstd</i>	0.029	0.017	0.000	0.024	0.109
<i>Float</i>	0.101	0.021	0.018	0.101	0.231
<i>InstOwn</i>	0.417	0.229	0.000	0.397	1.000
<i>MarketReturn</i>	-0.004	0.025	-0.107	0.001	0.107
<i>Proceeds(000)</i>	365327	531977	9500	196226	4365998
<i>RDA</i>	0.016	0.025	-0.001	0.007	0.150
<i>ROA</i>	0.069	0.074	-0.051	0.045	0.552
<i>Subscription</i>	61.639	49.633	0.427	48.158	308.991
<i>TECH</i>	0.750	0.434	0.000	1.000	1.000
<i>UW</i>	0.096	0.087	0.001	0.074	0.550
<i>VC</i>	0.342	0.475	0.000	0.000	1.000
Panel C: IPO price discount and initial return					
<i>InitialReturn</i>	0.428	0.618	-0.121	0.286	7.279
<i>Discount</i>	0.282	0.149	-0.122	0.270	0.841
<i>HDiscount</i>	0.233	0.143	-0.106	0.217	0.800
<i>LDiscount</i>	0.325	0.126	0.000	0.297	0.846
<i>MDiscount</i>	0.279	0.133	-0.050	0.258	0.823
Panel D: Price-earnings ratio					
<i>P/E_ESM_PriceRange</i>	25.129	30.232	2.778	18.280	298.333
<i>P/E_ESM_OfferPrice</i>	25.525	31.690	2.575	18.116	291.389
<i>P/E_MidPoint</i>	17.544	22.660	2.116	13.127	238.889
<i>P/E_OfferPrice</i>	17.477	22.532	1.852	13.014	244.444
<i>P/E_P1</i>	25.619	35.917	2.946	16.892	313.942
Panel E: Underwriter bargaining characteristics					
<i>IssueAgain</i>	0.189	0.932	0	0	1
<i>LeadPct</i>	0.653	0.271	0	0.574	0.999
<i>PreDiscount</i>	0.323	0.234	-1	0.303	0.689
<i>UWfee</i>	0.014	0.015	0.000	0.010	0.125
<i>YearProceed</i>	12.569	21.105	1	6.179	274.188
Panel F: Underwriter bargaining power indices					
<i>UWBP1</i>	2.104	1.123	0.000	2.000	5.000
<i>UWBP2</i>	0.000	1.000	-2.118	-0.078	4.817

previous three years that are underwritten by the same lead underwriter (*PreDiscount*)⁸; and (3) IPOs' security issuance, including seasoned equity offerings and corporate bonds, in the next two years (*IssueAgain*).⁹ Chang et al. (2017) also show that underwriters have incentives for underpricing IPOs to collect investor fees and brokerage revenues (*UWfee*). *UWfee* is the ratio of underwriter income from the investor subscription fee and the brokerage revenue to IPO proceeds. Following Levis et al. (2012), we use the ratio between the sum of yearly proceeds in the local IPO markets that are handled by the underwriter over the proceeds of the sample IPO as the bargaining power of the underwriter on the IPO (*YearProceed*). We, therefore, compose the bargaining power of the underwriter in indices based on these five bargaining power characteristics.

Our first underwriter bargaining power index (*UWBP1*) is composed as follows: A bargaining power characteristic, except *IssueAgain*, is set to 1 if it is higher than the median of the characteristic; and is set to 0 otherwise. *IssueAgain* is set to 1 if an IPO firm is-

issues the seasoned equity offering or corporate bond within two years after IPO issuance. *UWBP1* is the sum of these five indicator variables, with a range of 0–5.

We also construct a second underwriter bargaining power index (*UWBP2*) by establishing the first principal component of these five bargaining power characteristics of underwriters. The estimation of the first principal component provides the first-stage index factor loadings. Using the first-stage factor loadings, we define *UWBP2* as the first principal component of the correlation matrix of the five underwriter bargaining power characteristics (Baker and Wurgler, 2006; Chen and Chen, 2012).

The variable definitions are summarized in Table 2.

4.3. Descriptive statistics

We calculate the descriptive statistics of all the IPO variables for the entire sample and for the subsamples by the pre-IPO audit committee (IPOs with an audit committee versus IPOs without an audit committee).

Table 3 shows that 13.3% of the sample have formed an audit committee before issuance. On average, each firm has 7.268 board directors; 34.2% of the board directors are independent directors. The mean of accrual-based earnings management is 0.016, with the

⁸ On average, there are 6.6 issues that are underwritten by the same lead underwriter during the three years before the sample IPO.

⁹ The new security issuance can be underwritten by the same underwriter or a different underwriter.

Table 4

Descriptive statistics by a pre-IPO audit committee.

Mean and median for the variables of 316 IPO firms issued during 2007–2015 for IPOs with a pre-IPO audit committee versus those without a pre-IPO audit committee. ***, **, * denote the significance level at 1%, 5%, and 10%, respectively, of t-statistic for the test of equality of mean.

