

# Linking Non-Financial Performance Determinants with IPO Underpricing: Evidence from Indonesia

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**Abstract: Study Background/Rationale:** This study aims to investigate the determinants that may influence the underpricing in Initial Public Offerings (IPO), a phenomenon found in stock exchange markets globally. Underpricing occurs when the intrinsic value is higher than the offer price set by the issuing firm. As a result, the share's price skyrockets upon its market debut, offering an instant profit to investors, but potential damage to the company itself. **Method:** The focus of this study is the Indonesian stock market, which is seen as one of the leading growth economies among emerging markets and other developing economies, with accelerated GDP and having topped the list of Southeast Asian (ASEAN) countries regarding the number of IPOs. This research utilises multiple linear regression models and samples of firms that engaged in IPO in the Indonesia Stock Exchange (IDX) between 2018 and 2022. **Findings:** Using prospectus' non-financial performance determinants, this study finds that underwriter reputation, public ownership, and firm size have a positive influence on underpricing; additionally, offering size and firm age have a negative and statistically significant influence on underpricing. Furthermore, this study adds to the existing research by emphasising how various determinants are linked to IPO underpricing in Indonesia. In addition, this study demonstrates that prospectuses provide relevant information to minimise information asymmetry and ex-ante uncertainty between firms and shareholders. **Conclusion:** Considering the present shortage of studies on the determinants of IPOs underpricing as a starting point, this empirical research can be valuable since it could enhance the existing research by providing latest data for comparisons across nations.

**Keywords:** IPO, Underpricing, Underwriter reputation, Ex-Ante Uncertainty, Information Asymmetry, Indonesia.

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## 1. Introduction

Some research that attempted to uncover the determinants of IPOs underpricing in Indonesia primarily used old data sets or studied just certain variables, such as data sets from 2003 to 2011 (Darmadi and Gunawan, 2013), data sets from 2009 to 2013 (Indriani and Marlia, 2014), data sets from 2006 to 2015 (Hanafi and Setiawan, 2018), and a recent study by Bandi et al. (2020) investigating the effect of underwriter reputation on IPOs underpricing in Indonesia from 2010 to 2017. Considering the present shortage of studies on the determinants of IPOs underpricing as a starting point, this empirical research would be valuable since it could enhance the existing research by providing the latest data for comparisons across nations. Drawing upon the research background and the Indonesian context, this research aims to address the main research question, "What are the non-financial performance determinants influencing IPOs underpricing in Indonesia between 2018 and 2022?" Numerous variables were selected based on the existing literature which investigated the same topic. To the best of the authors' knowledge, this research will be the first to investigate IPOs underpricing in Indonesia using the most recent data set.

## 2. Literature Review

### 2.1 IPOs and Underpricing

IPOs mark the public debut of private firms and allow entities to acquire essential resources to boost their performance (Brau and Fawcett, 2006; Luo, 2008; Bancel and Mittoo, 2009; Aslan and Kumar, 2011; Feng et al., 2020). Additionally, besides gaining capital, IPOs also shift the firm's ownership from private to public (Poulsen and Stegemoller, 2008; Carbone et al., 2022), making the current shareholders less power over the company (Souitaris et al., 2020).

During IPOs, there are two common methods that firms can choose. The first one is a best-effort offering (BEO) method, where the underwriters sell as many shares as possible and earn a percentage of the offer proceeds, while the other one is a firm-commitment offering (FCO) method, where the underwriters purchase all shares from the issuing company at a negotiated discount and guarantees sale (Welch, 1991; Dunbar, 1998; Kim, 2021).

Dunbar (1998) investigated whether the firms' choice between FCO and BEO methods resulted in a successful offering, and he expected firms to choose the offering methods with the lowest direct issue costs: underpricing and underwriter compensation. This research focuses on the first cost, which is the underpricing.

## 2.2 Agency Theory and Information Asymmetry

In a systematic literature review, Carbone et al. (2022) discovered that among researchers, the agency theory is the most commonly utilised theory for studying IPO performance. The theory was developed by Jensen and Meckling (1973), as they tried to deepen Adam Smith's idea, and defined the agency relationship as a condition in which shareholders transfer managerial authority to managers. In further research, Panda and Leepsa (2017) discovered a similar finding and believed that Adam Smith was most likely the first figure to recognise the appearance of the agency problem.

## 2.3 Determinants of IPO Underpricing

### 2.3.1 Underwriter Reputation and Multiple Lead Underwriters

Underwriters are crucial during the IPO process (Brau and Fawcett, 2006). Firms will seek underwriters who will promote their shares, and further analyse the market condition and demand for the IPO firm's shares, before determining an offer price (Volberda et al., 2010), as well as the number of shares that firms would issue (Megaravalli, 2023).

