*IIUM Journal of Economics and Management* 12, no.2 (2004):


# FACTORS INFLUENCING THE UNDERPRICING OF INITIAL PUBLIC OFFERINGS IN AN EMERGING MARKET: MALAYSIAN EVIDENCE

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## ABSTRACT

By using 70 initial public offerings (IPOs) in the period 1992 to 1998, it is found that company size, indigenous population ownership and substantial shareholder losses are significant in explaining the variation of IPOs' underpricing. Large companies are associated with providing higher discount on their shares to signal their superior future prospects. The unique characteristic of promoting the indigenous population, *Bumiputra*, to participate in the Malaysian equity market through the government regulatory intervention has reduced underpricing. However, such intervention might have contributed to the losses on the part of the substantial shareholders. Surprisingly, Leland and Pyle's signalling model on entrepreneur's fractional ownership could not be supported.

JEL classifications: G32, G38

Key words: IPOs, Underpricing, Regulatory Intervention, Signalling Model, Ownership

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The authors would like to gratefully acknowledge the research grants provided by the Universiti Utara Malaysia. We are also grateful to Dr. Angappan Regupathi and the two referees, and the Editor of the IIUM Journal of Economics and Management for their constructive comments. We assume full responsibility for any remaining errors.

## 1. INTRODUCTION

The underpricing of new issues by Malaysian listed companies is among the highest in the South East Asia region. Dawson (1987) and Ismail, Abidin and Zainudin (1993) reported that the average underpricing was as high as 166.7 percent and 114.6 percent, respectively, over a study period of 1978 to 1983 for the former and 1980 to 1989 for the latter. A more recent study by Yong and Isa (2001) shows an average initial return of 94.91 percent for all new issues listed on the Main Board and Second Board of the Kuala Lumpur Stock Exchange from January 1990 to December 1998. As compared with other emerging markets, Malaysia appears to be at the top of the list in providing deep discount on its initial public offerings (IPOs). Although underpricing is a common occurrence in most companies' listings (Loughran, Ritter and Rydqvist, 1994), no theories or factors can completely explain the reasons behind the underpricing.

The underpricing of new issues is still considered an anomaly in the Western world as well as in the emerging market environment. Many studies may have been conducted in the West to seek an answer to this anomaly, but such research barely exists in the South East Asia region, particularly in Malaysia. This is with the exception of Ariff and Shamsher (1999) and Yong (1996). Most of the Malaysian IPOs studies concentrate on the returns achieved by market participants such as shown in the works of Dawson (1987, 1994, 1995), Hassan (1992,1993), Ismail, Abidin and Zainudin (1993), Wu (1993), Yong (1991,1992) and Yong and Isa (2001). It is only recently that researchers in this part of the world have embarked on the search for an explanation for such a phenomenon. The lack of research to find out the determining factors which might explain the underpricing of IPOs for Malaysian-listed companies has triggered this study. By using 70 IPOs of companies listed on the Main Board and Second Board from the year 1992 to 1998, this study tries to identify factors which might influence the underpricing of new issues.

Although the more recent IPO research concentrates on a subset of overpriced new issues (Ling and Ryngaert, 1997) and tries to establish the long-run price behavior of new issues (Barber and Lyon, 1997; Jain and Kini, 1994), this study focuses on explaining the high underpricing of companies listed in an emerging market, such as Malaysia.

The paper is organised into four sections. The next section reviews the literature of underpricing irregularities occurring on exchanges throughout the world; this is followed by the third section describing the data and methodology used in identifying variables that might have caused the underpricing. The fourth section reports the empirical results; and the final section concludes the discussion of the factors influencing the underpricing of IPOs for Malaysian listed companies.