	AuditCommittee=0		AuditCommittee=1		t-value
	mean N = 274	median	mean N = 42	median	
Panel A: Audit committee					
<i>DirectorComp</i>	5469	4173	5091	4614	1.72*
<i>BoardSize</i>	7.204	7	7.698	7	-2.20**
<i>Independence</i>	0.334	0.300	0.395	0.428	-5.22***
Panel B: IPO characteristics					
<i>AccrualEM</i>	0.019	0.005	-0.005	0.003	1.79*
<i>Age</i>	15.394	13.145	14.050	11.229	0.99
<i>Asset(000)</i>	2016921	1203489	3991670	2073471	-2.55**
<i>Auditor</i>	12.319	13.000	11.299	10.000	0.97
<i>DebtAsset</i>	0.348	0.341	0.408	0.425	-2.77***
<i>DirectorOwn</i>	0.287	0.234	0.287	0.255	0.01
<i>ESMReturn</i>	0.012	-0.008	-0.005	-0.014	1.30
<i>ESMstd</i>	0.029	0.025	0.025	0.021	1.53
<i>Float</i>	0.101	0.102	0.099	0.089	0.48
<i>InstOwn</i>	0.413	0.392	0.441	0.495	-0.82
<i>MarketReturn</i>	-0.051	0.104	0.026	-0.308	-0.27
<i>Proceeds</i>	342461	187708	514503	348960	-1.58
<i>RDA</i>	0.015	0.007	0.022	0.014	-1.53
<i>ROA</i>	0.060	0.043	0.126	0.117	-0.43
<i>Subscription</i>	62.368	48.049	56.885	48.280	0.75
<i>TECH</i>	0.759	1.000	0.692	1.000	1.05
<i>UW</i>	0.097	0.074	0.089	0.070	0.79
<i>VC</i>	0.351	0.000	0.281	0.000	1.00
Panel C: IPO price discount and initial return					
<i>InitialReturn</i>	0.434	0.286	0.388	0.279	1.65*
<i>Discount</i>	0.287	0.274	0.249	0.223	2.02**
<i>LDiscount</i>	0.329	0.297	0.298	0.288	2.16**
<i>MDiscount</i>	0.284	0.258	0.249	0.238	2.15**
<i>HDiscount</i>	0.238	0.223	0.200	0.178	2.04**
Panel D: Price-earnings ratio					
<i>P/E_ESM_PriceRange</i>	25.099	18.399	25.328	22.291	-0.07
<i>P/E_ESM_OfferPrice</i>	25.572	18.174	25.220	21.775	0.10
<i>P/E_MidPoint</i>	17.383	13.085	18.595	15.324	-0.36
<i>P/E_OfferPrice</i>	17.335	12.889	18.404	15.488	-0.39
<i>P/E_P1</i>	26.628	16.654	25.556	21.999	1.14
Panel E: Underwriter bargaining characteristics					
<i>IssueAgain</i>	0.195	0	0.147	0	0.67
<i>LeadPct</i>	0.672	0.600	0.493	0.527	4.95***
<i>PreDiscount</i>	0.328	0.358	0.282	0.240	1.07
<i>UWfee</i>	0.015	0.010	0.010	0.007	2.91***
<i>YearProceed</i>	13.010	6.421	8.907	4.869	2.02**
Panel F: Underwriter bargaining power indices					
<i>UWBP1</i>	2.174	2.000	1.652	1.000	3.21***
<i>UWBP2</i>	0.071	-0.014	-0.464	-0.713	5.28***

median at 0.007. The positive accrual-based earnings management implies that IPO firms may engage in earnings management. The total debt of an IPO firm is approximately 35.6% of its total assets. During the waiting period, the ESM prices of IPOs increase by 0.9%; however, the market index drops by 0.4%. The number of IPO shares is approximately 10.1% of the shares that are outstanding after issuance. The IPO uncertainty measured by the standard deviation of daily stock return during $[-60, -30]$ in ESM is 0.029. The average subscription rate is 61.639, thus implying that there is a low chance for retail subscribers to win an allocation. On average, R&D expenditure and operating income are 1.6% and 6.9% of the lagged assets. Directors and institutional investors hold 28.7% and 41.7% shares of IPO firms before issuance, respectively. 34.2% of IPOs are venture-backed and 75.0% of the sample is from high-tech industries.

The average initial return is 42.8%. The average *Discount* equal to 28.2% indicates that the final offer price is approximately 71.8% ($100\% - 28.2\% = 71.8\%$) of the ESM price. The price level of the initial price range is lower than the trading price in ESM. Even if the

offer price of all of the IPOs are set at the high-limit of the price range, the IPOs are still 23.3% lower than the final trading price in ESM, on average. The mid-point of the price range is 27.9% lower than the final trading price in ESM. The initial return and offer price discount indicate that the final offer price is lower than the ESM price or the aftermarket price.

Table 4 reports the descriptive statistics by using subsamples with and without a pre-IPO audit committee. Table 4 notes that IPOs with an audit committee experience low director compensation, but large board size, and increasingly independent board directors than those without an audit committee. Table 4 also indicates that IPOs with a pre-IPO audit committee experience a lower price discount (low-limit, mid-point, and high-limit price) of initial price range and price discount of final offer price, thus implying that IPOs with a pre-IPO audit committee are set with a higher price than those without a pre-IPO audit committee. Moreover, IPOs with a pre-IPO audit committee experience a higher earnings quality (*AccrualEM*) and a lower underwriter bargaining power (*UWBP1*, *UWBP2*). Table 4 indicates that a pre-IPO audit committee

Table 5

The informativeness of ESM price on IPO pricing.

OLS regression analyses of price-earnings ratio of IPO price on price-earnings ratio of ESM price to examine the informativeness of ESM price. Regulation 2011 requires the final offer price of an IPO higher than 70% of the average ESM price during the last 10 days. In the parentheses are the t-values. ***, **, * denote the significance level at 1%, 5%, and 10%, respectively.

	Before Regulation 2011 (N = 145)	After Regulation 2011 (N = 171)	Entire period (N = 316)
Panel A: Dependent variable <i>P/E_MidPoint</i>			
<i>Intercept</i>	3.704*** (4.69)	1.345*** (5.86)	2.111*** (4.33)
<i>P/E_ESM_PriceRange</i>	0.436*** (20.94)	0.688*** (121.08)	0.586*** (47.25)
R ²	0.7576	0.9887	0.8777
Panel B: Dependent variable <i>P/E_OfferPrice</i>			
<i>Intercept</i>	5.161*** (5.68)	1.678*** (5.78)	3.268*** (5.64)
<i>P/E_ESM_OfferPrice</i>	0.368*** (16.72)	0.668*** (92.41)	0.528*** (37.06)
R ²	0.6648	0.9807	0.8153
Panel C: Dependent variable <i>P/E_P1</i>			
<i>Intercept</i>	-3.019*** (-4.26)	1.168*** (3.19)	-0.727* (-1.71)
<i>P/E_ESM_OfferPrice</i>	1.088*** (63.25)	0.916*** (100.41)	0.996*** (94.95)
R ²	0.9660	0.9836	0.9667

raises the price level of the price range, final offer price, and earnings quality, and reduces the bargaining power of the underwriter.

5. Informativeness of ESM prices

Chang et al. (2017) show that ESM prices are informative for IPO prices, thus leading to little value uncertainty and information asymmetry in the IPO markets in Taiwan. We follow the Chang et al. (2017) methodology to examine how the price-earnings ratio of the IPO price relative to the last available annual earnings by the time IPO issuance can be explained by the price-earnings ratio of ESM price relative to the last available annual earnings.

