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DETERMINANTS OF THE LONG-TERM PERFORMANCE OF MALAYSIAN INITIAL PUBLIC OFFERINGS

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ABSTRACT

This study examined the determinants of the long-term performance of 351 initial public offerings (IPOs) launched in Malaysia over the 2002–2010 period. This paper used a panel regression analysis framework based on the ordinary least squares (OLS) technique to examine the potential determinants of IPOs' long-term performance. The findings revealed that the volatility of aftermarket returns, the dummy ACE market and concentration ownership significantly influence the long-term performance of Malaysian IPOs. This paper offers important implications specifically for investors as the findings can help them understand more about public companies' long-term performance and how to better predict their performance.

Keywords: Initial public offerings, determinants of long-term performance, Malaysia.

JEL Classification: G12, L11, M29.

INTRODUCTION

The long-term underperformance of initial public offerings (IPOs) is an anomaly that has been documented in previous literature. Financial researchers are questioning this anomaly issue because of the conflicting results found in various countries. Ritter (1991) documented that the United States (US) IPOs significantly underperformed in relation to matching companies three years after going public. Similar results were also reported by Levis (1993) in the United Kingdom (UK), Ljungqvist (1997) in Germany, Álvarez and González (2005) in Spain, Cai et al. (2008) in China and Jewartowski and Lizińska (2012) in Poland. Thomadakis et al. (2012) examined the long-term performance of 254 Greek IPOs listed between 1994 and 2002. The study documented that the Greek IPOs outperformed the market in one and two years and underperformed the market in three years after listing.

Several researchers have observed only marginal underperformance in the long term for IPOs, leading them to refrain from rejecting the market efficiency hypothesis (Ibbotson, 1975; Gompers & Lerner, 2003). In contrast, specific studies focusing on the Asian market indicate the long-term outperformance of IPOs. For instance, Chi et al. (2010) identified significantly positive abnormal returns for A-share IPOs listed in the Chinese market over three years. Their findings remained robust across various measures of IPO performance, including cumulative abnormal returns (CARs), buy-and-hold abnormal returns (BHARs) and the Fama-French three-factor model. Da Silva Rosa et al. (2003) reported that Australian IPOs exhibited outperformance, reaching approximately 13.12 percent over two years.

In the Malaysian context, the long-term performance of IPOs has received comparatively less scrutiny than that of other developed markets, such as the United States. Previous studies concerning the Malaysian market have predominantly concentrated on the extended performance of IPOs listed on the Main Market. An instance of this is seen in the work of Paudyal et al. (1998), who assessed the performance of IPOs listed on the Main from 1984 to 1995. Moreover, prior research on the Malaysian market largely focused on the long-term performance of IPOs listed on the Main Market. For example, Paudyal et al. (1998) examined the performance of IPOs listed on the Main Board from 1984 to 1995. They reported that the

three-year CARs were positive at 8.96 percent. Through the selection of 182 Main Board IPOs listed between 1980 and 1995, Jelic et al. (2001) reported significantly higher positive returns of IPOs than those recorded by Paudyal et al. (1998) using the BHARs measure. The three-year returns were significantly positive at 21.98 percent. Significantly positive returns were also reported by How et al. (2007) of the Second Board IPOs (28.23%).

This study argues that examining the issue of IPOs in Malaysia is necessary because the structure of Malaysian IPOs differs from that of other markets in at least three aspects. First, all domestic firms that seek listing on Bursa Malaysia must allocate at least 30 percent of their shares to the local indigenous investors known as the 'Bumiputera'. The purpose of this policy is to comply with the requirement of the National Development Policy (NDP), which is to increase Bumiputera ownership in the corporate sector (Securities Commission Malaysia, 2001). Second, the majority of the Malaysian IPOs are sold using the fixed-pricing mechanism. Although most countries are now using the book-building pricing mechanism,1 the fixed-pricing mechanism is more dominant in determining the IPO offer price in Malaysia.2 Moreover, the pricing process of IPOs is regulated by the Securities Commission Malaysia (SC) rather than being driven by the market (Corhay, 2002). The issuing companies need to apply for approval from the SC for their proposed offer price. Finally, most Malaysian IPOs have ownership structure concentrated to large shareholders that may provide varying effects on the firm value (Tam & Tan, 2007).