## 2. THEORIES AND EMPIRICAL EXPLANATION OF UNDERPRICING

One of the theoretical explanations which has been suggested to explain the underpricing of IPOs is information asymmetry. Rock (1986) focused on the existence of asymmetrically-distributed information between the informed and uninformed investors. According to him, the issuing company and its agent (investment banker) know a lot more about the company's future. The company will disclose its plans and activities in the prospectus which indirectly reveals its evaluation of the company's financial prospects through the issuing price. It is mentioned by Beatty and Ritter (1986) that a reputable investment banker needs to certify that the proposed price must reflect the company's prospects. Rock further explained that although the investment banker is the best agent to price the offering, his information and expertise may be lacking as compared to all investors' knowledge in the market combined. When such a situation occurs, the group of uninformed investors may have superior information to that of the investment banker and informed investors. Hence, to ensure that the offering is successful, the investment banker must offer a discount to encourage uninformed investors to participate with the low prices. Benveniste and Spindt (1989), Chemmanur (1989) and Sherman (1992) supported such an explanation. They mentioned that underpricing is a tool to encourage investors to provide and reveal private information.

Further explanations on the discount or the underpricing of IPOs are provided by Allen and Faulhaber (1989), Grinblatt and Hwang (1989) and Welch (1989) who argued that the discount or the underpricing of IPOs was actually intended. According to Allen and Faulhaber (1989), underpricing is associated positively with a company's value. This is based on the assumption that only good companies are able to give a large discount because of their superior future prospects, whereby the stock price will increase to reflect its true value above the issue price. Bad companies would not be able to use a similar strategy as they could not afford to recoup the initial loss from the discount given. Hence, underpricing is a credible signal of a company's quality. Grinblatt and Hwang (1989) and Welch (1989) in their papers also gave a similar explanation.

Leland and Pyle's (1977) signalling model provides a different view. Their model looks at the ownership of a company. According to them, an entrepreneur's fractional ownership of a company provides a credible signal to rational investors of a company's true value. A high fractional stock ownership implies that the entrepreneurs invested most of their wealth in the new issues company, which means that they have a less diversified portfolio. These entrepreneurs will only accept higher risks because they are certain of the company's prospects. This action serves as a signal to investors of the superior quality of the company's value. By using 53 IPOs in Singapore between February 1993 and July 1995, Hameed and Lim (1998) reported that the fractional ownership retained is significantly and positively related to total underpricing, supporting the Leland and Pyle (1977) signalling model. Higher ownership is associated with higher underpricing. In addition, they also found that larger companies, such as those listed on the Main Board, are associated with a lower underpricing as shown in the work of Beatty and Ritter (1986). This implies that underpricing and a company's value are inversely related.

Hwang (1988) came up with a generalised version of Leland and Pyle's model but with the assumption that only issuers know the company's future cash flows. He argues that fractional stock ownership is not sufficient to signal a company's value because it does not provide an opportunity for outside investors to differentiate between companies that have similar expected value but different future cash flow variance. Hwang proposed that underpricing as another signal which will help in conveying information of a company's future cash flow variance. He found that for a specified level of fractional ownership, there is a positive relationship between underpricing and company value.

Further empirical support is shown in the work of How and Low (1993). They tested the relationship between company value and degree of underpricing for 523 IPOs of the Australian market over a ten-year period, 1 July 1979 to 30 June 1989. They found that a significantly positive relationship exists between fractional ownership and company value, but the same could not be identified for the relationship between underpricing and company value because the result is dependent on the proxy used to measure company value. Underpricing is significant if company value is measured by the natural log of market capitalisation, but insignificant if total assets are used.

Another factor which might have an influence on underpricing is discussed by Titman and Trueman (1986). According to them, the choice of a quality adviser or underwriter for a new market issue might provide signals about a company's IPO. Normally, entrepreneurs who have favourable information about their companies will go for a high quality underwriter. This would provide a good signal about the company's IPO to the market. The market assumes that if something were to go wrong, such as the IPO not performing as expected, it would be able to recover its losses from the underwriter. It is expected that a high quality underwriter would probably avoid the risk of associating itself with a low quality IPO. This is to ensure that its good reputation is protected and maintained among the market participants. Those companies that may have a low quality IPO might not be able to hire a high quality underwriter to provide favourable information about their companies. A high quality underwriter might decline from issuing the IPO to ensure its reputation is not tarnished. Holland and Horton (1993) found that there exists an inverse relationship between high quality underwriters and underpricing where lower underpricing is associated with highly reputable underwriters. Such a finding differed from what was reported by Firth and Liau-Tan (1998) using Singapore Stock Exchange IPOs in the period 1980 to 1994. They found that a highly reputable underwriter has the expected relationship, but it is not statistically significant.