Numerous research had found negative relations between the underwriter's reputation and underpricing. As highlighted by How et al. (1995), reputable underwriters are willing to charge a premium to reflect the higher quality services they offer. In this context, high quality refers to the underwriter's ability to "correctly" price the IPO, set the offering price near to its intrinsic value, to maintain their reputation in the market (How and Yeo, 2000).

**H<sub>1</sub>:** Underwriter reputation is negatively associated with IPO underpricing.

In certain circumstances, firms would hire more than one underwriter, something known as Multiple Lead Underwriters (MLU). They collaborate by sharing their knowledge, networks, and expertise to manage and ensure the IPO's success. In the Indonesian context, the average appearance of MLU from 2018 to 2022 is 28.14%, with the years 2021 and 2022 exceeding 30%. There is a consensus among social scientists that there is a link between MLU and underpricing itself. IPO firms that use MLU have a lowered degree of underpricing (Jeon et al., 2015) and better long-run performance (Vithanage et al., 2016). In 2007, Hu and Ritter discovered evidence using 532 US IPO firms from 2001 to 2005, that MLU IPOs achieve a better offer price and decreased underpricing (Hu and Ritter, 2007).

**H<sub>2</sub>:** MLU has a negative correlation with IPO underpricing.

### 2.3.2 Offer Size

Offer size can be an instrument to measure the ex-ante uncertainty (Beatty and Ritter, 1986), which can be obtained by multiplying the total shares offered by the IPO price (Rathnayake et al., 2019). Previous studies have shown that the offer size negatively affects underpricing (Chen et al., 2004; Chi and Padgett, 2005; Yu and Tse, 2006; Su and Bangassa, 2011; Lin and Tian, 2012; Alanazi and Al-Zoubi, 2015; Komenkul and Siriwattanakul, 2016; Rathnayake et al., 2019). In contrast, other studies found contradicting findings, as a positive association appears among them (Heerden and Alagidede, 2012; Boonchuaymetta and Chuanrommanee, 2013).

**H<sub>3</sub>:** There is a negative association between offering size and IPO underpricing.

### 2.3.3 Warrant and Stock Options

Warrants provide investors the right to purchase additional shares at a certain price over a set time. According to popular belief, warrants are "sweeteners" to promote the IPOs (Chemmanur and Fulghieri, 1997; Lee et al., 2003; Fung et al., 2004; Garner and Marshall, 2005; Madyan et al., 2020; Chen, 2021). Chemmanur and Fulghieri (1997) discovered that firms express their risk and future cash flow expectations to investors through warrant issuance. Since warrants are linked with increased risk for issuers, issuing them will lead to higher underpricing. Additionally, studies by How and Howe (2001) and Lee et al. (2003) also find a positive relationship between warrants and initial returns.

In the context of Indonesian IPOs, the Indonesian State Law Number 8 of 1995 concerning Capital Market stated that warrants can be converted into shares six months after the issuance. However, little research has been conducted to investigate the impact of warrant issuance on IPOs underpricing in the Indonesian market. Madyan et al. (2020) conducted the most recent study, which evaluated the impact of warrants on market performance and discovered a positive association, in a short-term period, between the two.

**H<sub>4</sub>:** Warrant and stock options are positively affecting IPO underpricing.

#### *2.3.4 Public Ownership*

Research by Michel et al. (2014) recognise that greater public ownership not only can increase external shareholders' monitoring function and improve the firm's performance, but also encourages insiders to engage in activities that tend to only benefit them at the cost of external shareholders. According to Jain and Kini (1994), lowering public ownership also increases the incentives for management to perform effectively.

Yet there has been little research examining the impact of public ownership on IPOs underpricing in the Indonesian market. The most recent study is by Madyan et al. (2020), who investigated the impact of public ownership on market performance and came to a mixed conclusion, with a positive correlation with short-term market performance but no relationship with long-term market performance.

**H<sub>5</sub>:** There is a positive link between public ownership and IPO underpricing.

#### *2.3.5 IPOs' Purpose*

This research believes that if the IPO funds were used to settle debt, it would not attract investors, thus, resulting in lowered underpricing. This is supported by Wyatt's (2014) and Alyasa-Gan and Che-Yahya's (2022) study which found that the 'use of proceeds' for financing operations does not indicate projected future cash flows and can deliver negative signals that enhance the ex-ante uncertainty of future cash flows. Numerous studies have found a mixed relationship between financing purpose and underpricing, as some found a positive relationship (Amor and Kooli, 2017), while others found the contrary (Wyatt, 2014; McGuinness, 2019; Ahmad-Zaluki and Badru, 2021).

**H<sub>6</sub>:** The debt financing purpose and IPO underpricing have a negative correlation.

#### *2.3.6 Institutional Shareholder*

Previous research on IPOs underpricing has found that the presence of institutional shareholders in firms has a positive impact on underpricing. Bird and Yeung (2010) studied Australian firms from November 1995 to December 2004, Lin and Chuang (2011) studied Taiwan firms from 2000 to 2005, while Ong et al. (2020a) studied Malaysian firms from 2000 to 2018, concluding that institutional shareholder could be signalling the firm's quality to the investors. However, further studies using Indonesian data found that institutional shareholders negatively impact IPOs underpricing (Darmadi and Gunawan, 2013; Hanafi and Setiawan, 2018), implying that institutional shareholder can use their expertise to set the share price close to their intrinsic value.