Considering the dual listing of IPOs on both the Main Board and the Second Board, Corhay (2002) revealed that Malaysian IPOs exhibited a significant outperformance of 41.7 percent against the market. Notably, there is only one existing study on the performance of the ACE Market (formerly known as the MESDAQ Market). Ahmad-Zaluki and Kect (2012) delved into the performance of IPOs listed on the MESDAQ Market from 2002 to 2005, discovering that MESDAQ IPOs underperformed the Kuala Lumpur Composite Index (KLCI) over a three-year period (with CARs = -41.74 percent and BHARs = -68.88%). Due to the inconclusive findings reported in previous Malaysian research, particularly between the Main Market and the ACE market, this study is motivated to investigate the determinants of the long-term performance of IPOs listed in both the Main and ACE Markets.

LITERATURE REVIEW

Table 1 shows the long-term performance of IPOs in various countries. The performance of IPOs in the longer horizon is mixed, not only among different market categories (emerging market or developed market) but also among countries under the same market category and even in the same country. For example, Cai et al. (2008) found that the IPOs listed between 1997 and 2001 in China significantly underperformed by -30 percent relative to the Shanghai Stock Exchange A-Share Index. In contrast, Chi et al. (2010) documented that China's IPOs listed during 1996–2002 significantly outperformed the market three years after listing.

Brav et al. (2000) observed that underperformance diminished when employing a firm-matching benchmark in the United States. Their findings indicated that the prolonged underperformance of US IPOs was not universally prevalent. Instead, it was predominantly concentrated among smaller issuing firms with a low book-to-market ratio. Additionally, they noted that using BHARs as a measure tended to accentuate the underperformance of IPOs. In a comprehensive review of literature related to IPOs, Ritter and Welch (2002) suggested that the extended performance of IPOs was highly sensitive to the choice of econometric methodology and the selected sample period. They found that when using publicly listed firms with comparable market capitalisation and book-to-market value as a benchmark, equally weighted returns of IPOs demonstrated underperformance against the market index in the extended event period. Omran (2005) presented mixed results regarding the performance of Egyptian IPOs over the long term. He discovered that IPOs underperformed the market index during the three- and five-year holding periods.

In Malaysia, most studies have found that Malaysian IPOs outperformed the market in the long-term period. Nevertheless, the extent of outperformance varies depending on the sample period (Shari, 2022). Paudyal et al. (1998) examined the long-term performance of 95 privatised IPOs listed on the Main Board between 1984 and 1995 and found that IPOs outperformed the market in three years after listing at 8.9 percent. However, the three years of outperformance level reported by Paudyal et al. (1998) was significantly lower than that reported by Jelic et al. (2001) (21.9%), using 182 IPOs listed on the Main Board during the 1980–1995 period. By combining the

Main Board and the Second Board IPOs, Corhay (2002) and Ahmad-Zaluki et al. (2007) discovered that the Malaysian IPOs significantly outperformed relative to the KLCI Index over three years with CARs of 41.7 percent and 32.6 percent, respectively. Ahmad-Zaluki et al. (2007) extended their analysis by using matching companies as an alternative to the KLCI Index and found that the Malaysian IPOs outperformed in the three years, but only at 0.43 percent. In contrast, Ahmad-Zaluki and Kect (2012) reported that the MESDAQ market significantly underperformed at -41.7 percent over the three years from the listing day. They further argued that the negative performance of IPOs was due to more than half of their samples being high-technology companies. In sum, the variations in the long-term performance of IPOs reported in the various countries are sensitive to the time period, the methodology used to measure the long-term performance, the market benchmark and the listing market.