A more recent study by Ariff and Shamsher (1999) provided a new explanation about underpricing. They associated underpricing with the environment regulatory effect. According to them, regulatory intervention might be a possible cause of excessive underpricing in Malaysia. They used 161 new issues partitioned into three subsamples based on the regulation period from 1968 to 1975 (before the first regulation was implemented in 1976), 1975 to 1995 (after the first regulation but before the second regulation) and 1996 to 1997 (after the second regulation). Thirty-eight new issues were employed before

TABLE 1
KLSE Industrial Classification of Sample Companies

| Industry | Main Board | Second Board |
|---|---|---|
| Consumer Product | 3 | 6 |
| Industrial Product | 11 | 14 |
| Properties | 6 | - |
| Finance | 4 | - |
| Trading and Services | 2 | 10 |
| Hotel | 1 | - |
| Construction | 2 | 7 |
| Plantation | 1 | 1 |
| Technology | | 2 |
| Total | 30 | 40 |

the implementation of the 1976 new public policy on share ownership distribution. Based on this policy, the indigenous population (known as *bumiputra*) will be offered at least 30 percent of the IPOs either on an individual basis or through the ownership of mutual funds or companies. The second subsample used 73 new issues which were traded before the second regulation (offer price is fixed at a simple average price multiple over recent historical period). The third subsample used 50 new issues traded after the second regulation where the offer price is based on free pricing according to market conditions. Their test showed that the regulatory effect could only moderately explain excessive underpricing. It appears that underpricing in Malaysia still needs further examination. It is hoped that the current study can provide more information about excessive underpricing in this country.

## 3. RESEARCH DESIGN

There were 539 IPOs offered and listed on the Kuala Lumpur Stock Exchange between 1979 and May 1998 (Dawson, 1999). However, this study used only 70 companies listed from the year 1991 to 1998.[1] Specifically, the companies are selected based on the availability of the IPO's prospectus. The reason for this is that most of the dated are obtained from the information provided in the prospectus. The distribution of the sample throughout the period of study is unevenly distributed. Approximately 24 IPOs are taken from 1991 and 17 IPOs in 1992.

This is followed with 9, 10, 1, 4, 2 and 3 IPOs in each of the respective years 1993, 1994, 1995, 1996, 1997 and 1998. Out of 70 IPOs, 30 of them are listed on the Main Board while the remaining IPOs are listed on the Second Board of the Kuala Lumpur Stock Exchange. Table 1 summarizes the industrial classifications of the sample selected.

The model we use to investigate the factors influencing the underpricing of initial public offerings is based on the models of Hameed and Lim (1998) and How and Low (1993). A multivariate analysis between underpricing and six determining variables is performed by estimating a linear regression of as follows:

$$UNDERPRICING_i = \alpha + \beta_1 SIZE_i + \beta_2 OWNERSHIP_i + \beta_3 NATIVE_i + \beta_4 UNDERWRITER_i + \beta_5 VALUELOST_i + \beta_6 AGE_i + U_i$$

where

| | | |
|---|---|---|
| *UNDERPRICING* | = | (Closing price – Subscription price)/ Subscription price |
| *SIZE* | = | (Number of shares listed) x (Closing price) |
| *OWNERSHIP* | = | The ratio of number of shares held by the substantial shareholders after the new issue to total number of shares outstanding after the IPO. |
| *NATIVE* | = | The ratio of number of shares allocated to the indigenous population (*Bumiputra* investors and directors) to number of shares outstanding after listing. |
| *UNDERWRITER* | = | A dummy variable having a value of ‘1’ if the underwriter is either Arab-Malaysian Merchant Bank, United Merchant Group, RHB Sakura Merchant Bankers, Aseambankers Malaysia or Commerce International Merchant Bankers, and ‘0’ otherwise |
| *VALUELOST* | = | [(Closing price on listing day – Subscription price) x (Offer for sale)] / (Number of shares listed x closing price). |
| *AGE* | = | A company’s number of years of existence. |