**H<sub>7</sub>:** There is a negative link between institutional ownership and IPO underpricing.

#### *2.3.7 Corporate Governance*

Many researchers believe that board size is one of the various corporate governance instruments capable of minimising agency problems between managers and shareholders, or between majority and minority shareholders (Darmadi and Gunawan, 2013). This is consistent with the findings of Koufopoulos et al. (2008) and Ali (2018), who discovered that board size is positively related to overall company performance.

Research on corporate boards, whether in the circumstances of IPOs or not, has been predominantly centred on the one-tier board system (Kusumastati et al., 2022). However, the results may differ in Indonesia because the country employs a two-tier board system in which firms must have two boards in their structure: the Board of Commissioners, whose purpose is to explicitly supervise the Board of Directors as well as the corporation in general, and the Board of Directors, who manage the corporation daily (Indonesian Financial Service Authority, 2014). Each of these two boards must have different members so that there is no overlap between the two boards. Research in Indonesian IPOs suggests that board size is negatively associated with underpricing (Darmadi and Gunawan, 2013).

**H<sub>8</sub>:** Board size is negatively associated with IPO underpricing.

While a larger board size allows firms to have a diverse range of skills and backgrounds, it also raises the issue of “over boarded” firms (Field et al., 2013), in which a board member also serves on the other companies’ board, resulting in a busy board. Firms with busy boards are defined as those with a majority of independent directors holding three or more directorships, according to Fich and Shivdasani (2006).

Ferris et al. (2003) observed that busy boards contribute to the firm, not only in strengthening its networking connections and maintaining its partnerships with other parties but also in building the firm’s reputation (Fama, 1980; Fama and Jensen, 1983). Additionally, well-connected directors act as intermediaries for information between issuers and investors, reducing the information asymmetry and ex-ante uncertainties surrounding the IPO (Cai et al., 2012). However, recent studies in Indonesian firms reveal a contrary finding, as excessive directorships may leave directors with little time to monitor management, resulting in lower firm performance (Harymawan et al., 2019; Trinugroho et al., 2022).

**H<sub>9</sub>:** Busy board is positively linked with IPOs underpricing.

Further study found another issue in corporate governance where gender bias, particularly regarding the appearance of female board members, can negatively impact corporations. Some research implies that the participation of female board members has a positive impact on firm value (Carter et al., 2003; Groening, 2019; Park and Byun, 2022) as it increases the firms’ reputation (Hillman et al., 2007; Brammer et al., 2009), while others are less convincing (Miller and Triana, 2009; Matsa and Miller, 2013; Li and Chen, 2018). Female representations on boards were seen as less capable than their male counterparts, notwithstanding their qualifications and IPOs managed by female boards were viewed as less appealing investments (Bigelow et al., 2014).

**H<sub>10</sub>:** Female board members are negatively associated with IPO underpricing.

### *2.3.8 Firm Age and Firm Size*

Older companies may provide investors with greater information regarding the firms’ activities (Loughran et al., 1994), as the previous study by Beaty (1989) and Ritter (1991) believed that a firm’s age might reduce the ex-ante uncertainty. The firm’s age shows the length of time the company was operating before IPO which can be measured as the difference between the date of listing and the date of incorporation (Dhamija and Arora, 2017). The abundant information provided might lead to lower information asymmetry, hence, numerous research has shown that it negatively influences underpricing (Chen et al., 2004; Yu and Tse, 2006; Killins, 2019).

**H<sub>11</sub>:** Firm age is negatively associated with IPO underpricing.

According to Beaty and Ritter (1986), smaller companies have less information available than larger companies, which increases ex-ante uncertainty. Previous research, however, by Anderson et al. (2015), demonstrated a positive relationship between firm size and underpricing using the natural logarithm of total assets as measurement. This is supported by Badru and Ahmad-Zaluki (2018) who studied the IPOs firms listed in the Bursa Malaysia from 2005 to 2015 and found a positive and significant relationship. They contended that rather than measuring ex-ante uncertainty, firm size is often used to signify the company as a whole. On the other hand, a study by Rathnayake et al. (2019) shows an insignificant relationship.