Panel A of Table 5 shows that the ESM price right before the filing of price range explains that the initial price range that is measured by using the mid-point of the range. Panel B shows that the ESM price right before the filing of the final offer price explains the final offer price and Panel C reports how the final ESM price explains the aftermarket price of the IPO. Before the Regulation 2011, ESM price explains 75.76% and 66.48% of the variation of the mid-point of IPO initial price range and the final offer price, respectively. However, the ESM price explains 96.60% of the variation of the aftermarket price. After the Regulation 2011, ESM price explains at least 98% of the variations of IPO price range, offer price, and aftermarket price. Consistent with the findings of Chang et al. (2017), we confirm that ESM prices are informative for IPO pricing.

If IPO underpricing is attributable to information asymmetry, publicly available information such as ESM prices should not explain most of the variations of IPO price ranges, offer prices, or aftermarket prices. Chang et al. (2017) observe that because ESM prices explain most of the variations of IPO prices, IPO underpricing should not be attributed to information asymmetry; instead, they attribute IPO underpricing in Taiwan to the bargaining power of the underwriter. In this paper, we focus on how the establishment of a pre-IPO audit committee influences IPO pricing through its effect on the bargaining power of the underwriter.

6. Audit committee and IPO pricing

6.1. Cost of establishing a pre-IPO audit committee

If the establishment of a pre-IPO audit committee generates only benefits, all the IPO firms should voluntarily form an audit

Table 6

The determinants of forming a pre-IPO audit committee.

Logistic regression analysis of establishing a pre-IPO audit committee. The cost of establishing an audit committee is measured by the compensation for independent directors, the incentive to engage in accruals earnings management, and the cost of adapting to the culture change due to a newly established audit committee. In the parentheses are the t-values. ***, **, * denote the significance level at 1%, 5%, and 10%, respectively.

	Parameter	t-value	Parameter	t-value
<i>Intercept</i>	-11.085**	(-2.13)	-21.089***	(-4.11)
<i>AccrualEM</i>	-2.789**	(-1.96)		
<i>InDirectorComp</i>	-0.325*	(-1.87)	-0.250**	(-1.99)
<i>InAge</i>	-0.438**	(-2.07)	-0.431**	(-1.97)
<i>ESMstd</i>	-17.759	(-1.06)	-17.760	(-1.06)
<i>RDA</i>	11.081**	(2.22)	4.170*	(1.72)
<i>ROA</i>	11.863***	(3.68)	11.866***	(3.37)
<i>UW</i>	0.847	(0.28)	0.848	(0.28)
<i>VC</i>	0.297	(0.59)	0.298	(0.59)
<i>InstOwn</i>	-0.080	(0.86)	-0.801	(-0.74)
<i>InESMMV</i>	0.348	(1.53)	-0.519	(-1.43)
<i>InAsset</i>	1.081***	(2.84)	1.081***	(2.80)
<i>TECH</i>	-0.196	(-0.51)	-0.197	(-0.34)
<i>Auditor</i>	-0.027	(-0.78)	-0.027	(-0.84)
<i>Independence</i>	16.794***	(4.08)	16.795***	(4.09)
<i>BoardSize</i>	0.834***	(3.60)	0.832***	(3.60)
<i>Year</i>	0.922***	(3.06)	0.589***	(2.93)
Pseudo R ²	0.2184		0.2052	

committee before issuance. Therefore, there should be some potential costs or cons for establishing a pre-IPO audit committee. In Table 6, we examine the determinants of a pre-IPO audit committee with a logistic regression model.

Teoh et al. (1998) indicate that IPO firms tend to engage in earnings management to increase the proceeds for opportunistic purposes. An audit committee is supposed to protect the fairness and informativeness of financial reports. Therefore, we expect that the accrual-based earnings management should be limited under the existence of a pre-IPO audit committee. If firms have incentives for engaging in accruals earnings management, they are less likely to establish a pre-IPO audit committee. We use the ex post accruals earnings management as the ex ante incentive for engaging in accruals earnings management.

Firms pay their board directors. In Taiwan, an audit committee consists of independent directors and should not be less than three persons in number. The compensation for all the independent directors is the cost of forming an audit committee. We expect that

the incentive to establish an audit committee declines with the compensation for independent directors. We use the logarithm of the compensation, including the annual salary and bonus for independent directors, as the monetary cost for establishing an audit committee. Carrillo and Gromb (2007) argue that older firms are less prone to adapting to an environmental change and that culture inertia increases with age. Adapting to potential culture changes because of a newly established audit committee is also a cost of establishing an audit committee. We use age as a measure of cost of potential culture change because of a newly established audit committee.

Columns #1 and #2 of Table 6 show that as expected, the establishment of a pre-IPO audit committee is negatively related to the incentive of engaging in accruals earnings management before issuance (coefficient of *AccrualEM* = -2.789, t-value = -1.96), the cost of compensation for independent directors (coefficient of *lnDirectorComp* = -0.325, t-value = -1.87), and the cost of adapting to cultural changes from a newly established audit committee (coefficient of *lnAge* = -0.438 with t-value = -2.07).

The control variables of the logistic regression indicate that more profitable IPOs, larger IPO firms, younger IPO firms, and IPOs with increased R&D expenditure and independent board directors or a larger board are increasingly likely to voluntarily establish an audit committee before issuance. Coles et al. (2008) and Lehn et al. (2009) indicate that the scope of complexity of firm operations lead to the establishment of an audit committee. Complexity of business operations increase with R&D expenditure and necessitate increased monitoring from an audit committee to reinforce corporate governance. Larger firms are increasingly likely to obey regulations to form an audit committee. Profitable firms can afford the cost of forming an audit committee. An audit committee requires at least three independent directors to enlarge the board size. The likelihood of forming an audit committee increases with the percentage of independent board directors. Table 6 also shows that we still reach similar results when dropping the ex-post accruals as an independent variable.

6.2. Underwriter bargaining power

We argue that a pre-IPO audit committee influences IPO prices based on its effect to reduce underwriter bargaining power. We employ a 2SLS regression to take care of the endogeneity of a pre-IPO audit committee for examining the effect of a pre-IPO audit committee on the bargaining power of the underwriter.¹⁰ Table 6 indicates that board independence and board size influence the establishment of an audit committee. To ensure that our results are specific for the presence of a pre-IPO audit committee instead of board independence or board size, we also include board independence and board size as control variables.

