

The Influence of Firm Size on IPO Oversubscription: Evidence from Bursa Malaysia

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Abstract: The purpose of this paper is to examine the influence of firm size on oversubscription of initial public offerings (IPOs) listed on the Bursa Malaysia from the period of 2005 to 2015. The presence of firm size in influencing oversubscription further enables us to test the information asymmetry argued by Beatty and Ritter (1986). Data of 254 IPOs over a period of 11 years were obtained from the websites of Bursa Malaysia. Multivariate regression analysis was carried out to test for the relationship between oversubscription and independent variables. The finding of the study shows that firm size has a significant and negative influence on oversubscription. The result indicates that large firm which have a proven track records would have lower information asymmetry and do not need to under price their IPOs to attract investors and decrease the probability of oversubscription.

Keywords: IPO, Firm size, Information asymmetry, IPO, Offer price and Oversubscription.

JEL Classification: G00; G01; G12; G23

I. INTRODUCTION

The phenomenon initial return of Initial Public Offerings (IPOs) is well documented in the finance literature. While the puzzle has received widespread attention, another aspect of IPOs that has attracted considerable interest only recently is the high IPO oversubscription (Low & Yong, 2011; Tajuddin et al., 2015). Oversubscription which could be interpreted as investors' demand is a crucial element contribution to the success of IPOs. Based on the existing literature, demand from investors plays a part in influencing IPO performance (Alexander Ljungqvist et al., 2006; Chowdhry & Sherman, 1996; Low & Yong, 2011). This indicates that IPOs with high demand are associated with higher level of initial return.

The incidence of oversubscription of IPOs has also been reported in developed markets. Álvarez and González (2005), Brennan and Franks (1997), Cornelli and Goldreich (2003), Degeorge et al. (2010), Giudici and Paleari (2001), and Maeseneire and Manigart (2002) reported oversubscription rates of 18.35, 18.77, 9.10, 2.26, 7.69, and 15.30 times respectively. However, higher oversubscription rates are prominent in Asian countries that employed fixed-priced mechanism instead of auction and book-building mechanism, such as in Hong Kong, Malaysia and Singapore (Chowdhry & Sherman, 1996).

Loughran et al. (1994) have shown that the institutional differences in pricing and allocation of shares play an important role in explaining performance of IPOs among the 25 countries that they have reviewed. According to Loughran et al. (1994), Malaysia is more regulated compared to the other countries, and this might affect the oversubscription and underpricing. In Malaysia, fixed-price mechanism is frequent method in pricing of IPOs. Under the fixed-price mechanism, the offer price and issue size of IPO are predetermined in the prospectus by the issuers and underwriter. Thus, the offer price and issue size are established without knowing the demand from investors. In contrast to that, under the book-building mechanisms, the issuers usually allow underwriters to adjust the issue size of the IPOs under certain circumstances based on the demand from investors.

Since the Malaysian IPO market principally uses fixed price method, it might differently affect oversubscription rates as compared to other countries that use book-building and auction mechanisms. Therefore, the Malaysian IPOs market provides an ideal setting to examine factors that influence oversubscription. In this study, we aim to shed light on selected important pre-listing information, such as firm size, listing board, offer price, and financial crisis. Empirical evidence with respect on this factors are still lacking, especially in developing markets such as Malaysia, which has been categorized as having a high degree of information asymmetry (Eldomiaty, 2008).

The rest of the paper is organized as follows. The next section reviews the underlying theory and related literature while the third section covers the data and methodology. Section four reports the empirical results while the final section provides the conclusion.

II. LITERATURE REVIEW

A number of theories have been advanced to discuss the IPO underpricing, such as bandwagon effect, information asymmetry, lawsuit avoidance, prospects theory, signaling and winner's curse. The information asymmetry between investors is the reason for IPOs to be oversubscribed and underpriced (Rock, 1986). In Rock's model, if the new issue is underpriced, it would attract both informed investors and uninformed investors. When the higher numbers of shares are applied than the numbers of shares available for subscription, it would increase the oversubscription rate. Meanwhile, Beatty and Ritter (1986) argue that underpricing is related to ex-ante uncertainty. In the situation where information is higher, investors should pay a certain costs to obtain more information. Therefore, higher the information asymmetry means that the more risk investors should bear. Thus, to attract investors to subscribe the IPO, investors should be compensated with higher initial returns in order for issuers to attract the investors', especially uninformed investors. The arguments on the firm uncertainty and high information asymmetry lead to higher underpricing which is also consistent with Beatty and Ritter (1986).