**H<sub>12</sub>:** Firm size is positively associated with IPO underpricing.

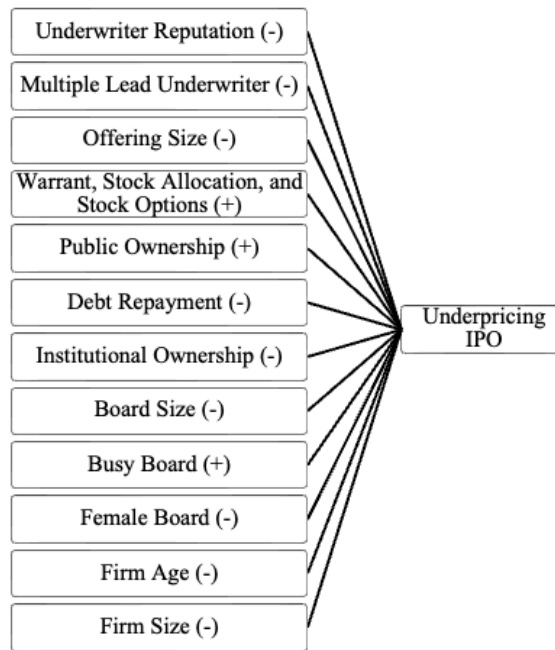


Figure1: Research Model

### 3. Methodology

#### 3.1 Data and Sample

This study uses secondary data, primarily from the firms’ prospectuses. Prospectuses are obtained through the Perfect Information (PI Navigator) database. Data on the share price on the first trading day are necessary to calculate underpricing, and it is taken from both Yahoo! Finance and Bloomberg. Furthermore, most of the necessary data is hand-collected and manually obtained since this research focuses on the use of prospectuses.

To capture the most recent trends in Indonesian IPOs, this study’s initial sample includes all 276 firms that performed IPOs in Indonesia’s equity market between 1 January 2018 and 31 December 2022. A further firm elimination left 229 firms that fit the criteria.

Table 1: Research Sample Selection

No.	Criteria	Total	Unit
1.	Total IPO companies from 2018 to 2022	276	Firms
2.	Companies not suffering from IPO underpricing	(28)	Firms
3.	Companies in the financial sector	(11)	Firms
4.	Companies using other than Indonesian Rupiah currency	(7)	Firms
5.	Companies with not sufficient data	(1)	Firm
Total samples (observations)		229	Firms

#### 3.2 Research Method and Research Model

This study used quantitative research methods, where theories and hypotheses are developed and then tested empirically (Newman and Benz, 1998). The following research model is provided based on the hypothesis development and variable definitions:

$$\begin{aligned}
 \text{Underpricing} = & \beta_0 + \beta_1 \text{UnderwriterReputation} + \beta_2 \text{MLU} + \beta_3 \text{OfferingSize} + \beta_4 \text{WarrantOptions} \\
 & + \beta_5 \text{PublicOwnership} + \beta_6 \text{DebtRepayment} + \beta_7 \text{InstitutionalShareholder} + \beta_8 \text{BoardSize} \\
 & + \beta_9 \text{BusyBoard} + \beta_{10} \text{FemaleBoard} + \beta_{11} \text{FirmAge} + \beta_{12} \text{FirmSize} + \varepsilon
 \end{aligned}$$

Taking the research question as a starting point, the research model of this study employs twelve constructs and utilises cross-sectional research.

### 3.3 Variables Definition

#### 3.3.1 Dependent Variable

This research uses IPO underpricing (*Underpricing*) as the dependent variable, which is defined as the difference between the closing price on the first trading day and the offer price (Certo et al., 2001; Loughran and Ritter, 2004; Bruton et al., 2009; Moore et al., 2010; Lin and Chuang, 2011; Tian, 2011; Roosenboom, 2012; Park and Patel, 2015; Boone et al., 2016; Vithanage et al., 2016). Therefore, it is calculated by dividing the offer price by the difference of the closing price minus the offer price on the first trading day. The *Underpricing* formula is as follows:

$$\text{Underpricing} = \frac{(\text{Closing price} - \text{offer price})}{\text{Offer price}}$$

#### 3.3.2 Independent Variables

The independent variables considered in this study are the determinants predicted to represent the cause of underpricing in Indonesian IPOs, which are the underwriter reputation (*UnderwriterReputation*), multiple lead underwriters (*MLU*), the offer size (*OfferingSize*), warrant, stock allocation, and stock options (*WarrantOptions*), public ownership (*PublicOwnership*), debt repayment purpose (*DebtRepayment*), institutional shareholder (*InstitutionalShareholder*), board size (*BoardSize*), busy board (*BusyBoard*), female director (*FemaleBoard*), firm age (*FirmAge*), and firm size (*FirmSize*).

*UnderwriterReputation* is a binary variable that equals 1 if the firm’s IPO is underwritten by the top five underwriters and 0 otherwise. The data derives from the Bloomberg League Table, which ranks underwriters based on the value of securities issues underwritten during the sample period (Darmadi and Gunawan, 2013).