Table 7 shows that the bargaining power of the underwriter decreases with the establishment of a pre-IPO audit committee (coefficient = -0.311 with t-value = -1.99 for *UWBP1*; coefficient = -0.272 with t-value = -1.93 for *UWBP2*). The presence of a pre-IPO audit committee provides the IPO firm with increased power to bargain with the underwriters for going public, thus reducing the bargaining power of the underwriter. Another explanation for the negative relationship between underwriter bargaining power and the presence of a pre-IPO audit committee is the substitution effect. IPO firms hiring an audit committee before an issuance are more likely to hire less prestigious underwriters with inferior track records and market share.¹¹

Table 7

2SLS regression analyses for underwriter bargaining power. The second-stage regression analyses for underwriter bargaining power of IPOs issued during 2007–2015. In the parentheses are the t-values. ***, **, * denote the significance level at 1%, 5%, and 10%, respectively.

	Dependent variable: UWBP1		Dependent variable: UWBP2	
	Parameter	t-value	Parameter	t-value
<i>Intercept</i>	-5.678	(-0.05)	-376.120**	(-5.45)
<i>AuditCommittee</i>	-0.311**	(-1.99)	-0.272*	(-1.93)
<i>AccrualEM</i>	-0.109	(-0.17)	-0.184	(-0.36)
<i>UW</i>	3.553***	(4.20)	1.708**	(2.28)
<i>lnProceeds</i>	-0.434***	(-4.27)	-0.402***	(-7.81)
<i>RDA</i>	0.296	(0.11)	-0.626	(-0.38)
<i>ROA</i>	-1.102	(-0.98)	-1.072	(-1.53)
<i>VC</i>	-0.066	(-0.55)	0.045	(0.60)
<i>InstOwn</i>	-0.004	(-0.01)	-0.054	(-0.29)
<i>TECH</i>	0.084	(0.58)	0.133	(1.47)
<i>Auditor</i>	0.005	(0.71)	-0.007	(-1.39)
<i>lnAge</i>	0.127	(1.38)	0.058	(0.98)
<i>DirectorOwn</i>	-0.292	(-0.68)	0.414	(1.55)
<i>DebtAsset</i>	0.921**	(2.17)	0.217*	(1.82)
<i>lnAsset</i>	-0.217**	(-1.99)	-0.158**	(-2.32)
<i>Float</i>	-2.610	(-0.84)	-0.837	(-0.43)
<i>Independence</i>	0.003	(0.10)	0.799	(1.39)
<i>BoardSize</i>	-0.016	(-0.37)	-0.024	(-0.89)
<i>Year</i>	-0.007	(-0.10)	-0.191	(-1.37)
<i>Year2011</i>	-0.275*	(-1.88)	-1.894***	(-12.30)
<i>R</i> ²	0.3184		0.6034	

Moreover, board independence or board size is not significant for the bargaining power of the underwriter (coefficient of *Independence* = 0.003 with t-value = 0.10, coefficient of *BoardSize* = -0.016 with t-value = -0.37 for *UWBP1*; coefficient of *Independence* = 0.799 with t-value = 1.39, coefficient of *BoardSize* = -0.024 with t-value = -0.89 for *UWBP2*). Therefore, the effect of the presence of an audit committee on the bargaining power of the underwriter is not caused by board independence or board size. Table 7 also shows that underwriter bargaining power is negatively related to the proceeds size, firm size, and the Regulation 2011. The bargaining power of the underwriter increases with underwriter prestige and firm leverage.

6.3. Setting an initial price range

Studies show that an audit committee reduces information asymmetry by raising the financial reporting quality to improve IPO pricing efficiency. In the previous section, we have shown that the establishment of a pre-IPO audit committee reduces the bargaining power of the underwriter. Both the reduced information asymmetry and the bargaining power of the underwriter help to raise the IPO prices to reduce price discount and the underpricing of IPOs. However, Table 5 shows that there is little information asymmetry in the IPO markets in Taiwan because of the informative ESM prices. Therefore, we conjecture that the reduced bargaining power of the underwriter, instead of the increased financial reporting quality improves IPO pricing efficiency in Taiwan.

Setting an initial price range is crucial because based on regulations, the final offer price of an IPO must fall within the initial price range. Therefore, the final offer price of an IPO in Taiwan is somewhat determined when an underwriter files the initial price range to FSC. The higher price level of an initial price range or a lower price discount of the range implies a higher final offer price. Table 5 shows that the ESM price can almost fully explain the price level of the initial price range. Therefore, we examine whether a pre-IPO audit committee, financial reporting quality, and the bargaining power of the underwriter influence the discount of the initial price range that is relative to the ESM price.

¹⁰ The first-stage regression of 2SLS is omitted to save space. Logarithm of director compensation is used as the instrumental variable.

¹¹ We thank an anonymous referee for raising this to us.

Table 8

2SLS regression analyses for discount of mid-point of an initial price range.

The second-stage regression analyses for the discount of mid-point of an initial price range of IPOs issued during 2007–2015 relative to the last available price in ESM before filling the price range. This table is to examine whether financial reporting quality (*AccrualEM*) or underwriter bargaining power (*UWBP1*, *UWBP2*) influences the setting of initial price range and the moderation effect of Regulation 2011 on relation between underwriter bargaining power and IPO pricing. In the parentheses are the t-values. ***, **, * denote the significance level at 1%, 5%, and 10%, respectively.

