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Firm age and IPO underpricing: evidence from the Australian Securities Exchange

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Abstract. This study examines the relationship between firm age and initial public offering (IPO) underpricing in the Australian market, using a sample of 35 companies listed on the Australian Securities Exchange between 2018 and 2022. The central objective of this study is to contribute to the ongoing discussion by rigorously testing the hypothesis that there is a negative correlation between the age of the company listing and the degree of underpricing experienced. The main test variable of this study is the natural logarithm of the company's age, measured by the number of years between the company's establishment and listing date. This model acknowledges the multifactorial nature of IPO pricing and introduces several control variables to isolate the impact of company age. These controls include Tobin's Q, acting as a proxy for growth opportunities and market valuation; the natural logarithm of total assets, representing firm size; a binary variable indicating whether the company is audited by the Big Four accounting firms (BigN), reflecting audit quality and credibility; and the natural logarithm of board size, indicating the corporate governance structure. The empirical results are consistent with the main hypothesis: the underpricing experienced by older companies tends to be less severe. However, this relationship does not reach statistical significance at any conventional level. This study finds no statistically significant evidence to support the view that company age is a key determinant of IPO underpricing in the recent Australian market landscape. The low explanatory power of the model highlights the limitations of the study. Conversely, these limitations point to directions for future research, which should aim to use larger cross-border datasets and integrate a more comprehensive set of explanatory factors to better reveal the complex dynamics of IPO underpricing.

Keywords: IPO underpricing, firm age, information asymmetry, Australian Securities Exchange (ASX)

1. Introduction

An initial public offering (IPO) marks the first occasion on which a firm makes its shares available for public trading. Corporations can raise capital in the primary market through IPOs [1]. Moreover, an IPO signifies the transition of a firm from private to public status, necessitating strategic pricing and marketing to attract potential investors [2].

In general, the IPO literature indicates that all markets experience positive initial returns [3]. However, the financial industry has struggled to reach a consensus on the underlying reasons for IPO underpricing over the years. Allen and Faulhaber endorsed the underpricing theory, explaining it through the lens of the asymmetric information hypothesis [4]. Rock introduced the 'winner's curse' model [5]. Ibbotson and Jaff focused on the 'hot' period of IPO underpricing [6]. Benveniste and Spindt suggested that underpricing enables investment bankers to obtain more accurate information regarding the actual demand for IPOs [7].

One study found that Australian IPOs' abnormal returns averaged 25.47%, with raw returns of 26.43% in the primary market on the first day of trading, with both figures showing statistical significance at the 1% level [8].

2. Motivation and variable explanation

Many aspects of IPOs change over time [9], and researchers have extensively studied how factors like information asymmetry and market conditions influence IPO underpricing. However, one area of ongoing debate is whether the relationship between firm age and IPO underpricing is positively or negatively correlated. The aim of this article is to identify the nature of the relationship between the two factors. Understanding this relationship could have important implications for how investors assess a company's value, manage risks, and develop pricing strategies.

To determine whether Australian IPOs are underpriced, this article explores the impact of firm age on underpricing. Other control variables are Tobin's Q, total assets, Big N auditors, and board size, where the definitions of these variables are offered in Appendix 1.

This article opens with a review of relevant literature and an outline of the hypotheses. This is followed by a detailed examination of the methodology and presentation of the results. The article then concludes with a summary of the findings, an analysis of the study's limitations, and suggestions for future research directions.

3. Literature review and hypothesis development

3.1. Literature review

3.1.1. Negative relationship

Engelen and Van Essen found a negative relationship between company age and IPO underpricing, meaning that older companies experience lower levels of underpricing because they provide more information to the public, reducing initial investor uncertainty [10]. Rathnayake et al. also established that firm age exhibits an inverse correlation with IPO underpricing [11]. The degree of underpricing is higher among younger companies because they have higher pre-IPO uncertainty and information asymmetry. In contrast, older firms have more information available and a more defined market position, which decreases uncertainty and results in less underpricing.

Chan et al. observed that the level of IPO underpricing decreases with firm age [12], as older firms are likely to have more stable operational histories and lower information asymmetry, which decreases investor risk. Garfinkel also showed that older firms have lower underpricing rates than younger ones because they have longer operating experience, more stable shareholders, and lower risk [13]. Loughran and Ritte found that underpricing is more pronounced in younger firms, particularly those aged 0-7 years. This has been observed across different periods, with the highest level of underpricing recorded during the Internet bubble of 1999-2000 [14]. Loughran and Ritter argued that younger firms are riskier and more uncertain than older firms, leading investors to demand higher first-day returns at a lower price.