Underpricing of new issues is measured by calculating the percentage change of the subscription price to the closing market price on the first day of trading. This measure has been used in a number of studies: Dawson (1999), Hameed and Lim (1998), How and Low (1993) and Yong (1996). As for the independent variable SIZE, it is expected to have a positive relationship with the dependent variable *UNDERPRICING* based on the rationale that only good quality companies are able to bear the signalling costs associated with underpricing. This is based on the studies done by Howard Low (1993), as discussed earlier, and Yong (1996). By using 158 IPOs in Malaysia over a study period from January 1990 to December 1993, Yong's (1996) expectation of a relationship between a company's size and underpricing was found to be statistically insignificant. He was not able identify any particular pattern in the relationship except when underpricing is calculated for a longer period of six months and one year. However, he observed a decreasing adjusted underpricing with a larger size company. The size of a company was measured by its paid-up capital.

*OWNERSHIP* is expected to have a positive relationship with *UNDERPRICING*. A high fractional stock ownership implies that the entrepreneurs invested most of their wealth in the new issues, which means they have a less diversified portfolio (Leland and Pyle, 1977). These entrepreneurs will only accept high risks if they are certain of the company's prospects. Investors used the fractional ownership as a signal of the superior quality of the company's prospects. An empirical result which supports this argument is reported by Hameed and Lim (1998), by using IPOs listed on the Main Board of the Stock Exchange of Singapore and the Stock Exchange of Singapore Dealing and Automated Quotation Market (SESDAQ). A positive relationship between ownership and underpricing existed when they combined IPOs in the fixed (a single issue price pre-determined by the issuer and underwriter) and tender tranches (issue price is determined through tender system). This result cannot be supported when it is only applied to the IPOs in the fixed tranche.

The third variable, *NATIVE*, has never been tested before.[2] It is an institutional characteristic unique to an emerging capital market such as Malaysia. According to Ariff and Shamsher (1999), regulatory interventions have moderately explained underpricing in Malaysia. They have not examined specifically the indigenous population's ownership. Hence, we hope that by including this variable, it will assist in understanding the underpricing of Malaysian new issues. A percentage of the indigenous population's (known as *Bumiputra*) ownership is computed as the ratio of the number of ordinary shares allocated for *Bumiputra* investors and directors to total outstanding shares after listing. If the explanation of Ariff and Shamsher holds true with respect to regulatory interventions, it is expected that *NATIVE* will be positively related to *UNDERPRICING*.

As for *UNDERWRITER*, an inverse relationship with *UNDERPRICING* is expected where highly reputable underwriters are associated with favourable information about a company to be listed. According to Firth and Liau-Tan (1998), large underwriters are concerned about their reputation. Hence, they would normally go for successful new issues. A dummy variable is used to represent *UNDERWRITER*. If the size of the underwriter is above the average total assets of RM2,948,716,000 (US$775,977,895)[3] among the nine participating underwriters which are included in this study, it will take a value of '1'. The underwriters in this category are: Arab-Malaysian Merchant Bank, United Merchant Group, RHB Sakura Merchant Bankers, Aseambankers Malaysia and Commerce International Merchant Bankers.

The fifth variable *VALUELOST* takes into account the substantial shareholders' losses once they offer 'for sale' part of their shares. The variable is expected to have a positive effect in which higher underpricing would mean higher losses among the owners. Such a situation might be acceptable for the owners probably due to their needs to comply with the New Development Policy with respect to *Bumiputra* equity participation and to have access to the capital market. Finally, the last variable is the company's years of existence which can be associated with risk factor (Clarkson and Simunic, 1994; Feltham, Hughes and Simunic, 1991; Firth and Liau-Tan, 1998; Simunic and Stein, 1987). If a company has been in existence for a long time, it may be more stable and better known to market participants. Hence, it is expected that the longer the years of existence, the lower the risk and thus the lower the underpricing of new issues.