	Dependent variable: <i>MDiscount</i>					
	#1	#2	#3	#4	#5	#6
<i>Intercept</i>	2.076 (0.08)	32.281 (0.88)	-16.055 (-1.43)	-16.461 (-1.47)	7.353 (0.69)	6.551 (0.62)
<i>AuditCommittee</i>	-0.030* (-1.95)	-0.109** (-1.96)	-0.008 (-1.41)	-0.004 (-1.23)	-0.009 (-1.49)	-0.007 (-1.40)
<i>AccrualEM</i>		-0.234 (-1.32)	-0.215 (-1.01)	-0.125 (-1.38)	-0.103 (-1.46)	-0.089 (-1.08)
<i>UWBP1</i>			0.016*** (2.78)	0.025*** (3.30)		
<i>UWBP1*</i>				-0.018* (-1.84)		
<i>Year2011</i>					0.075*** (8.11)	0.082*** (7.74)
<i>UWBP2</i>						-0.018* (-1.88)
<i>UWBP2*</i>						-0.018* (-1.88)
<i>Year2011</i>						-0.018* (-1.88)
<i>ESMstd</i>	0.666 (1.14)	0.638 (0.74)	0.219 (0.63)	0.202 (0.58)	0.222 (0.70)	0.233 (0.73)
<i>lnProceeds</i>	0.001 (0.13)	-0.002 (-0.11)	0.016* (1.92)	0.018** (2.07)	0.034*** (4.16)	0.034*** (4.17)
<i>lnAsset</i>	-0.048** (-2.14)	-0.085*** (-2.63)	-0.026** (-2.36)	-0.027** (-2.48)	-0.016* (-1.65)	-0.018* (-1.80)
<i>RDA</i>	0.257 (0.25)	0.138 (0.09)	-0.072 (-0.29)	-0.051 (-0.20)	-0.031 (-0.14)	0.012 (0.06)
<i>ROA</i>	0.006 (0.02)	-0.149 (-0.32)	-0.105 (-0.94)	-0.126 (-1.13)	-0.060 (-0.59)	-0.066 (-0.65)
<i>lnAge</i>	-0.052 (-1.51)	-0.001 (-0.06)	-0.015 (-1.51)	-0.013 (-1.31)	-0.016* (-1.79)	-0.015 (-1.57)
<i>DebtAsset</i>	0.194 (1.34)	0.237 (1.57)	0.032 (0.76)	0.030 (0.71)	0.015 (0.40)	0.020 (0.52)
<i>Float</i>	-0.646 (-0.86)	-0.079 (-0.07)	-0.022 (-0.07)	-0.024 (-0.08)	0.070 (0.24)	0.077 (0.27)
<i>DirectorOwn</i>	-0.003 (-0.03)	0.019 (0.15)	0.075 (1.60)	0.078 (1.58)	0.030 (0.75)	0.031 (0.78)
<i>InstOwn</i>	-0.094 (-1.43)	0.041 (0.45)	-0.015 (-0.50)	-0.012 (-0.40)	-0.005 (-0.18)	-0.003 (-0.12)
<i>Auditor</i>	-0.001 (-0.95)	-0.001 (-0.47)	-0.001 (-0.32)	-0.001 (-0.31)	0.001 (0.36)	0.001 (0.21)
<i>UW</i>	-0.223* (-1.87)	-0.395** (-2.08)	-0.150* (-1.93)	-0.158** (-2.03)	-0.205*** (-2.94)	-0.189*** (-2.68)
<i>VC</i>	-0.029 (-1.23)	0.009 (0.28)	-0.022* (-1.82)	-0.023* (-1.93)	-0.022** (-2.01)	-0.023** (-2.12)
<i>TECH</i>	-0.021 (-0.69)	0.028 (0.63)	0.006 (0.45)	0.010 (0.72)	0.001 (0.02)	0.002 (0.20)
<i>Independence</i>	-0.085 (-0.63)	0.124 (0.63)	-0.082 (-1.10)	-0.082 (-1.11)	-0.100 (-1.48)	-0.105 (-1.55)
<i>BoardSize</i>	-0.006 (-0.67)	-0.012 (-0.89)	-0.004 (-0.99)	-0.004 (-0.96)	-0.003 (-0.80)	-0.003 (-0.82)
<i>Year</i>	-0.001 (-0.04)	-0.015 (-0.84)	0.008 (1.46)	0.008 (1.50)	-0.003 (-0.69)	-0.003 (-0.61)
<i>Year2011</i>	-0.015* (-1.80)	-0.082* (-1.72)	-0.053** (-2.07)	-0.015 (-1.47)	-0.063** (-2.29)	-0.057** (-2.05)
<i>R²</i>	0.5318	0.5413	0.5516	0.5534	0.6291	0.6313

Table 8 measures the mid-point of an initial price range that is relative to the trading price in ESM to examine the price discount of an initial price range.¹² If the presence of a pre-IPO audit committee helps to raise IPO price, it should reduce the discount of the price level of the initial price range. Under information asymmetry, a pre-IPO audit committee raises the price level of the price range by providing increased quality of financial reporting. On the other hand, under agency problem, the presence of a pre-IPO audit com-

mittee raises the price range by reducing the bargaining power of the underwriter.

Columns #1 and #2 of Table 8 show that without controlling for the bargaining power of the underwriter, *AuditCommittee* is significantly negatively related to *MDiscount* (coefficient = -0.030, t-value = -1.95 in Column #1; coefficient = -0.109, t-value = -1.96 in Column #2). Without controlling for the bargaining power of the underwriter, a pre-IPO audit committee raises the price level of the initial price range. Column #2 of Table 8 also shows that even without controlling for the bargaining power of the underwriter, the financial reporting quality measured by *AccrualEM* is not related to the discount of the price range (coefficient = -0.234 with

¹² We reach similar results by measuring the price discount of low-limit or high-limit of an initial price range relative to the ESM price.

t-value = -1.32). The low information asymmetry in the IPO markets in Taiwan leads to the insignificance of the financial reporting quality.

Columns #3 and #5 of Table 8 indicate that the bargaining power of the underwriter increases the price discount (coefficient of $UWBP1 = 0.016$ and t-value = 2.78 in Column #3; coefficient of $UWBP2 = 0.075$ and t-value = 8.11 in Column #5), thus implying that a powerful underwriter sets a low price level on price range. Columns #4 and #6 further show that the effect of the bargain-

ing power of the underwriter on the price range reduces with the passage of Regulation 2011. Regulation 2011 restricts the final offer price, thus mitigating the effect of the bargaining power on the underwriter on IPO pricing.

6.4. Setting a final offer price

An IPO final offer price is set based on all the available information before issuance, including bidders' demand, through a book-

Table 9

2SLS regression analyses for the discount of final offer price.