**Table 2: Underwriter League Table (Bloomberg)**

No.	2018	2019	2020	2021	2022
1.	CITIC Securities	UOB Kay Hian Pvt Ltd	BCA Sekuritas PT	Bank Mandiri	Trimegah Securities
2.	Indo Premier Securities	Sinarmas Securities PT	Jasa Utama Capital PT	Buana Capital PT	Indo Premier Securities
3.	UOB Kay Hian Pvt Ltd	NH Investment & Securities Co Ltd	NH Investment & Securities Co Ltd	BRI Danareksa Sekuritas PT	Bank Mandiri
4.	Cintadana Sekuritas	Jasa Utama Capital PT	UOB Kay Hian Pvt Ltd	Trimegah Securities	Credit Suisse
5.	Bank Mandiri	Kresna Sekuritas PT	Pacific Sekuritas Indonesia PT	CITIC Securities	DBS Group

However, this study believes that underwriter rank is dynamic, with ups and downs, and that the top five underwriters will shift moderately each year. Thus, this study will employ two different measurements for *UnderwriterReputation*, as *UnderwriterReputation1* will use the overall rank within the research’s time frame, and *UnderwriterReputation2* will use the rank for each year. The underwriter league table for each year is presented in Table 3-2 above. The other independent variables are as follows:

- *MLU* is a binary variable that equals 1 if the firm’s IPO has more than one lead underwriter and 0 otherwise (Jeon et al., 2015; Vithanage et al., 2016).
- *OfferingSize* is the natural logarithm of offering size, calculated by multiplying the total number of shares offered by the IPO price (Rathnayake et al., 2019); the offering size figure is also stated on the prospectus’ front page.
- *WarrantOptions* is a dummy variable that equals 1 if the firm’s IPO includes warrants, stock allocations, stock options, or any combination of these, and 0 otherwise (Madyan et al., 2020).
- *PublicOwnership* is the proportion of shares held by the public after the IPO, excluding the fraction of shares offered through warrant offers (Madyan et al., 2020).
- *DebtRepayment* is a binary variable that equals 1 if one of the firm’s IPO purposes is debt repayment and 0 otherwise (Amor and Kooli, 2017).
- *InstitutionalShareholder* is the percentage of institutional shareholders before the IPO (Darmadi and Gunawan, 2013; Hanafi and Setiawan, 2018).

- *BoardSize* is the number of persons who sit in boardrooms. Because of Indonesia’s two-tier board structure, this study covers members of both the Board of Directors and the Board of Commissioners (Darmadi and Gunawan, 2013).
- *BusyBoard* is a dichotomous variable that captures the presence of a busy board in the firm, as described by Fich and Shivdasani (2006) as those with three or more directorships. In this study, it equals 1 if at least one of the board members is classified as busy, and 0 otherwise.
- *FemaleBoard* is defined as the percentage of the female to total boards in boardrooms (Li and Chen, 2018; Badru et al., 2019).
- *FirmAge* is the number of years since incorporation (Ritter, 1991; Dhamija and Arora, 2017).
- *FirmSize* is measured as a natural logarithm of the firm’s total assets (Anderson et al. (2015).

## 4. Results and Discussion

### 4.1 Overall IPO in Indonesia

According to Ernst and Young’s (2018-2022) global IPO report, Indonesia has continuously led the overall performance of publicly traded firms in ASEAN and is among the Top-10 Asian countries with the most IPO performances. Table 4-1 illustrates the overall IPO performance in Indonesia from 2018 to 2022.

**Table 3: Overall IPO Performance in Indonesia**

No.	Year	Total IPO	Underpriced	%	IPO Proceeds (in Billion IDR)
1.	2018	57	54	94.74	16,009.84
2.	2019	55	51	92.72	14,779.42
3.	2020	51	51	100.00	5,578.34
4.	2021	54	46	85.19	62,608.40
5.	2022	59	46	77.96	32,867.57
Total		276	248	89.85	131,843.57

### 4.2 Descriptive Statistic Analysis

Table 4-2 summarises the descriptive statistics for each variable in the model.

**Table 4: Descriptive Statistics (N=229)**

VARIABLES	Mean	SD	Min	p25	Median	p75	Max
Underpricing	.403	0.208	.004	.248	.35	.502	.7
UnderwriterReputation1	.122	0.328	0	0	0	0	1
UnderwriterReputation2	.323	0.469	0	0	0	1	1
MLU	.262	0.441	0	0	0	1	1
OfferingSize	25.337	1.164	23.208	24.425	25.171	26.022	30.718
WarrantOptions	.598	0.491	0	0	1	1	1
PublicOwnership	.232	0.091	.005	.2	.2	.294	.52
DebtRepayment	.201	0.402	0	0	0	0	1
InstitutionalShareholder	.704	0.390	0	.426	.951	1	1
BoardSize	6.183	1.881	4	5	6	7	13
BusyBoard	.786	0.411	0	1	1	1	1
FemaleBoard	.177	0.169	0	0	.167	.286	.75
FirmAge	15.31	11.776	1	7	12	22	64
FirmSize	26.44	1.511	23.005	25.269	26.391	27.419	32.63

### 4.3 Regression Results: Underpricing and The Determinants

Table 4-3 presents the regression results from the research’s model. This table depicts the research model, which includes two measurement variations of underwriter reputation as independent variables, namely *UnderwriterReputation1* and *UnderwriterReputation2*. The coefficient of determination (R-squared) of the model regression is 0.273 and 0.285 for models with *UnderwriterReputation1* and *UnderwriterReputation2* as independent variables, respectively. When multiple proxies of underwriter reputation are used, the model can explain about 27.3% and 28.5% of the variation in Underpricing. Furthermore, if we use adjusted R-squared, the R-squared for equations (1) and (2) are slightly lower, at 0.233 and 0.245, respectively.