TABLE 2
Descriptive statistics

| | UNDERPRICING | SIZE | OWNERSHIP | NATIVE | UNDERWRITER | VALUELOST | AGE |
|---|---|---|---|---|---|---|---|
| Mean | 0.784429 | 2.29E+08 | 0.558857 | 0.528772 | 0.54386 | 0.092286 | 22.7 |
| Median | 0.555 | 92505000 | 0.69 | 0.54 | 1 | 0.08 | 24.5 |
| Maximum | 3.87 | 1.75E+09 | 0.85 | 0.83 | 1 | 0.25 | 52 |
| Minimum | 0.02 | 2887750 | 0 | 0.3 | 0 | 0.01 | 3 |
| Std. Dev. | 0.755555 | 3.22E+08 | 0.28689 | 0.195622 | 0.5025 | 0.06279 | 10.4401 |
| Skewness | 1.862642 | 2.81041 | -1.191184 | 0.100325 | -0.174566 | 0.94057 | 0.286175 |
| Kurtosis | 6.827661 | 11.35183 | 2.877997 | 1.476455 | 1.012929 | 3.152761 | 2.863927 |
| Jarque-Bera | 83.20882 | 295.5943 | 16.59748 | 5.608441 | 9.667064 | 10.38923 | 1.009456 |
| Probability | 0 | 0 | 0.000249 | 0.060554 | 0.007958 | 0.005546 | 0.60367 |

## 4. ANALYSIS OF RESULTS

A summary of the descriptive statistics of the data is provided in Table 2. On average, underpricing among the sample data during the period 1991 to 1998 is approximately 78.44 percent with a maximum and minimum value of 387 percent and 2 percent, respectively. The average company size, as measured by SIZE is RM229,000,000 (US$60,263,157.89), and on the average, these companies have been in the market for about 23 years. Nonetheless, we could also observe that there are companies which went for listing right after their third year having met the Malaysia Securities Commission requirement of average after tax profit for three consecutive years. With respect to the indigenous population ownership, as measured by *NATIVE*, the mean is 52.88 percent and the minimum value is 30 percent complying with the New Development Policy. There is also evidence that the owners of companies that went for listing made an average loss of 9.23 percent, and up to a maximum loss of 25 percent.

Table 3 reports the correlation matrix of the determining variables. The pairwise correlations among the predictors are uniformly low in the range of 0.01 to 0.30 except for *NATIVE* and *VALUELOST*. The degree of collinearity for the two variables is 0.64. When a subsidiary auxiliary regression[4] is executed for *NATIVE* against the rest of the determining variables and *VALUELOST* against the rest of the explanators, their degrees of collinearity, as measured by the coefficient of determinations ($R^2$), are 46.52 percent (F-statistic = 8.87) and 42.05 percent (F-statistic = 7.40), respectively. The result supports the existence of the collinearity problem for both variables. These variables can simply be dropped from the regression, "but this remedy can be worse than the disease (multicollinearity)" (Gujarati, 1992, p.307). This is because the formulation of the regression model is based on the unique characteristic of the market which is very much affected by government policy.

Table 4 provides the results of the multivariate regression analysis of *UNDERPRICING* against the determining variables. It shows that these variables significantly explain 72.73 percent of the variation in *UNDERPRICING* with an F-value of 22.2280, implying collectively that the determining variables have a significant impact on *UNDERPRICING*. When each determining variable is examined

TABLE 3
Correlation Coefficients of Determining Variables

| | SIZE | OWNERSHIP | NATIVE | UNDERWRITER | VALUELOST | AGE |
|---|---|---|---|---|---|---|
| SIZE | 1 | -0.180132 | -0.113799 | -0.05243 | 0.030701 | 0.034973 |
| OWNERSHIP | -0.180132 | 1 | -0.302611 | 0.078017 | -0.22821 | 0.11886 |
| NATIVE | -0.113799 | -0.302611 | 1 | -0.105713 | 0.639348 | -0.026044 |
| UNDERWRITER | -0.05243 | 0.078017 | -0.105713 | 1 | -0.071715 | -0.147345 |
| VALUELOST | 0.030701 | -0.22821 | 0.639348 | -0.071715 | 1 | 0.011455 |
| AGE | 0.034973 | 0.11886 | -0.026044 | -0.147345 | 0.011455 | 1 |