The second-stage regression analyses for the discount of final offer price of IPOs issued during 2007–2015 relative to the last available ES price before filing the offer price. This table is to examine whether underwriter bargaining power ($UWBP1$, $UWBP2$) influences discount of offer price and the moderation effect of Regulation 2011 on relation between underwriter bargaining power and IPO pricing even including information about retail subscription and stock return from ES. In the parentheses are the t-values. ***, **, * denote the significance level at 1%, 5%, and 10%, respectively.

	Dependent variable: Discount					
	#1	#2	#3	#4	#5	#6
Intercept	-12.512 (-1.05)	2.238 (0.22)	-15.687 (-1.53)	1.268 (0.13)	4.211 (0.42)	10.456 (1.07)
AuditCommittee	-0.025* (-1.92)	-0.002 (-0.85)	-0.003 (-0.79)	-0.004 (-0.73)	-0.001 (-0.66)	-0.001 (-0.76)
AccrualEM	-0.068 (-1.02)	-0.008 (-0.25)	-0.025 (-0.38)	-0.030 (-0.54)	-0.027 (-0.61)	-0.022 (-0.41)
Subscription		0.001*** (6.82)		0.001*** (6.59)		0.001*** (4.26)
UWBP1			0.022*** (3.09)	0.017** (2.57)		
UWBP1* Year2011			-0.018** (-1.96)	-0.019** (-2.26)		
UWBP2					0.071*** (7.22)	0.053*** (5.06)
UWBP2* Year2011					-0.025* (-1.87)	-0.021* (-1.82)
ESMReturn		0.486*** (9.70)	0.493*** (9.23)	0.482*** (9.70)	0.516*** (10.39)	0.503*** (10.43)
MarketReturn	0.006*** (2.64)	0.001 (0.22)	0.001 (0.50)	0.001 (0.22)	0.001 (0.10)	-0.001 (-0.02)
lnProceeds	0.010 (1.21)	-0.002 (-0.39)	0.017* (1.72)	0.001 (0.22)	0.030*** (3.95)	0.015* (1.91)
RDA	0.233 (0.86)	0.150 (0.68)	0.017 (0.07)	0.168 (0.77)	0.080 (0.36)	0.166 (0.78)
ROA	-0.113 (-0.95)	-0.107 (-1.12)	-0.138 (-1.33)	-0.123 (-1.27)	-0.080 (-0.84)	-0.079 (-0.85)
UW	-0.156* (-1.94)	-0.106* (-1.66)	-0.191*** (-2.65)	-0.140** (-2.08)	-0.199*** (-2.99)	-0.159** (-2.43)
VC	-0.021 (-1.64)	-0.028*** (-2.69)	-0.025** (-2.26)	-0.028*** (-2.77)	-0.025** (-2.45)	-0.027*** (-2.74)
InstOwn	-0.025 (-0.80)	-0.012 (-0.47)	-0.020 (-0.71)	-0.009 (-0.37)	-0.014 (-0.56)	-0.009 (-0.39)
TECH	0.004 (0.28)	0.011 (0.91)	0.017 (1.32)	0.014 (1.18)	0.010 (0.81)	0.009 (0.76)
Auditor	-0.001 (-0.14)	-0.001 (-0.71)	-0.001 (-0.24)	-0.001 (-0.75)	0.001 (0.05)	-0.001 (-0.41)
lnAge	-0.008 (-0.83)	-0.009 (-1.07)	-0.011 (-1.23)	-0.008 (-0.93)	-0.014 (-1.62)	-0.011 (-1.38)
DirectorOwn	0.059 (1.25)	0.030 (0.78)	0.070* (1.73)	0.035 (0.94)	0.036 (0.97)	0.021 (0.59)
DebtAsset	0.051 (1.12)	-0.015 (-0.42)	0.042 (1.07)	-0.023 (-0.60)	0.038 (1.03)	-0.004 (-0.11)
lnAsset	-0.026** (-2.27)	0.009 (0.84)	-0.031*** (-3.01)	0.009 (0.79)	-0.023** (-2.36)	0.002 (0.22)
Float	-0.033 (-0.10)	0.411 (1.47)	-0.057 (-0.20)	0.409 (1.48)	0.014 (0.05)	0.316 (1.18)
Independence	-0.070 (-0.88)	-0.100 (-1.25)	-0.061 (-0.90)	-0.102 (-1.60)	-0.097 (-1.52)	-0.116 (-1.57)
BoardSize	-0.003 (-0.63)	-0.003 (-0.80)	-0.002 (-0.53)	-0.003 (-0.73)	-0.001 (-0.33)	-0.002 (-0.54)
Year	0.006 (1.08)	-0.001 (-0.22)	0.007 (1.56)	-0.001 (-0.13)	-0.002 (-0.41)	-0.005 (-1.08)
Year2011	-0.042 (-1.53)	-0.003 (-0.15)	-0.006 (-0.22)	0.034 (1.18)	0.047 (1.49)	0.047 (1.07)
R ²	0.5701	0.7215	0.6848	0.7287	0.7291	0.7446

building process, retail subscribers' demand through public subscription, and more importantly, the trading information in ESM before issuance. We employ *Discount* (the final offer price relative to the trading price in ESM) and *InitialReturn* (the return from the final offer price to the first close price in the aftermarket) to examine the efficiency of the final offer price. *InitialReturn* is popularly used to measure IPO underpricing because trading price before issuance is unavailable for most listing exchanges.

Table 9 reports the effect of a pre-IPO audit committee and the bargaining power of the underwriter on the offer price discount. Similar to the findings on the initial price range in Table 8, Column #1 of Table 9 shows that *AuditCommittee* is negatively related to the offer price discount (coefficient = -0.025 , t-value = -1.92) without controlling for the retail subscription that is revealed during the waiting period or the bargaining power of the underwriter. With retail subscription (*Subscription*) and ESM price re-

Table 10

2SLS regression analyses for IPO underpricing.

The second-stage regression analyses for IPO underpricing measured by initial return of IPOs issued during 2007–2015. This table is to examine whether underwriter bargaining power (*UWBP1*, *UWBP2*) influences initial return and the moderation effect of Regulation 2011 on relation between underwriter bargaining power and IPO pricing even including information about retail subscription and stock return from ESM. In the parentheses are the t-values. ***, **, * denote the significance level at 1%, 5%, and 10%, respectively.