This research will examine the model's goodness-of-fit by assessing the overall significance of the regression (F-test) (Lind et al., 2012). In equations (1) and (2), the p-values for the F-test are less than the 1% significance level. This implies that all independent factors have a significant effect on IPO underpricing at the same time; in other words, the model in this study can be interpreted to fit the data. However, the F-test cannot identify which independent variable has a significant effect on the dependent variable. As a result, the single parameter test (t-test) is used to identify how each independent variable influences the dependent variable.

According to the regression results in Table 4-3, the *UnderwriterReputation* has a mixed effect on *Underpricing* in equations (1) and (2). In equation (1), using Darmadi and Gunawan's (2013) measurement (*UnderwriterReputation1*) in this sample set yields a negative association with *Underpricing* that is not statistically significant. Furthermore, this study employs and modifies the measurement. Since the underwriter's reputation is dynamic, the top five underwriters are expected to differ for each year (*UnderwriterReputation2*). The result shows that underwriter reputation has a statistically significant positive association with *Underpricing* at the 5% significance level.

Based on the empirical findings, the *UnderwriterReputation1* coefficient is negative and aligns with the  $H_1$ . Previous research on IPOs underpricing in Indonesia also discovered the same results (Tanjung et al., 2019; Bandi et al., 2020; Setya et al., 2020). However, it is not statistically significant; in other words, it has less of an impact on underpricing. It would be preferable if issuing firms did not use this measurement to determine which underwriter they should partner with. The empirical findings in equation (2) reveal that the *UnderwriterReputation2* coefficient is positive and rejects the  $H_1$ . According to Table 4-3, using the top five underwriters will increase the underpricing by 0.056%.

It appears that top underwriters tend to purposely underprice IPOs between 2018 and 2022 to achieve a larger market share (Loughran and Ritter, 2004; Jones and Swaleheen, 2010), rather than minimising ex-ante uncertainty. By intentionally underpricing the IPO, it may attract investors and ensure the IPO's success. Previous research also found similar results (Hoberg, 2007; Chang et al., 2008; Boulton et al., 2010; Banerjee et al., 2011; Dimovski et al., 2011). This significant finding shows that issuing firms may use this measurement to decide which underwriters to collaborate with to minimise the potential of leaving money on the table. Providing a significant impact on underpricing, the following determinants will be explained using equation (2) results.

According to Table 4-3, the *MLU* coefficient is negative, showing that using multiple lead underwriters can reduce underpricing. To the best of the author's knowledge, no research has been conducted to determine the relationship between these two variables in the context of Indonesian IPOs. This result backs up prior research (Hu and Ritter, 2007; Jeon et al., 2015; Vithanage et al., 2016; Sahoo and Sahoo, 2022) and adds to the existing literature. Despite confirming  $H_2$ , the evidence indicates that the relationship between these two variables is statistically insignificant.

Based on the evidence in Table 4-3, the *OfferingSize* has a highly significant negative impact on underpricing. It also supports  $H_3$  and previous findings (Chen et al., 2004; Chi and Padgett, 2005; Yu and Tse, 2006; Su and Bangassa, 2011; Lin and Tian, 2012; Alanazi and Al-Zoubi, 2015; Komenkul and Siriwattanakul, 2016; Rathnayake et al., 2019) that *OfferingSize* is negatively influence the underpricing. The impact is statistically significant at the 1% significance level, as increasing *OfferingSize* by 1% reduces underpricing by 0.093%. It appears that investors use the *OfferingSize* as the instrument to minimise the ex-ante uncertainty (Beatty and Ritter, 1986), in which they may be less eager to participate in the IPO or demand a lower starting price if they perceive the larger offering size as a signal of future dilution or a higher number of outstanding shares.