Table 1

Long-Term Performance of IPOs in Various Countries

Country	Period of Study	Sample Size	3-year Returns	Author(s)
Malaysia Market				
Malaysia	1984 – 1995	95	+8.9	Paudyal et al. (1998)
Malaysia	1980 – 1995	182	+24.8	Jelic et al. (2001)
Malaysia	1992 – 1996	258	+41.7	Corhay (2002)
Malaysia	1990 – 2000	454	+32.6	Ahmad-Zaluki et al. (2007)
Malaysia	1989 – 2000	322	+28.2	How et al. (2007)
Malaysia	2002 – 2005	93	-41.7	Ahmad-Zaluki and Kect (2012)
Malaysia	2014 – 2015	17	-10.96	Abu Bakar et al. (2019)
Emerging Market				
Brazil	1980 – 1990	62	-47.0	Aggarwal et al. (1993)
Chile	1982 – 1990	28	-23.7	Aggarwal et al. (1993)
China	1997 – 2001	335	-30.0	Cai et al. (2008)
China	1996 – 2002	897	+16.6	Chi et al. (2010)
China	2001 – 2015	1,046	+0.046	Zhang et al. (2022)
Egypt	1994 – 1998	53	-27.0	Omran (2005)
Indonesia	2010 – 2020	647	+67.74	Arini and Iskandar (2022)
Thailand	1985 – 1992	150	+10.0	Allen et al. (1999)
Turkey	1990 – 2000	244	-84.5	Yilmaz and Bildik (2006)

(continued)

Country	Period of Study	Sample Size	3-year Returns	Author(s)
Turkey	1990 – 1995	163	+44.1	Kiymaz (2000)
Developed Market				
Australia	1991 – 1999	333	+13.1	Da Silva Rosa et al. (2003)
Australia	1994 – 1999	251	-4.6	Dimovski & Brooks (2004)
Australia	1995 – 2000	419	-25.3	Bayley et al. (2006)
Australia	1995 – 2004	68	+12.0	Bird and Yeung (2012)
Austria	1965 – 1993	57	-27.3	Aussenegg (2006)
Canada	1972 – 1993	216	-17.9	Jog & Srivistava (1997)
Finland	1984 – 1989	79	-21.1	Keloharju (1993)
Germany	1970 – 1990	145	-12.1	Ljungqvist (1993)
Japan	1971 – 1990	172	-27.0	Cai & Wei (1997)
Korea	1985 – 1988	99	+2.0	Kim et al. (1993)
Sweden	1980 – 1990	162	+1.2	Loughran et al. (1994)
UK	1980 – 1988	712	-8.1	Levis (1993)
US	1975 – 1984	1526	-27.4	Ritter (1991)
US	1970 – 1990	4753	-26.9	Loughran and Ritter (1995)
US	1988 - 2005	2829	+11.7	Abukari & Vijay (2011)

Source: The data were taken from Loughran et al. (1994), derived from the findings in the literature review and the rest was based on published papers. In this context, a negative sign (-) signifies underperformance in the IPO, while a positive sign (+) indicates outperformance.

DEVELOPMENT OF HYPOTHESES

Previous studies have commonly used firm age to measure the ex-ante uncertainty of IPO firms. Older firms are expected to have lower ex-ante uncertainty because they have a longer operating history, and vice versa. Due to the limited information available, young firms are commonly mispriced by investors. Investors who are overoptimistic about the prospect of young or newly listed companies often overvalue them beyond the fair value and create higher initial under-pricing at the initial offer. Nevertheless, these optimistic investors will adjust their overvaluation when more information about the companies becomes available to the public, resulting in lower performance in the long-term period. Using firm size as a proxy for both ex-ante uncertainty and investor optimism, Ritter (1991) evinced that younger firms have poor long-term performance compared to older firms. He interpreted the poor long-term performance of young firms as evidence, supporting

the investors' over optimism and hypotheses. Similar findings were also reported by Krishnan et al. (2011) and Belghitar and Dixon (2012); however, the positive relationship between firm age and its long-term performance is not statistically significant at any level. Dong et al. (2011) found a significantly positive relationship between firm age and the long-term adjusted returns of the IPOs. Therefore, this study hypothesises that:

H_1: There is a significant relationship between firm age and the long term performance of IPOs.