TABLE 4
Regression Analysis of UNDERPRICING and Determining Variables

| Variable | Coefficient | t-Statistic |
|---|---|---|
| Intercept | 1.337834 | 2.664044 |
| SIZE | 1.17E-09** | 5.549256 |
| OWNERSHIP | -0.959662* | -1.667867 |
| NATIVE | -2.283537** | -5.553012 |
| UNDERWRITER | -0.089302 | -0.747233 |
| VALUELOST | 11.63269** | 8.570629 |
| AGE | 0.004549 | 0.766268 |
| R-squared | 0.727325 | |
| Adjusted R-squared | 0.694604 | |
| F-statistic | 22.228030 | |

*Significant at $\alpha$=0.10 level; **Significant at $\alpha$=0.01 level

individually while holding the remaining predictors constant, it showed that *SIZE*, *NATIVE* and *VALUELOST* are statistically significant at the 1 percent level while *OWNERSHIP* is found to be significant at the 10 percent level to explain the variation in *UNDERPRICING*.

The findings on the relationship between *SIZE* and *UNDERPRICING* corroborate the evidence shown in the work of Allen and Faulhaber (1989), Grinblatt and Hwang (1989), How and Low (1993) and Welch (1989). It is in contrast to the work of Beatty and Ritter (1986) and Hameed and Lim (1998) where larger companies are found to be associated with a lower underpricing. A high t-statistic of 5.5493 (significant at the 1 percent level) implies that larger Malaysian companies may be able to give more discount because of their superior future prospects. If the market is efficient, the share price will probably increase to its true value, reflecting the company's future prospects. In such a case, underpricing becomes a credible signal of a company's quality.

*NATIVE* and the unique regulatory intervention by the government are found to be inversely related to *UNDERPRICING*. This contradicts the explanation provided by Ariff and Shamsher (1999) according to which regulatory intervention is expected to produce excessive underpricing. Our findings showed that the regulatory intervention reduces underpricing of Malaysian IPOs.

The relationship between *VALUELOST* and *UNDERPRICING* is as expected. The higher the underpricing of the IPOs, the greater is the value lost by substantial shareholders. Two possible explanations are (a) that the substantial shareholders or owners are willing to sacrifice their capital gains out of share price appreciation in order to have access to the capital market for future growth, and (b) that this sacrifice is probably needed to ensure the companies comply to the government's New Development Policy of getting the *Bumiputra* population to participate in the equity market.

Both *NATIVE* and *VALUELOST* work closely together to reinforce the regulatory intervention by the government. This might have caused a relatively high correlation of 63.93 percent (refer to Table 3) between the two variables. When one of the variables is taken out from the regression equation, the overall significance of the results is affected.

Tables 5 and 6 present the multivariate regression analysis excluding *VALUELOST* and *NATIVE*, respectively. When *VALUELOST* is excluded, the remaining variables (*SIZE*, *OWNERSHIP*, *NATIVE*, *UNDERWRITER*, *AGE*) could only explain 32.67 percent of the variation in *UNDERPRICING*. The exclusion of *VALUELOST* resulted in only one significant variable (*SIZE*) to explain *UNDERPRICING*, when each predictor is examined individually. *NATIVE* has become an insignificant predictor.

Table 6 reports on the multivariate regression analysis when *NATIVE* is excluded out from the model. The $R^2$ increases to 55.92 percent when *SIZE*, *OWNERSHIP*, *UNDERWRITER*, *VALUELOST* and *AGE* are regressed against the dependent variable *UNDERPRICING*. Individually, an exclusion of *NATIVE* resulted in two significant variables (*SIZE* and *VALUELOST*) to explain the dependent variable.