Table 5: Regression Results

VARIABLES	(1) Underpricing	(2) Underpricing
UnderwriterReputation1	-0.035 (0.042)	
UnderwriterReputation2		0.056** (0.028)
MLU	-0.025 (0.031)	-0.030 (0.030)
OfferingSize	-0.084*** (0.017)	-0.093*** (0.016)
WarrantOptions	-0.035 (0.025)	-0.033 (0.025)
PublicOwnership	1.176*** (0.173)	1.134*** (0.174)
DebtRepayment	-0.041 (0.031)	-0.042 (0.031)
InstitutionalShareholder	0.037 (0.032)	0.037 (0.032)
BoardSize	-0.005 (0.008)	-0.005 (0.007)
BusyBoard	0.039 (0.030)	0.038 (0.030)
FemaleBoard	0.009 (0.074)	0.006 (0.073)
FirmAge	-0.002** (0.001)	-0.002** (0.001)
FirmSize	0.098*** (0.014)	0.095*** (0.014)
Constant	-0.305 (0.352)	0.015 (0.357)
Observations	229	229
R-squared	0.273	0.285
Adjusted R-squared	0.233	0.245
F-test	6.77	7.16
Prob > F	0.0000	0.0000

Notes: This table shows the association between IPOs underpricing and their determinants. The dependent variable is *Underpricing*, which is shown in two different equations since one of the independent variables is proxied using two different measurements, which are *UnderwriterReputation1* and *UnderwriterReputation2*. The standard errors are shown in brackets. \*\*\*, \*\*, and \* represent significance levels of 1%, 5%, and 10%, respectively.

Previous research has demonstrated that warrant issuance and stock options can be used as a “sweetener” in IPOs to encourage investors to buy shares in firms that attract little public attention (Chen, 2021), hence this study predicts a positive association between *WarrantOptions* and *Underpricing*. Logically, investors dare to bid a higher price if they know they will receive a warrant or stock options. However, the study’s findings presented in Table 4-3 clearly show that issuing warrants or implementing stock options could minimise underpricing given that the *WarrantOptions* coefficient is negative but statistically insignificant, rejecting the  $H_4$  suggested. Based on the previous studies, Certo et al. (2003) as well as Sanders and Boivie (2004) believe that stock options grants boost a firm’s credibility in the eyes of investors. It could also be seen as an approach for reducing firm risks and moral hazards by matching the interests of boards and shareholders (Beatty and Zajac, 1994), therefore it reduces the underpricing. The result also suggests that investors may have seen it for the same reason that *OfferingSize* did. Warrants are redeemable for shares, increasing the number of outstanding shares. If they view a higher number of outstanding shares as a signal of future dilution, they may be unwilling to participate in the IPO or demand a lower offering price.

According to Hsieh et al. (2011), investors appear to react negatively to publicly owned shares (*PublicOwnership*), believing that there is a higher chance of a corporation being taken over by third parties. Not only does a greater proportion of outstanding shares increase the shareholder’s monitoring function, but it also leads to behaviours that benefit insiders at the cost of external shareholders (Michel et al., 2014). However, this study finds that *PublicOwnership* is positively associated with *Underpricing*, and it is statistically significant at the 1% level of significance. While the result confirms the  $H_5$  suggested, the evidence indicates that every 1% increase of *PublicOwnership* will increase 1.174% of underpricing. The highly significant level could indicate that investors view this as a risky factor and are therefore demanding a larger return. This finding is consistent with Bradley and Jordan’s (2002) study, as well as Madyan et al.’s (2020) research, which discovered that *PublicOwnership* is positively related to short-term market performance in Indonesia.

As stated in the previous chapter, this research suggests that if IPO funds were utilised as *DebtRepayment*, it would not attract investors, resulting in decreased underpricing. This study provides the same results and confirms the  $H_6$  suggested. Rather than reducing the ex-ante uncertainty, investors appear to see this as a negative signal that financing purpose does not indicate projected future cash flows; in other words, if investors

saw any possibility of *DebtRepayment* activities in the prospectus, it leads to a lower underpricing. However, the result is statistically insignificant, implying that this variable does not have enough explanations to influence underpricing. Using different data samples, this finding is consistent with previous studies (Wyatt, 2014; McGuinness, 2019; Ahmad-Zaluki and Badru, 2021; Alyasa-Gan and Che-Yahya, 2022).

The presence of *InstitutionalShareholder* in firms, based on previous research (Bird and Yeung, 2010; Lin and Chuang, 2011; Ong et al., 2020a), has a positive impact on underpricing. They argue that rather than reducing ex-ante uncertainty, institutional shareholders can be utilised as a positive signal, indicating that they will boost the firm's value through more effective monitoring by utilising their experience and resources. Investors may believe that institutional shareholders can signal the firm's quality, leading them to bid for the shares at higher prices than their intrinsic value. These could be the reasons why *InstitutionalShareholder* has a positive value, confirming earlier studies, and rejecting the  $H_7$  proposed. Although it differs from earlier research in the Indonesian context (Darmadi and Gunawan, 2013; Hanafi and Setiawan, 2018), the influence of *InstitutionalShareholder* on *Underpricing* in this study is statistically not significant.