	Dependent variable: <i>InitialReturn</i>					
	#1	#2	#3	#4	#5	#6
<i>Intercept</i>	-73.480*	-70.202*	11.389	24.203	35.077	24.904
	(-1.80)	(-1.83)	(0.31)	(0.81)	(0.94)	(0.82)
<i>AuditCommittee</i>	-0.040**	-0.022	-0.010	-0.016	-0.029	-0.026
	(-2.05)	(-1.30)	(-1.15)	(-1.29)	(-1.44)	(-1.49)
<i>AccrualEM</i>	-0.358	-0.401	-0.398	-0.248	-0.235	-0.225
	(-1.49)	(-1.28)	(-1.31)	(-1.21)	(-1.21)	(-1.01)
<i>Subscription</i>			0.003***	0.001**	0.002***	0.001**
			(7.21)	(2.44)	(4.97)	(1.98)
<i>UWBP1</i>			0.050**	0.007		
			(1.99)	(0.34)		
<i>UWBP1*</i>			-0.086***	-0.036*		
<i>Year2011</i>			(-2.68)	(-1.88)		
<i>UWBP2</i>					0.138***	0.020
					(3.39)	(0.59)
<i>UWBP2*</i>					-0.073*	-0.028*
<i>Year2011</i>					(-1.94)	(-0.67)
<i>Discount</i>				2.004***		2.003***
				(11.81)		(11.42)
<i>ESMReturn</i>		1.221***	1.111***	0.099	1.172***	0.107
		(6.06)	(6.06)	(0.58)	(6.41)	(0.61)
<i>MarketReturn</i>	0.021**	0.007	0.005	0.004	0.003	0.003
	(2.56)	(0.97)	(0.70)	(0.71)	(0.46)	(0.62)
<i>lnProceeds</i>	0.018	0.018	-0.030	-0.031	0.006	-0.024
	(0.58)	(0.62)	(-1.05)	(-1.35)	(0.21)	(-0.94)
<i>RDA</i>	2.188**	1.540*	2.161***	1.606**	2.107***	1.604**
	(2.32)	(1.73)	(2.66)	(2.43)	(2.60)	(2.40)
<i>ROA</i>	-0.637	-0.621	-0.496	-0.069	-0.316	-0.013
	(-1.54)	(-1.60)	(-1.40)	(-0.24)	(-0.90)	(-0.05)
<i>UW</i>	-0.555**	-0.485*	-0.389	-0.082	-0.451*	-0.107
	(-2.01)	(-1.87)	(-1.58)	(-0.41)	(-1.85)	(-0.53)
<i>VC</i>	-0.036	-0.050	-0.077**	-0.031	-0.073*	-0.029
	(-0.81)	(-1.20)	(-2.02)	(-1.01)	(-1.93)	(-0.93)
<i>InstOwn</i>	0.132	0.134	0.172*	0.164**	0.163*	0.159**
	(1.17)	(1.26)	(1.79)	(2.10)	(1.71)	(2.03)
<i>TECH</i>	0.113**	0.139***	0.140***	0.108***	0.119**	0.102***
	(2.10)	(2.75)	(3.02)	(2.88)	(2.57)	(2.69)
<i>Auditor</i>	-0.003	-0.003	-0.004*	-0.002	-0.004	-0.002
	(-1.25)	(-1.25)	(-1.81)	(-1.35)	(-1.62)	(-1.40)
<i>lnAge</i>	0.029	0.017	0.029	0.031	0.013	0.027
	(0.77)	(0.49)	(0.92)	(1.22)	(0.41)	(1.02)
<i>DirectorOwn</i>	-0.152	-0.118	-0.191	-0.183	-0.214	-0.181
	(-0.94)	(-0.77)	(-1.37)	(-1.62)	(-1.55)	(-1.59)
<i>DebtAsset</i>	0.179	0.196	-0.083	0.023	-0.026	0.033
	(1.13)	(1.32)	(-0.60)	(0.20)	(-0.19)	(0.29)
<i>lnAsset</i>	-0.066	-0.080**	0.080*	0.041	0.062	0.039
	(-1.61)	(-2.08)	(1.94)	(1.23)	(1.50)	(1.13)
<i>Float</i>	1.202	1.090	2.974***	1.989**	2.803***	1.978**
	(1.06)	(1.02)	(2.97)	(2.43)	(2.81)	(2.41)
<i>Independence</i>	-0.388	-0.368	-0.561	-0.359	-0.605	-0.370
	(-1.41)	(-1.42)	(-1.37)	(-1.36)	(-1.57)	(-1.31)
<i>BoardSize</i>	0.013	0.013	0.007	0.008	0.008	0.008
	(0.77)	(0.78)	(0.50)	(0.66)	(0.58)	(0.66)
<i>Year</i>	0.036*	0.035*	-0.006	-0.012	-0.018	-0.012
	(1.81)	(1.85)	(-0.34)	(-0.84)	(-0.97)	(-0.85)
<i>Year2011</i>	-0.215**	-0.179**	-0.220**	0.215**	-0.173*	-0.141*
	(-2.34)	(-2.06)	(-2.03)	(-2.45)	(-1.78)	(-1.77)
R ²	0.6581	0.6989	0.7560	0.8397	0.7597	0.8385

turn (*ESMReturn*) being revealed during the waiting period, Column #2 of Table 9 shows that a pre-IPO audit committee is not significant for the final offer price discount (coefficient = -0.002 , t -value = -0.85). Even controlling for retail subscription and *ESM* price return, Columns #4 and #6 of Table 9 show that the bargaining power of the underwriter is positively related to the offer price discount (coefficient of *UWBP1* = 0.017 , t -value = 2.57 in Column #4; coefficient of *UWBP2* = 0.053 , t -value = 5.06 in Column #6) and Regulation 2011 reduces the effect of the bargaining power of the underwriter on the offer price discount (a negative interaction term of underwriter bargaining power and Regulation 2011 with coefficient = -0.019 and t -value = -2.26 in Column #4; coefficient = -0.021 , t -value = -1.82 in Column #6).