Studies on the oversubscription of fixed price IPOs are only recently beginning to emerge (Low & Yong, 2011; Tajuddin et al., 2016). Low and Yong (2011) who studied the oversubscription phenomena in Malaysia showed that investors' enthusiasm, offer price, opportunity cost of fund and volume of IPO are factors that influence the oversubscription ratio significantly. Meanwhile, Tajuddin et al. (2016) used the utilization of proceeds for investment to measure growth opportunity as determining factors in examining oversubscription. Furthermore, this study views that oversubscription could also be explained by other factors which are not covered in previous studies, such as firm size, listing board, offer price, and financial crisis.

The main variable in this study is firm size. In the literature, firm size is associated with information asymmetry (Barclay & Smith, 1995; Beatty & Ritter, 1986; Goergen et al., 2006). The presence of information asymmetry plays an important role in explaining oversubscription. According to Barclay and Smith (1995), Beatty and Ritter (1986) and Goergen et al. (2006), small firms are more uncertainties and have higher level of information asymmetry. Thus, it makes difficult for investors to estimate its value (Goergen et al., 2006; Lowry et al., 2010). In contrast to that, large firms have a proven track record of operating history, and their data are made publicly available and have lower information asymmetry (Chen et al., 2004).

Bundoo (2007) stated that large firms were more underpriced in the Stock Exchange of Mauritius. This was followed by Sohail and Raheman (2009) and Bansal and Khanna (2012) who found the positive significant relationship between firm size and underpricing. In contrast, Mezhoud and Boubaker (2011) and Tajuddin et al. (2015) found negative relationship between firm size on the level underpricing and oversubscription. This implies that a large firm which has high quality does not want to underprice their IPO due to the fear of the dispersal of their ownership structure which reduces the subscription rate. The contradictory evidence calls for further investigations to determine whether size of the firm could positively or negatively affect or has no influence on oversubscription levels of IPOs. In addition, this study is of the view that firm size must be given adequate focus as it has direct effect in influencing investors and oversubscription of IPOs.

III. DATA AND METHODOLOGY

Our sample comprised 254 firms listed on Bursa Malaysia during the period of 2005 to 2015 which is presented in Table 1. The sample in this study excludes companies that have extreme outliers and financial companies which include banks, financial services, insurance companies, and real estate investment trusts (REITs). The main source of data is prospectus which was downloaded from Bursa Malaysia website.

Table1: Summary of IPOs by Year of Listing from 2005 to 2015

Listing Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
IPO	79	40	26	23	14	29	28	17	17	15	13	301
Observation	67	33	21	17	14	25	24	14	16	13	10	254

Source: Bursa Malaysia

This study employs a cross-sectional multiple regression analysis to examine the association of firm size and oversubscription of IPOs. The regression model, which includes three controlled variables, is represented as follows:

$$OSR_i = \alpha + \beta_1 MKTCAP_i + \beta_2 BOARD_i + \beta_3 PRICE_i + \beta_4 CRISIS_i + \varepsilon_i \quad (1)$$

Where the dependent variable is IPOs oversubscription (*OSR*), and it measures the total number of shares demanded by investors over the total number of shares offered. The main variable is market capitalization (*MKTCAP*). *MKTCAP* is the natural logarithm of the market capitalization. *BOARD* refers to the listing board that takes a value of 1 if an IPO is listed on the ACE Market and 0 if listed on the Main Market. *PRICE* is the offer price of the IPOs. *CRISIS* refers to the period of the global financial crisis that takes a value of 1 if an IPO is offered from the year 2008 to 2010 and 0 otherwise.

IV. FINDINGS AND DISCUSSION

Table 1 provides the descriptive statistics for the 254 firms that issued IPOs from January 2005 to December 2015. The average (median) oversubscription ratio is 23.86 times (12.20 times). The maximum oversubscription ratio is 227.00 times while the minimum value is -0.50 times. The large difference between the maximum and minimum oversubscription shows that the demand varies for each IPO issued in Malaysia.

The average market capitalization is RM 947 million that ranges from RM 19.90 million to RM 40.40 billion. This shows a huge difference between small and large firms in the Malaysian IPOs market. Listing Board (*BOARD*) on average shows that the ratio of IPOs listed on the ACE Market is 0.40 or 40% while IPOs listed on the Main Market is 0.60 or 60%. The minimum offer price is RM0.12 while the maximum offer price is RM5.20. This shows a large difference among offer price of the IPOs for the entire period of 2005 to 2015. Moreover, when the global financial crisis (*DCRISIS*) that occurred in 2008 to 2010, the average *CRISIS* reported was 0.22, which reflects that 22% of the total IPOs or 56 IPOs were issued during this period.