Using data from Indonesia from 2018 to 2022, it has been demonstrated in Table 4-3 that *BoardSize* has a negative impact on underpricing, although the relationship is not statistically significant, and confirms the  $H_8$  proposed. The result is consistent with Darmadi and Gunawan (2013) who believe that the larger the *BoardSize*, the more investors perceive it can minimise ex-ante uncertainty because larger boards are believed to provide more effective monitoring (Boone et al., 2007). Furthermore, larger boards may help firms to better manage the complexity of their business processes, lowering doubts about firm value. As a result, a high-quality IPO firm will employ signals other than a huge board size to demonstrate the issue's quality.

While investors believe that a larger board will reduce the underpricing, a contrary result appears when it comes to busy boards, as the results show a positive association between *BusyBoard* and *Underpricing*. Previous studies in Indonesian firms reveal that excessive directorships may leave boards with little time to monitor management, resulting in lower firm performance (Harymawan et al., 2019; Trinugroho et al., 2022). From the investors' perspectives, the situation fails to reduce the ex-ante uncertainty and signalling a lower future firm's performance and riskier firm's future performance, thus, leading to a higher underpricing. Although the relationship is not significant, it is aligned with  $H_9$  proposed and confirms previous findings by Feng et al. (2019).

The presence of *FemaleBoard* is another corporate governance indicator that has been shown to be positively associated with underpricing. Previous research has suggested that female boards are regarded to be less capable, making female-led IPOs less tempting investments (Bigelow et al., 2014). This research is expecting the investors will interpret this as a bad indicator for future performance, thus they will not bid for a higher offering price, resulting in a lower underpricing. The results, however, clearly show that *FemaleBoard* is positively linked with underpricing and rejects the  $H_{10}$  suggested, albeit not statistically significant. It confirms Reutzel and Belsito's (2015) finding that the appearance of female board members in US firms might increase underpricing. They argue that the negative signal from female leadership in the boardroom, who were perceived to have a negative impact on the IPO firm and viability, as Amatucci and Crawley (2011) also believed that female directors are often seen as being less confident than men in terms of financial decision-making. A recent study by Teti and Montefusco (2022) also found similar findings in Italian companies where they believe the presence of female directors indicates uncertainty and perhaps less favourable results to investors, leading to greater underpricing as compensation.

Initially, this study expected *FirmAge* and *FirmSize* to have a negative and positive connection with *Underpricing*, respectively. The research conducted here reveals a similar outcome to the expectations and verifies the  $H_{11}$  and  $H_{12}$  hypotheses. More importantly, the results imply that both determinants have significant effects on *Underpricing*. *FirmAge* is seen as a method for reducing ex-ante uncertainty. While the majority of IPO firms are young, it is common to see older companies go public as well. Previous research has found that the longer the time of incorporation, the more information about the firm is available in the market, and vice versa, the younger the firm, the greater ex-ante uncertainty and greater underpricing due to issuer uncertainty (Karlis, 2000; Kirkulak and Davis, 2005). The results demonstrate that increasing the *FirmAge* by one year old reduces the *Underpricing* by 0.002%, and it is statistically significant at the 5% level of significance, corroborating previous findings (Chen et al., 2004; Yu and Tse, 2006; Killins, 2019). Unlike *FirmAge*, which can minimise ex-ante uncertainty, *FirmSize* appears to indicate to the investor that the larger the firm, the riskier it is. This could be because larger firms often face more complex business processes and obstacles, resulting in a riskier situation, and as a result, investors demand greater returns through a higher offer price. Table 4-3 demonstrate that increasing the *FirmSize* by 1% increases the *Underpricing* by 0.102%, and it is statistically significant at the 1%

level of significance, corroborating previous findings (Anderson et al., 2015; Badru and Ahmad-Zaluki, 2018).

## 5. Conclusion

This study intends to investigate the non-financial performance determinants that may influence the IPO underpricing phenomenon in the context of the Indonesian stock market. Using IPOs data from 2018 to 2022, this study adds to the existing literature by providing data for further cross-country comparisons.

The dependent variable in this study is the IPOs underpricing. Underwriter reputation, multiple lead underwriters, offering size, warrant, stock allocation, stock options, public ownership, debt repayment purpose, institutional shareholder, board size, busy board, female director, firm age, and firm size are the independent variables used in this research. The underwriter's reputation is measured in two different proxies, resulting in a significant result for one of both proxies.

A multiple linear regression model is used in this study to assess the Based on the regression analysis, this study concludes that underwriter reputation, public ownership, and firm size have a positive influence on underpricing; additionally, offering size and firm age have a negative and statistically significant influence on underpricing; however, the other determinants have no or little influence on underpricing.

This research cannot be considered without weaknesses; some limitations can be identified during this study. The first limitation is the relatively small sample size. The sample size was limited by a five-year time frame. With the Indonesian capital market being particularly strong in the Asian market, especially in Southeast Asia, a longer time frame is expected to provide better results and explanations of the research question in this study.

The second limitation is represented by the variable selection. The variables considered in this research model do not adequately capture the majority of the potential determinants of underpricing.

Indeed, given the limited research time, it was not possible to collect relevant information from a bigger sample and utilise more criteria in the research model.

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