Goergen et al. (2006) argued that large firms are more visible than small firms and they benefit from a higher degree of recognition from investors. Consequently, larger firms have lower ex-ante uncertainty than smaller firms. Thomadakis et al. (2012) predicted that a firm with low uncertainty had better long-term returns. Using ownership retention as a proxy for uncertainty, they found support for their hypothesis that firms with lower uncertainty had better performance in the long-term. Belghitar and Dixon (2012) also documented a positive association between firm size (measured by the natural log of market capitalisation) and the long-term returns of the IPOs. Therefore, the second hypothesis is formulated as below:

H_2: There is a significant relationship between firm size and the long-term performance of IPOs.

Issue size is also used to measure the ex-ante uncertainty of firms. A higher issue size represents lower ex-ante uncertainty, resulting in better long-term performance. Nevertheless, previous studies have found mixed results on the relationship between issue size and the long-term performance of IPOs. Some studies have reported a positive relationship between issue size and long-term performance. For example, Keloharju (1993) split the long-term performance of IPOs in Finland by issue size and discovered that negative abnormal returns were concentrated in small issue companies. Similar findings were reported by Ritter (1991), How (2000), Belghitar and Dixon (2012) and Minardi et al. (2013). In contrast, some other studies have documented an inverse relationship with long-term performance, showing that higher offers made by the companies would result in long-term underperformance. This is explained by Lee et al. (1996), Allen et al. (1999), Cai et al. (2008), Chorruk and Worthington (2010), Chi et al. (2010), Thomadakis et al. (2012) and Gao et al. (2015). Based on the above discussion, this study hypothesises that:

H_3: There is a significant relationship between issue size and the long-term performance of IPOs.

Most empirical studies on IPOs revealed that aftermarket returns volatility is negatively related to the long-term performance of IPOs. For example, Sahoo and Rajib (2010) used aftermarket returns volatility to measure ex-ante uncertainty for post-IPO performance. They predicted that higher ex-ante uncertainty (high returns volatility) negatively influenced the long-term performance of IPOs. They found evidence that supported their prediction that IPOs were surrounded by higher risks at the time of issue and underperformed in the long run (one-year BHARs). Gao et al. (2006) confirmed this negative relationship. Accordingly, the fourth hypothesis is as below:

H_4: There is a significant relationship between early aftermarket volatility and the long-term performance of IPOs.

A higher leverage ratio is translated into higher risk. Gao et al. (2015) identified the determinants of the long-term performance of IPOs in China. They revealed that post-leverage had a significantly negative influence on the long-term performance of these IPOs. Fan et al. (2007) measured leverage as total debt over sales and found that the firms' leverage was positively influenced by the one-year and two-year CARs and negatively influenced by the three-year CARs in the China market. Nevertheless, none of the coefficients were significant. Ong et al. (2020) investigated the relationship between leverage and IPO offer price in Malaysia. The finding revealed that leverage was negatively related to offer prices, indicating that higher leverages often posed high financial risks. Given the results of the effect of the leverage ratio on the long-term performance of IPOs, this study hypothesises that:

H_5: There is a significant relationship between firm leverage and the long-term performance of IPOs.