Table1: Descriptive Statistics for Variables from January 2005 to December 2015

Variables	Mean	Median	Minimum	Maximum
OSR (times)	23.86	12.20	-0.50	227.00
Market Capitalization (RM million)	947.00	95.69	19.90	40,400.00
BOARD	0.40	0.00	0.00	1.00
Offer Price (RM)	0.94	0.70	0.12	5.20
CRISIS	0.22	0.00	0.00	1.00

Notes: *OSR* is the number of times the IPOs are oversubscribed. Market capitalization is the market capitalization of the IPOs. *BOARD* refers to the listing board that takes a value of 1 if an IPO is listed in the ACE Market and 0 if listed in the Main Market. Offer price is the offer price of the IPOs. *CRISIS* refers to the period of the global financial crisis that takes a value of 1 if an IPO is offered from the year 2008 to 2010 and 0 otherwise.

The correlation coefficient matrix for all variables is shown in Table 2. All variables have a correlation lower than 0.6 except for *MKTCAP* and *BOARD* with the values of 0.77. However, the figures are still far lower than the 0.90 cut-off point, and that indicates a potential for multicollinearity (Asteriou & Hall, 2007). Since the variance inflation factors (VIF) range from 1.28 to 4.19, it is clear that multicollinearity is not a problem in this study (Kleinbaum et al., 2013).

Table2: Pearson's Correlation Matrix between Variables

	OSR	MKTCAP	BOARD	PRICE	CRISIS
OSR	1	-0.31***	0.42***	-0.25***	-0.21***
MKTCAP		1	-0.54***	0.77***	0.06
BOARD			1	-0.48***	-0.11*
PRICE				1	0.11*
CRISIS					1

Notes: ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. *OSR* is the number of times the IPOs are oversubscribed. *MKTCAP* is the natural logarithm of the market capitalization. *BOARD* refers to the listing board that takes a value of 1 if an IPO is listed on the ACE Market and 0 if listed on the Main Market. *PRICE* is the offer price of the IPOs. *CRISIS* refers to the period of the global financial crisis that takes a value of 1 if an IPO is offered from the year 2008 to 2010 and 0 otherwise.

The results of ordinary least square (OLS) regressions are presented in Table 3. As the model suffers from autocorrelation problems, Newey-West covariance estimator to adjust the standard errors is used in the regression analysis. The model which includes four variables constitutes 21% of the variations in oversubscription. The F-statistics is significant at 1% level.

The results of firm size (*MKTCAP*) show a negative but significant relationship with oversubscription. In other words, large firms have a proven track record and lower information asymmetry (Chen et al., 2004). Thus, the issuers do not need to underprice their IPOs to attract investors while information asymmetry is higher for small firms that are new and do not have proven track record. Therefore, the issuers need to underprice their IPOs to attract investors. The finding is in line with Mezhoud and Boubaker (2011) and Tajuddin et al. (2015) who have noted that large companies are associated with lower demand from investors.

Table3: The Estimation Results

Dependent variable is oversubscription ratio		
Independent Variables	Coefficient	t-statistic
MKTCAP	-3.396	-2.205***
BOARD	23.878	2.673***
PRICE	1.773	0.685
CRISIS	-14.047	-3.443***
C	79.557	2.817***
Adjusted R-squared	0.202	
F-Statistics		16.976***
Probability	0.000	
VIF range	1.285	- 4.185

Notes: ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. *OSR* is the number of times the IPOs are oversubscribed. *MKTCAP* is the natural logarithm of the market capitalization. *BOARD* refers to the listing board that takes a value of 1 if an IPO is listed on the ACE Market and 0 if listed on the Main Market. *PRICE* is the offer price of the IPOs. *CRISIS* refers to the period of the global financial crisis that takes a value of 1 if an IPO is offered from the year 2008 to 2010 and 0 otherwise.

The listing board (*BOARD*) is found to be positively but significantly related to oversubscription. This result is consistent with past studies on the Malaysian market, such as by Abdul-Rahim and Yong (2010) and Taufil-Mohd (2007). Companies listed on the ACE Market are new and face high risk; thus, the issuers need to underprice their IPOs to attract investors. However, those companies that are listed on the Main Market are well established and face lower risk; as a result, the issuers do not need to underprice their IPOs to attract investors. Therefore, firms listing in ACE Market have higher demand as investors are compensated with higher initial returns for bearing such high risks. Thus, the listing board of an IPO does matter in explaining oversubscription. Surprisingly, the offer price of IPO (*PRICE*) shown insignificant positive results. This implies that the offer price does not matter in explaining the oversubscription ratio.