3.1.2. Positive relationship

In non-technical firms, a positive correlation exists between firm age and performance, implying that older firms perform better after the IPO because they are usually associated with lower operational risks, more managerial experience, and greater financial stability. However, in the case of technology companies, the relationship is reversed, as younger companies outperformed older ones during the period from 1991 to 1997. Daily et al. found that company age and IPO underpricing are positively related. In particular, the research indicates that the greater the time between the establishment of the company and its IPO, the higher the level of underpricing [15]. This may be due to increased risk or an information gap on the value of the company as time elapses before the IPO.

3.1.3. Not statistically significant

In their study, Anand and Singh found that company age does not significantly affect underpricing [16]. Although older companies are expected to have more stable performance histories, lower information asymmetry, and less investor uncertainty, the results do not support the hypothesis that company age has an impact on IPO pricing. Bansal and Khann also found no significant relationship between the two factors [17]. Rodoni et al. examined Indonesian IPOs under Islamic law between 2010 and 2014 and similarly found no significant effect [18]. Although some prior literature suggests that company age should affect IPO underpricing, empirical evidence does not support this. The authors claimed that underpricing is more sensitive to factors such as underwriter reputation, industry type, and financial ratios like ROE and DER.

3.2. Hypothesis development

The central research question addressed in this article is: Does the age of a firm influence IPO underpricing?

Clark divided the experimental sample into two categories: technology companies and non-technology companies [19]. Clarkson and Merkle, however, argued that in practice, regardless of industry category, a company's age can negatively influence the degree of underpricing [20]. Ritter also contends that firms with more extended operating histories are at a lower risk of experiencing underpriced IPOs compared to those with shorter histories, as they are generally easier to value [21].

Conversely, companies in the early stages of their lifecycle often face higher levels of information asymmetry [22]. As a result, older companies are generally regarded as more stable and less risky. Given the strong monotonic relationship between

age and aftermarket performance, investors are more inclined to trust a company's long-term prospects and financial stability [23].

Drawing on these theoretical insights and empirical findings, this article contends that as companies mature and grow older, the degree of underpricing they encounter during their initial public offering tends to decrease. Accordingly, this paper proposes the following hypothesis:

H1: Firm age is negatively associated with IPO underpricing

This hypothesis proposes that as a company grows older, the level of information asymmetry between the company and prospective investors decreases, resulting in a lower rate of IPO underpricing.

4. Data and model specification

4.1. Data collection

The sample used in this analysis comprises 35 IPO companies that launched IPOs on the Australian Securities Exchange (ASX) between January 1, 2018 and December 31, 2022, spanning all industries except financial and real estate. After excluding companies that had suspended operations, 35 IPO companies (excluding funds and trusts) were ultimately chosen as the test samples (the original dataset can be found in Appendix 2).

4.2. Model specification

4.2.1. Dependent variable

In this study, the degree of underpricing serves as the dependent variable, which is a widely used metric to assess the extent of mispricing during the first day of an IPO's trading:

$$Underpricing = (Close\ price–Issue\ price)/Issue\ price$$

4.2.2. Test variable and control variables

The test variable in this analysis is LNFirm_Age, as the article primarily investigates the effect of company age on IPO underpricing. The additional control variables include Tobin's Q, LNAsset, BigN, and LNBsize. The explanations for these variables can be found in Appendix 3. Additionally, it should be noted that the calculation method for Tobin's Q value is as follows:

$$TOBIN'sQ = MV\ Asset/BV\ Asset$$

MV Asset typically refers to the market value of assets, whereas BV Asset denotes the book value of assets.

4.2.3. Model specification

To test the hypothesis, this paper employed a multivariate analysis using the single equations of estimation (OLS) to investigate the relationship between IPO underpricing and several influencing factors. The general model used is as follows:

$$LnUNDERPRICING = \beta 0 + \beta 1 LnFIRM_AGEi + \beta 2 TOBIN'sQi + \beta 3 LnASSETSi + \beta 4 BIGNi + \beta 5 LnBSIZEi + €i$$

5. Results and analysis

5.1. Regression result and analysis

5.1.1. Regression analysis coefficients and P-values for the impact of firm age and other variables on IPO underpricing

The estimated results from the simple linear regression model are as follows (detailed regression results can be found in Table 1, and the dataset used for regression can be found in Appendix 4).