The positive relationship between retail subscription and price discount reported in Columns #2, #4, and #6 of Table 9 is consistent with the winner's curse hypothesis. IPOs need to be discounted to attract uninformed retail subscribers under the winner's curse hypothesis. However, given the little information asymmetry, the winner's curse should not hold in the IPO market in Taiwan, with a pre-IPO market. This positive relation between retail subscription and price discount is attributable to underwriter rent-seeking behavior. Chang et al. (2017) indicate that the bargaining power of the underwriter discounts the offer price to attract retail subscription to increase the underwriting income. The *ESM* price return is also positively related to the final offer price discount. Because the final offer price must fall within the initial price range, the final offer price is unable to fully reflect the *ESM* price return. Offer price discount increases with the *ESM* price return.

Table 9 indicates that *AccrualEM* is not significantly related to the price discount. The information asymmetry is low and the signal of the firm value does not play a strong role in IPO pricing, under the existence of *ESM* price. However, the bargaining power of the underwriter is positively related to price discount. IPO final offer declines with the bargaining power of the underwriter.

In a pre-IPO market, a pre-IPO audit committee reduces price discount in the IPO markets in Taiwan not because of the increased fairness and informativeness of financial reports, but because of the reduced bargaining power of the underwriter.

We further examine the difference between the final offer price and aftermarket price. This difference is known as a proxy for IPO underpricing. IPOs are well known for being underpriced at issuance. In Table 10, we report the determinants for IPO underpricing (*InitialReturn*). Column #1 of Table 10 shows that without controlling for the information available through the IPO process (retail subscription, *ESM* price return, and/or price discount), a pre-IPO audit committee is negatively related to IPO underpricing (coefficient = -0.040 ; t -value = -2.05 in Column #1). The bargaining power of the underwriter is positively related to IPO underpricing and the effect of the bargaining power of the underwriter on IPO underpricing is mitigated by Regulation 2011. Tables 9 and 10 show that the bargaining power of the underwriter is a significant determinant for IPO pricing. Agency problem, instead of information asymmetry, explains the IPO pricing behavior in the IPO markets in Taiwan.

In this paper, we disentangle the information asymmetry explanation from the bargaining power explanation in IPO pricing and have to control for underwriter reputation. The presence of an audit committee has two effects (increased earnings quality and reduced bargaining power of the underwriter) on IPO pricing. We employ Tables 8–10 to disentangle the information asymmetry (earnings quality) from the agency problem (underwriter bargaining power). Tables 8–10 show that earnings quality has no effect on IPO pricing and that *AuditCommittee* disappears when the underwriter bargaining power indices are added to the models, thus implying the significance of the bargaining power of the under-

writer, instead of the earnings quality of IPO pricing. Therefore, we conclude that the presence of a pre-IPO audit committee reduces the IPO price discount that is relative to the *ESM* price and IPO underpricing that is relative to the aftermarket price, not because of the reduced information asymmetry, but because of reduced agency conflicts.

Note that underwriter prestige is significantly negatively related to the discount of initial price range, discount of offer price, and initial return in Tables 8–10. Underwriter prestige is measured based on the market share of an underwriter. Chang et al. (2017) discuss the role of underwriter market share in the IPO markets. Underwriter market share in the IPO markets can be a measure of the bargaining power of the underwriter and a measure of underwriter reputation, thus leading to its unclear impact on IPO underpricing. Rent-seeking underwriters with higher bargaining power increase IPO underpricing. However, Beatty and Ritter (1986) argue that prestigious underwriters lower IPO underpricing to maintain reputational capital. Carter and Manaster (1990) indicate that prestigious underwriters provide increased certification value for IPOs, thus investors demand less underpricing. Chang et al. (2017) further argue that issuers served by prestigious underwriters can be high quality and have high bargaining power. Therefore, the underwriter market share itself cannot be a direct measure for the bargaining power of the underwriter. In Tables 8–10, the negative relationship between price discount (and initial return) and underwriter reputation measured by underwriter market share is consistent with the certification role of underwriters. Underwriter reputation and venture-back are negatively related to the offer price discount, thus implying that prestigious underwriters and venture capitalists help to set a higher final offer price.

7. Conclusion

The establishment of an audit committee reduces information asymmetry by providing fair and informative financial reports. Moreover, increasing capital must be approved by an audit committee, if it is established. The establishment of an audit committee, therefore, reduces the bargaining power of the underwriter in IPO issuance. The presence of a pre-IPO audit committee may also have a substitution effect. IPO firms hiring an audit committee before issuance are more likely to hire less prestigious underwriters, with inferior track records and market share.

In this paper, we examine the effect of a pre-IPO audit committee on IPO pricing in an economy with little information asymmetry. For most of the IPO markets without a pre-IPO market, information asymmetry is severe because no price history is available before issuance. However, the IPOs in Taiwan are required to trade in a pre-market called *ESM* for at least 6 months before issuance, thus making trading information available before issuance. We show that the *ESM* price available to the public explains more than 90% of the variation of IPO prices, including the initial price range, final offer price, and aftermarket price.

We also find that the presence of a pre-IPO audit committee reduces IPO price discount that is relative to the *ESM* price and IPO underpricing that is relative to the aftermarket price, not because of the reduced information asymmetry, but because of the reduced underwriter bargaining power. IPOs with a pre-IPO audit committee are filed at a higher price level from the initial price range and a higher offer price. The price level of the initial price range and final offer price are less discounted, relative to the trading price in *ESM*, for those with a pre-IPO audit committee than those without one. This paper provides new evidence about the presence of an audit committee for reducing agency problems between issuers and underwriters.

Appendix: Articles related to role of lawsuit of an audit committee of Company Act in Taiwan

Article 213: In case of a lawsuit between the company and a director, the members of the audit committee shall act on behalf of the company, unless otherwise provided by law; and the meeting of shareholders may also appoint some other person to act on behalf of the company in a lawsuit.

Article 214: Shareholder(s) who has/have been continuously holding 1% or more of the total number of the outstanding shares of the company over six months may request in writing the members of the audit committee of the company to institute, for the company, an action against a director of the company.

In case the members of the audit committee fail to institute an action within 30 days after having received the request made under the preceding Paragraph, then the shareholders filing such request under the preceding Paragraph may institute the action for the company;

Article 220: Subject to the condition that the board of directors does not or is unable to convene a meeting of shareholders, the members of the audit committee may, for the benefit of the company, call a meeting of shareholders when it is deemed necessary.

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