The coefficient for financial crisis (*CRISIS*) is negative but significant in influencing oversubscription. During the financial crisis, oversubscription is reduced by 14.05 times. This is because during the global financial crisis from 2008 to 2010, investors stayed away from IPOs due to the bearish market.

Overall, the observed variables are all significant at the 1% level, except for offer price (*PRICE*). We conjecture that the insignificant result of *PRICE* might be due to larger firms are associated with higher offer prices as shown in Table 4.

Table4: Mean values between OSR, market capitalization and IPOs offer price

	OSR (times)	Market Capitalization (RM)	Offer Price (RM)
Large Market Capitalization (n = 127)	12.86	1,840,000,000.00	1.33
Small Market Capitalization (n= 127)	34.85	57,763,149.00	0.55

To test for this conjecture, we estimate additional model which is an interaction between firm size and offer price ($MKTCAP \times PRICE$) for robustness. The multiple regression analysis is re-estimated as shown in Table 5.

Table5: The interaction effect between company size and offer price

Dependent variable is oversubscription ratio		
Independent Variables	Coefficient	t-statistic
MKTCAP	-6.583	-2.819***
BOARD	19.502	2.467**
PRICE	-45.083	-1.878***
CRISIS	-14.417	-3.485***
MKTCAPxPRICE	2.206	2.009**
C	144.442	3.090***
Adjusted R-squared	0.209	
F-Statistics	14.362***	
Probability	0.000	

Notes: ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. *OSR* is the number of times the IPOs are oversubscribed. *MKTCAP* is the natural logarithm of the market capitalization.

BOARD refers to the listing board that takes a value of 1 if an IPO is listed on the ACE Market and 0 if listed on the Main Market. *PRICE* is the offer price of the IPOs. *CRISIS* refers to the period of the global financial crisis that takes a value of 1 if an IPO is offered from the year 2008 to 2010 and 0 otherwise.

The finding shows that the interaction term is significant and positively related to oversubscription at the 5% level. The result shows that the significant of the offer price on oversubscription of IPO depends on the size of the firm. In other words, the demand for the IPOs will be higher if the size of the firms are smaller, and offered at lower offer price. Our finding supports the information asymmetry argument by Beatty and Ritter (1986) where small firms are associated with uncertainty and higher information asymmetry. Thus it is necessary for small firms to compensate for the higher risk by offering higher return to investors (underpricing). This would motivate investors to subscribe to the IPOs and increase the likelihood of oversubscription.

V. CONCLUSION

This paper examines the association between firm sizes on oversubscription using 254 IPOs listed on the Bursa Malaysia during the period 2005 to 2015. By employing multiple regression analysis, we found a negative significant relation between firm size and oversubscription. This shown that large firm would reduce oversubscription. Overall, the findings of this study provide new insights for investors regarding the importance of information such as firm size, offer price, listing board and financial crisis which is available in the prospectus. Thus, it is expected to assist investors in making decisions prior investments in IPOs.

This study use natural logarithm of market capitalization to represent firm sizes. There is a need to use the different measurement to represent firm size such as total asset, total sales and market value of equity itself. It is important to re-examine the consistency of those measures with the measurement used in this study on oversubscription of IPOs.

Future research could look at macroeconomic variables as the potential determinants of oversubscription. The macroeconomic variables such as inflation rate, unemployment rate and overnight policy rate (OPR) are most commonly used in determining performance and might affect investors demand.