The relationship between oversubscription and long-term performance is expected to be negative. According to Omran (2005), the positive sentiment of investors observed during the initial offers was expected to diminish over time when they realised that they had been overoptimistic by subscribing heavily during the initial offer. Agarwal et al. (2008) examined the pre-offering demand (proxied by the oversubscription ratio) and the long-term performance of Hong Kong

IPOs listed from 1993 to 1997. They reported that firms with higher oversubscription during the initial returns underperformed in the long run compared to firms with lower oversubscription. Therefore, the next hypothesis is formulated as follows:

H_6: There is a significant relationship between oversubscription and the long-term performance of IPOs.

Previous studies have documented a negative relationship between initial returns and the long-term performance of IPOs (see for example, Dimovski and Brooks, 2004; Omran, 2005; Ahmad-Zaluki et al., 2007; Cai et al., 2008; Kutsuna et al., 2009; Chi et al., 2010). Levis (1993) and Paudyal et al. (1998) argued that initial excess returns resulted from investors' over optimism about new issue shares. Consequently, such issues are expected to underperform the market in the long term. They further argued that the long-term performance of IPOs should not be significantly different from the market if the IPOs wish to attain their equilibrium at the initial returns. Therefore, a negative relationship is expected between initial returns and long-term performance of IPOs. In contrast, some other studies have documented a positive relationship between initial returns and long-term performance of IPOs. Belghitar and Dixon (2012) found that initial returns positively influenced the performance of IPOs in the long term. They suggested that high-quality firms should intentionally under-price their shares at the initial offerings and believed that they could issue further shares in the subsequent offering at market value. Similar findings have also been reported by Lee et al. (1996), Álvarez and González (2005) and Krishnan et al. (2011). Therefore, the seventh hypothesis is:

H_7: There is a significant relationship between initial returns on the first day of trading and the long-term performance of IPOs.

Profitability is commonly used as a signal of a firm's quality. Highly profitable firms are reflective of higher quality. Su (2004) used firm profitability as a signal of higher prospects and found a negative relationship between firm profitability and initial returns of IPOs. Following Su (2004), this study also employed firm profitability to show the firms' quality and predicts a positive relationship between profitability and the long-term performance of IPOs as hypothesised in H8 below:

H_8: There is a significant relationship between profitability and the long-term performance of IPOs.

Carter et al. (1998) argued that a high-quality firm will likely choose an underwriter with a high reputation to underwrite its IPO because a high-reputation underwriter has screening and certification power over the firm that can reduce the uncertainty about its value. Therefore, they predicted that IPOs underwritten by highly reputable underwriters had lower initial under-pricing and higher long-term returns. Using 501 US IPOs, they found support for their prediction that IPOs underwritten by more reputable underwriters performed well long term compared to IPOs underwritten by low-ranking underwriters. Furthermore, Chemmanur and Fulghieri (1994) debated that an underwriter would gain a good reputation by managing IPOs that performed better in the long term. Based on the discussion above, it is hypothesised that:

H_9: There is a significant relationship between an underwriter's characteristics and the long-term performance of IPOs.

Thomadakis et al. (2012) contended that IPO firms that could attain listing on the Main Market were considered higher quality. The listing requirements for the Main Market are more stringent than those for any other market. Therefore, they expected that the Main Market IPOs would have better performance in the long run. They found support for their prediction that the Main Market was positively correlated with long-term returns. This finding is consistent with Ljungqvist et al. (2003) regarding the US market. In a Malaysian study, Ahmad-Zaluki et al. (2007) found that the Main Market IPOs underperformed the matching companies slightly, while the Second Board IPOs outperformed the matching companies. They discovered that large firms (proxied by the Main Market) had lower performance than small firms (proxied by the Second Board) in the long run. Since the ACE Market is an alternative market for all firms, this study expects that firms not eligible to be listed on the Main Market will be listed in the ACE Market. The next hypothesis is:

H_{10}: There is a significant relationship between the ACE Market and the long-term performance of IPOs.