Table 1. Regression analysis of underpricing and independent variables and control variables

	Coefficients	P-value
Intercept	1.917974527	0.147506544
LNFirm_Age	-0.00938704	0.888877074
TOBIN's Q	0.038091146	0.37807909
LNAsset	-0.088265947	0.328420233
BIGN	-0.123660337	0.48546731
LNBsize	-0.119097732	0.625191231

The coefficient of LNAge is -0.009387, suggesting that for each 1-unit increase in company age, the dependent variable decreases by approximately 0.009387. While the coefficient is negative, the magnitude of the effect is minimal. The P-value of 0.88888 is considerably higher than 0.05, indicating that the effect of company age on the dependent variable does not demonstrate statistical significance and fails the significance test.

The coefficient for Tobin's Q is 0.038091, indicating that a 1-unit increase in Tobin's Q results in an approximate growth of 0.038091 in the dependent variable. With a P-value of 0.37807, which surpasses the 0.05 significance threshold, Tobin's Q does not exhibit a statistically significant effect on the dependent variable.

The coefficient for LNAsset is -0.088265, implying that a 1-unit increase in company assets leads to a reduction of approximately 0.088265 in the dependent variable. With a P-value of 0.32842, which is greater than 0.05, the effect of company assets is not statistically significant.

The coefficient for BIGN is -0.12366, suggesting that when a company is audited by one of the Big Four accounting firms, the dependent variable decreases by approximately 0.12366. With a P-value of 0.48547, exceeding the 0.05 significance level, this effect is not statistically significant.

The coefficient for LNBsize is -0.11909, meaning that for each 1-unit increase in board size, the dependent variable decreases by approximately 0.11909. However, with a P-value of 0.62519, the impact of board size on the dependent variable is not statistically significant.

5.1.2. Regression statistical data and analysis

The statistical data from the regression analysis are presented in Table 2 below.

Table 2. Regression statistical data

Regression Statistics	
Multiple R	0.378278204
R Square	0.1430944
Adjusted R Square	-0.004647945
Standard Error	0.41542759
Observations	35

The R-square value of the regression analysis is 0.1430944, meaning the model accounts for about 14.31% of the variance. This low R-square value suggests that the model has weak explanatory power.

5.2. Descriptives

Table 3. Descriptive statistical results

TOBIN's Q		Assets		Age		BIGN		Bsize	
Mean	2.761094942	Mean	50882011.37	Mean	2714.828571	Mean	0.228571429	Mean	4.857142857
Standard Error	0.291160152	Standard Error	9369238.475	Standard Error	436.0163833	Standard Error	0.072014404	Standard Error	0.275445726
Median	2.216277604	Median	33853000	Median	2107	Median	0	Median	4
Standard Deviation	1.722526691	Standard Deviation	55429162.33	Standard Deviation	2579.507711	Standard	0.426042961	Standard Deviation	1.629558893
Minimum	0.620665662	Minimum	6259542	Minimum	92	Minimum	0	Minimum	3
Maximum	9.059830947	Maximum	221005810	Maximum	9387	Maximum	1	Maximum	8

Table 3 provides descriptive statistics for variables such as Tobin's Q, Assets, Age, BIGN, and Board Size. For each variable, the mean, standard error, median, standard deviation, minimum, and maximum values are listed. For instance, the mean value of Tobin's Q is 2.76, with a standard deviation of 1.72, while company assets average 50,882,011.37, ranging from 6,259,542 to 221,005,810. The 'BIGN' variable has a mean of 0.228 and a median of 0, suggesting that most companies were not audited by BigN. The average board size is 4.86, with a range of 3 to 8 members (detailed descriptive statistical results can be found in Table 2).

6. Conclusion

This study employed a regression model to examine the influence of company age and other factors on IPO underpricing. The results suggest that although firm age is negatively correlated with IPO underpricing, the relationship is not statistically significant, which aligns with the findings of Brav and Gompers' research, as well as Chahine and Saade, who argued that no clear correlation exists between company age and IPO underpricing [24]. Likewise, other variables, including Tobin's Q, company assets, Big Four audit status, and board size, also show no significant influence on underpricing.

6.1. Limitations

The model's overall explanatory power is limited, accounting for only a small portion of the variation in IPO underpricing. Vismara et al. argue that the relationship between company age and IPO underpricing is primarily observed at different market levels [25]. Additionally, this study could broaden the selection of variables, including factors such as board independence, market return rate, and legal protection of shareholder rights, among others [26]. Furthermore, the small sample size may have affected the findings.

6.2. Future research

The results suggest that incorporating additional variables or increasing the sample size is essential for obtaining a more thorough understanding of the factors influencing IPO underpricing. Future research could explore the correlation between IPO underpricing and company age in greater depth, incorporating additional factors to better address inconsistencies in the current literature.

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