When both *NATIVE* and *VALUELOST* are dropped from the multivariate regression analysis, as shown in Table 7, the coefficient of determination reduces to 32.63 percent which is almost similar to the result reported in Table 5. Overall, the estimated regression is significant at the 1 percent level with an F-statistic of 6.2957. In this regression, *SIZE* is the only significant predictor to explain the variation in *UNDERPRICING*.

TABLE 5
Regression Analysis of UNDERPRICING and Determining Variables Excluding VALUELOST

| Variable | Coefficient | t-Statistic |
|---|---|---|
| C | 1.280871 | 1.639503 |
| SIZE | 1.40E-09** | 4.29651 |
| OWNERSHIP | -1.068808 | -1.194205 |
| NATIVE | -0.093614 | -0.186739 |
| UNDERWRITER | -0.079436 | -0.427228 |
| AGE | 0.006384 | 0.69169 |
| | | |
| R-squared | 0.326733 | |
| Adjusted R-squared | 0.260727 | |
| F-statistic | 4.950018 | |

**Significant at $\alpha$=0.01 level

TABLE 6
Regression Analysis of UNDERPRICING and Determining Variables Excluding NATIVE

| Variable | Coefficient | t-Statistic |
|---|---|---|
| C | -0.037396 | -0.067992 |
| SIZE | -1.43E-09** | 5.520844 |
| OWNERSHIP | -0.193777 | -0.275536 |
| UNDERWRITER | -0.037030 | -0.246879 |
| VALUELOST | 6.949600** | 5.190603 |
| AGE | 0.005120 | 0.685241 |
| R-squared | 0.559161 | |
| Adjusted R-squared | 0.515941 | |
| F-statistic | 12.93767 | |

**Significant at $\alpha$=0.01 level

Referring back to Table 4 which includes the variables *NATIVE* and *VALUELOST*, the result shows that *OWNERSHIP* is negatively related to with *UNDERPRICING*, at the 10 percent level. Surprisingly, our evidence contradicts those of Leland and Pyle's (1977) and Hameed and Lim's (1998). Their results showed that fractional ownership is significantly and positively related to underpricing where higher

TABLE 7
Regression Analysis of UNDERPRICING and Determining Variables Excluding NATIVE and VALUELOST

| Variable | Coefficient | t-Statistic |
|---|---|---|
| C | 1.19057 | 1.958516 |
| SIZE | 1.41E-09** | 4.447376 |
| OWNERSHIP | -1.014731 | -1.209517 |
| UNDERWRITER | -0.07621 | -0.415536 |
| AGE | 0.006373 | 0.696993 |
| R-squared | 0.326273 | |
| Adjusted R-squared | 0.274448 | |
| F-statistic | 6.295652 | |

**Significant at $\alpha$=0.01 level

ownership signals a better quality company. Companies underpriced their shares to signal quality. An explanation for the contrasting results is that such signalling may not be applicable in this market since there is a regulatory requirement which mandates issuers to dispose of their ownership one year after listing in the 15 to 20 percent range per annum.[5]

As for the remaining variables (*UNDERWRITER* and *AGE*), their low t-statistics of –0.7472 for the former and 0.7662 for the latter show that both these variables are not significant factors in explaining underpricing. The claim made by Titman and Trueman (1986) that the choices of the quality adviser or underwriter provides signals about a company's IPO is not supported. Although our finding has the expected negative relationship where highly reputable underwriters are associated with lower underpricing and high quality IPOs, this relationship is not statistically significant. This result is consistent with Firth and Liau-Tan (1998) but contrast to Holland and Horton (1993).

With respect to *AGE*, it appears that for a Malaysian company, longer years of existence do not necessarily mean that it has lower risk or lower underpricing as also reported by Clarkson and Simunic (1994), Feltham, Hughes and Simunic (1991), Firth and Liau-Tan (1998) and Simunic and Stein (1987). This variable plays an insignificant role in explaining *UNDERPRICING* based on the result shown in Table 4.