According to Johnson et al. (2000), Morck et al. (2000) and Claessens et al. (2002), a concentration ownership environment allows entrenched controlling owners to extract private control benefits at the expense of minority investors. Some prior studies have claimed that the relationship between ownership structure and firm value is

non-linear or concave. For example, McConnell and Servaes (1990) investigated the relationship between equity ownership structure and firm performance (measured by Tobin's Q) of 1,173 US firms. They found a significant curvilinear relationship between Tobin's Q and the percentage of ownership by insiders. The firms' performance showed an upward trend until the insider ownership reached about 40 percent to 50 percent, resulting in a slight downward turn when the insiders' shareholding was above 50 percent. Shleifer and Vishny (1997) pointed out that concentration ownership could help increase firm value, as predicted in the incentive alignment hypothesis. Nevertheless, the degree of concentration ownership plays a role in making the entrenchment effect more dominant. Therefore, the tenth hypothesis is:

H_{11}: There is a significant relationship between concentration ownership and the long-term performance of IPOs.

DATA AND METHODOLOGY

The dataset utilised in this study encompassed firms that experienced an IPO and were listed on the Malaysian Stock Exchange (Bursa Malaysia) from 2002 to 2010. Information regarding IPO companies within the specified period was obtained from the Bursa Malaysia website at http://www.bursamalaysia.com. Data pertinent to the underwriter, net income, and date of incorporation, total assets, total liabilities, long-term liabilities, paid-up equity and pricing methodology were gathered from diverse sources, including prospectuses, annual reports and the firms' websites. DataStream served as the source for acquiring data pertaining to the daily share prices of the IPO firms, along with the KLCI Index, which acted as a market benchmark spanning up to five years.

This study employed robust standard errors of ordinary least squares (OLS) regression to explain the determinants of an IPO's long-term performance. This study used buy-and-hold abnormal return (BHARs) as a dependent variable. According to Barber and Lyon (1997) and Lyon et al. (1999), the BHAR measurement can capture investors' experience of holding securities for an extended period compared to other methods. The explanatory variables comprised firm age (FIRM_AGE), firm size (FIRM_SIZE), issue size (ISSUE_SIZE), volatility (VOLATILITY), leverage (LEV), oversubscription rate (OVSUB), initial returns (UNDERPRICE), profitability (PROFIT), underwriter's

ranking (UW_RANK), dummy ACE board (D_ACE) and percentage of block holder shareholdings (TOPHOLD) (see Table 2).

Table 2

Description of the Variables and Expected Signs

Variables	Descriptions	Data Type
	Dependent Variables	
BHAR	Adjusted share returns measured using buy-and-hold abnormal returns	percentage
	Independent variables	
FIRM_AGE	The firm's age (in years) is quantified by the natural logarithm of 1 plus the disparity between the firm's incorporation date and its Initial Public Offering (IPO) listing date	Log(1+age)
FIRM_SIZE	The logarithm (base e) of total assets one year before the IPO	Log(RM)
ISSUE_SIZE	The logarithm (base e) of the product of the number of offered shares and the offer price	Log (RM)
VOLATILITY	Daily standard deviation for 14 days after IPO excluding the first trading day	Percentage
LEV	The leverage ratio for the firm in the year preceding the IPO is calculated as the division of total debt by total assets.	Percentage
OVSUB	Defined as how many times each IPO firm is oversubscribed by the investors	Ratio in times
UNDERPRICE	The difference between the closing price and the issue price on the initial day of trading	Percentage
PROFIT	Firm profitability is proxied by ROA, which is calculated as net income after tax divided by total assets one year before the firm goes public	Percentage
UW_RANK	Yearly ranking given by Bursa Malaysia based on the trading value of the equities. A ranking of 9 is considered the highest ranking and 0 is considered the lowest ranking	Number (0-9)

(continued)

Variables	Descriptions	Data Type
D_ACE	A listing board variable is established as a binary indicator. It takes a value of 1 if the IPO firm is listed on the ACE market and 0 otherwise.	Binary
TOPHOLD	The accumulated percentage of significant shareholders holding a minimum of 5 percent of the company's shares	Percentage