VI. REFERENCES

- [1] Abdul-Rahim, R., & Yong, O. (2010). Initial returns of Malaysian IPOs and Shari'a-compliant status. *Journal of Islamic Accounting and Business Research*, 1(1), 60-74.
- [2] Ljungqvist, A., Nanda, V., Singh, R. (2006). Hot Markets, Investor Sentiment, and IPO Pricing. *The Journal of Business*, 79(4), 1667-1702.
- [3] Álvarez, S., & González, V. M. (2005). Signalling and the Long-run Performance of Spanish Initial Public Offerings (IPOs). *Journal of Business Finance & Accounting*, 32(1-2), 325-350.
- [4] Asteriou, D., & Hall, S. G. (2007). *Applied Econometrics: a modern approach, revised edition*. Hampshire: Palgrave Macmillan.
- [5] Bansal, R., & Khanna, A. (2012). Determinants of IPOs Initial Return: Extreme Analysis of Indian Market. *Journal of Financial Risk Management*, 1(4), 68-74.
- [6] Barclay, M. J., & Smith, C. W. (1995). The maturity structure of corporate debt. *The Journal of Finance*, 50(2), 609-631.
- [7] Beatty, R. P., & Ritter, J. R. (1986). Investment banking, reputation, and the underpricing of initial public offerings. *Journal of Financial Economics*, 15(1), 213-232.
- [8] Brennan, M. J., & Franks, J. (1997). Underpricing, ownership and control in initial public offerings of equity securities in the UK. *Journal of Financial Economics*, 45(3), 391-413.
- [9] Bundoo, S. (2007). An analysis of IPOs underpricing in Mauritius. *African Journal of Accounting, economics, Finance and Banking Research*, 1(1), 1-12.
- [10] Chen, G., Firth, M., & Kim, J.-B. (2004). IPO underpricing in China's new stock markets. *Journal of Multinational Financial Management*, 14(3), 283-302.
- [11] Chowdhry, B., & Sherman, A. (1996). International differences in oversubscription and underpricing of IPOs. *Journal of Corporate Finance*, 2(4), 359-381.
- [12] Cornelli, F., & Goldreich, D. (2003). Bookbuilding: How Informative Is the Order Book? *The Journal of Finance*, 58(4), 1415-1443.
- [13] Degeorge, F., Derrien, F., & Womack, K. L. (2010). Auctioned IPOs: The US evidence. *Journal of Financial Economics*, 98(2), 177-194.
- [14] Eldomiati, T. I. (2008). Determinants of corporate capital structure: evidence from an emerging economy. *International Journal of Commerce and Management*, 17(1), 25-43.
- [15] Giudici, G., & Paleari, S. (2001). The Market Performance of Italian IPOs in the Long-Run. Paper presented at the Asia Pacific Finance Association Annual Conference, Bangkok, Thailand.
- [16] Goergen, M., Renneboog, L., & Khurshed, A. (2006). Explaining the diversity in shareholder lockup agreements. *Journal of Financial Intermediation*, 15(2), 254-280.
- [17] Kleinbaum, D., Kupper, L., Nizam, A., & Rosenberg, E. (2013). *Applied regression analysis and other multivariable methods*: Cengage Learning.
- [18] Loughran, T., Ritter, J. R., & Rydqvist, K. (1994). Initial public offerings: International insights. *Pacific-Basin Finance Journal*, 2(2-3), 165-199.
- [19] Low, S.-W., & Yong, O. (2011). Explaining over-subscription in fixed-price IPOs — Evidence from the Malaysian stock market. *Emerging Markets Review*, 12(3), 205-216.
- [20] Lowry, M., Officer, M. S., & Schwert, G. W. (2010). The variability of IPO initial returns. *The Journal of Finance*, 65(2), 425-465.
- [21] Maeseineire, W. D., & Manigart, S. (2002). Initial returns: underpricing or overvaluation? Evidence from Easdaq and EuroNM.
- [22] Mezhoud, M., & Boubaker, A. (2011). Determinants of the Components of IPO Initial Returns: Paris Stock Exchange. *International Journal of Accounting and Financial Reporting*, 1(1).

- [23] Rock, K. (1986). *Why new issues are underpriced*. *Journal of Financial Economics*, 15(1–2), 187-212.
- [24] Sohail, M. K., & Raheman, A. (2009). *Determinants of under-pricing of IPOs regarding financial & non-financial firms in Pakistan*. *European Journal of Economics, Finance and Administrative Sciences*, 15, 62-73.
- [25] Tajuddin, A. H., Abdullah, N. A. H., & Taufil-Mohd, K. N. (2016). *Does Growth Opportunity Matter in Explaining the Oversubscription Phenomena of Malaysian IPO?* *Procedia-Social and Behavioral Sciences*, 219, 748-754.
- [26] Tajuddin, A. H., Mohd-Rashid, R., Abdullah, N. A. H., & Abdul-Rahim, R. (2015). *An empirical examination of over-subscription in the Malaysian IPO market*. *International Journal of Economics and Management*, 9(S), 81-102.
- [27] Taufil-Mohd, K. N. (2007). *Regulations and Underpricing of IPOs*. *Capital Markets Review*, 15(1), 1-27.