TABLE 8
Stepwise Regression Analysis of UNDERPRICING and Determining Variables

| Variable | Coefficient | t-Statistic |
|---|---|---|
| C | 0.607 | 3.358 |
| SIZE | 1.262E-09** | 6.111 |
| VALUELOST | 11.702** | 8.554 |
| NATIVE | -2.098** | -5.236 |
| | | |
| R-squared | 0.706 | |
| Adjusted R-squared | 0.689 | |
| F-statistic | 42.401 | |

**Significant at $\alpha$=0.01 level

So far, our result shows that *SIZE*, *NATIVE* and *VALUELOST* are significant at the 1 percent level and *OWNERSHIP* at the 10 percent level to explain the changes in *UNDERPRICING*. We have also analysed the output when relatively highly collinear predictors (*NATIVE* and *VALUELOST*) are dropped from the regression equation. Nonetheless, this might not provide a robust analysis. Hence, to ensure the most reasonable set of explanatory variables is identified, a stepwise regression is executed. The result is reported in Table 8. The finding is consistent with the result reported in Table 4 on the multivariate regression analysis. The same set of determining variables (*SIZE*, *VALUELOST*, *NATIVE*) is identified to be significant at the 1 percent level to explain the variation in *UNDERPRICING*. The coefficient of determination produced by the stepwise regression is 70.60 percent as compared to 72.73 percent on the multivariate regression.

Overall, the results show that intervention by the government to increase Bumiputra equity participation through the New Development Policy has reduced underpricing. This would imply that such a policy should be continued in the hope that it could assist in improving the efficiency of the equity market.

## 5. CONCLUSION

By using 70 companies from nine industries listed on the Main Board and Second Board of the KLSE in the years 1991 to 1998, six determining variables were regressed against the underpricing of IPOs. Company size (*SIZE*), indigenous population ownership (*NATIVE*), substantial shareholders' losses once they offer for sale part of their shares (*VALUELOST*), and the number of shares held by substantial shareholders after the new issues (*OWNERSHIP*) are found to have a significant effect in explaining the variation of the underpricing of IPOs in an emerging market such as Malaysia. These variables explain 72.73 percent of the variation in *UNDERPRICING* with an F-statistic of 22.23. When a stepwise regression is conducted, three variables are identified to have significant influence on the variation of *UNDERPRICING* with an $R^2$ of 70.60 percent. *OWNERSHIP* is no longer found to have a significant factor.

Our result shows that larger Malaysian companies might be able to provide higher discount on their share prices because of their superior future prospects. If the KLSE is efficient, the share price might increase to reflect a company's true value. In this case, underpricing becomes a credible signal of a company's quality. It also appears that regulatory intervention of the Malaysian government plays a significant role in explaining the variation in the underpricing of IPOs. An increase in ownership by the indigenous population (*Bumiputra*) reduces the IPOs underpricing. Hence, the argument provided by Ariff and Shamsher (1999) that regulatory intervention is expected to produce excessive underpricing could not be supported. Our result on regulatory intervention is further strengthened when *VALUELOST* is found to be statistically significant. Surprisingly, our result fails to support the Leland and Pyle (1977) signaling model on entrepreneur's fractional ownership.

## ENDNOTES

1. There were 78 companies selected, but 8 companies had to be dropped from the list because they appeared to be overpriced. Among the 8 companies, two were taken out from 1991 and 1998, whereas the other six were from the year 1997, that is, during the economic downturn. Overpricing ranges between 18.33 percent to 47.62 percent for these six companies.

2. This is to the authors' knowledge. We would appreciate it very much if readers can inform us of any studies done which examine this factor.

3. The average total assets excludes the total assets by Arab-Malaysian Merchant Bank Bhd which showed a considerably large figure of RM13,733,216,000 (US$3,614,004,211) as of 31 March 1999. If this number is included, the average total assets for the underwriters is almost doubled to RM4,027,166,500 (US$1,059,780,658). The exchange rate used is US$1.00 equivalent to RM3.80.

4. Gujarati (1992) recommended the use of this method to identify which regressor is highly collinear with other independent variables.

5. Some companies are not restricted in their selling where no moratorium requirement is imposed.

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