Multiple regression analysis was used to measure the linear relationship between the dependent variables and explanatory variables. The basic model is given by:

$$Y = \alpha + \sum_{j=1}^{m} \beta_j X_{ij} + \varepsilon_i \quad (1)$$

RESULTS AND DISCUSSION

Summary Statistics for Long-Term Performance

Table 3 summarises the long-term performance statistics of IPOs, assessed through both buy-and-hold returns (BHRs) and BHARs. These return measures assumed that investors would purchase shares on the sixteenth trading day and hold them for one, two, three, four and five years. The results showed positive mean returns from holding up to five years. This outcome implied that investors still make a profit after holding the share for a long time. Nevertheless, the findings on the long-term performance of individual IPOs were mixed, between negative (under performance) and positive (out performance). Over the five-year holding period, the IPOs reported the lowest performance of -7.18 percent in the second year of trading and the highest returns of 92.71 percent in the fifth year of trading. The mean returns for both raw BHRs and adjusted BHAR increased over time. This outcome was reflected in the reduced number of IPO firms gaining negative returns. The percentage of IPOs that are underperforming in the market index decreased from 37.04 percent in the first year to 21.26 percent in the fifth year of the holding period. Similarly, the median value indicated a positive sign and continued to increase as time increased. The median value varied between 0.66 percent and 4.61 percent for the

BHRs and between 0.55 percent and 3.64 percent for the BHARs. The standard deviation for the returns gradually increased from year to year. The highest standard deviation was 8.90 percent for both BHRs and BHARs in the five years of trading. The lowest standard deviation was 2.30 percent for BHRs and 2.51 percent for BHARs in the first year of trading.

Table 3

Summary Statistics of BHRs and BHARs

Holding Period	Variables	N	Mean (%)	Median (%)	Std dev. (%)	Skewness	Kurtosis	Min. (%)	Max. (%)
1 Year	BHRs	351	0.773	0.663	2.30	1.196	10.587	-6.180	17.174
	BHARs	351	0.605	0.554	2.51	0.893	8.380	-6.576	16.926
2 Years	BHRs	351	1.708	1.368	3.00	1.041	7.248	-6.344	20.104
	BHARs	351	1.252	1.159	3.15	0.880	6.603	-7.184	19.720
3 Years	BHRs	350	3.137	2.419	4.50	2.371	14.669	-5.596	37.151
	BHARs	350	2.427	1.782	4.55	2.222	13.683	-6.393	35.918
4 Years	BHRs	344	4.707	3.405	6.60	4.122	34.119	-5.540	70.030
	BHARs	344	3.789	2.513	6.59	4.057	33.472	-6.535	68.850
5 Years	BHRs	334	6.428	4.608	8.90	4.371	34.632	-4.704	92.712
	BHARs	334	5.303	3.636	8.90	4.334	34.280	-5.648	91.273

Five-Year Abnormal Returns for Individual Firms

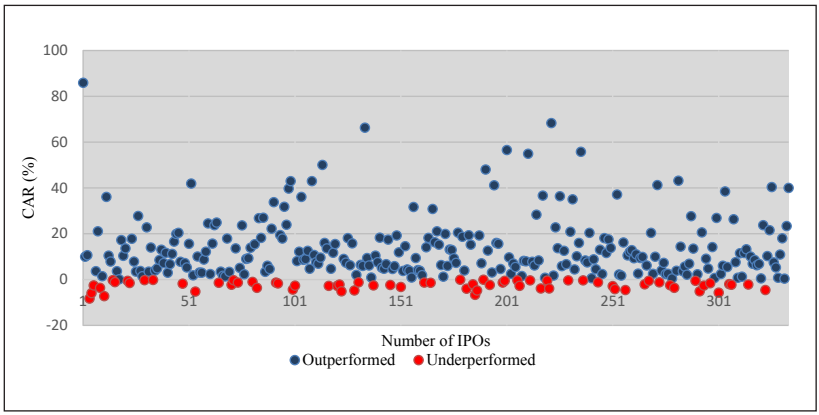
Figure 1 illustrates the scatter plot for the five-year abnormal returns of the 334 IPOs. The blue dots represent the group of IPO firms that performed relatively better in the long run to the market benchmark. In contrast, the red dots represented the group of IPO firms that performed poorly to the market benchmark. Overall, most of the IPO firms listed between these periods outperformed the market index in the five years. 265 out of 334 firms reported positive returns after five years. Only 69 firms reported returns below the market index. For the outperformed group, the maximum return was 85.9 percent, by a firm listed under industrial products in 2010. The lowest return for the underperformed group was -8.24 percent.

It can be seen that most firm returns are within the range of -5 percent to 20 percent. This observation suggests that investors who purchased

the shares of Malaysian IPOs listed between 2002 and 2010 had less risk of significant losses than other developed countries. For example, Ritter (1991) and Loughran and Ritter (1995) reported that the US IPOs relatively underperformed to matching companies at -27.39 percent during the 1975 to 1984 period and -26.9 percent from 1970 to 1990 in the three-year holding period.

Figure 1

Five-Year Abnormal Returns for Full Samples



Multiple Regression Analysis

This study included three step-by-step interactive variables, as presented in columns 1, 2, and 3 of PANEL A and PANEL B of Table 4, to capture the interaction effect on the IPOs' performance. The three interactive variables were interaction between the industry sector and the year 2003 (D_INDUST*D_2003), interaction between the technology sector and the year 2006 (D_TECH*D_2006), and interaction between initial returns and the technology sector (UNDERPRICE*D_TECH). It is important to note that this study included all the year dummies in each model. Nevertheless, only dummy listing years that significantly affected the performance of IPOs were reported in the models. In addition, the two dummy sectors of D_FINANCE and D_REITs were involved in the models because these sectors had only a statistically significant influence on the long-term IPO performance[3].

Table 4

Regression Analysis for the Three-Year and Five-Year BHARs

Independent Variables	PANEL A: Three-year BHARs			PANEL B: Five-year BHARs		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
FIRM_AGE	-0.126	-0.109	-0.144	-0.568	-0.565	-0.603
	(-0.544)	(-0.476)	(-0.628)	(-1.306)	(-1.303)	(-1.388)
FIRM_SIZE	0.401	0.386	0.310	0.0465	0.0355	-0.0703
	(1.338)	(1.347)	(1.110)	(0.109)	(0.0861)	(-0.169)
ISSUE_SIZE	-0.459	-0.418	-0.346	-0.766	-0.718	-0.633
	(-1.631)	(-1.523)	(-1.280)	(-1.618)	(-1.542)	(-1.350)
VOLATILITY	0.476***	0.496***	0.498***	0.578**	0.606**	0.602**
	(3.550)	(3.691)	(3.811)	(2.435)	(2.560)	(2.571)
OVSUB	-0.0109	-0.0122*	-0.0111*	-0.0146	-0.0160	-0.0149
	(-1.580)	(-1.853)	(-1.777)	(-1.240)	(-1.404)	(-1.342)
UNDERPRICE	-0.00448	-0.00323	-0.0106	-0.0193	-0.0180	-0.0252*
	(-0.662)	(-0.477)	(-1.598)	(-1.333)	(-1.230)	(-1.905)
LEV	-0.00106	-0.000275	-0.000694	-0.00204	-0.00122	-0.00194
	(-0.250)	(-0.0670)	(-0.172)	(-0.269)	(-0.163)	(-0.260)
PROFIT	0.00781	0.00710	0.00628	-0.00417	-0.00471	-0.00662
	(0.731)	(0.694)	(0.606)	(-0.219)	(-0.251)	(-0.340)
UW_RANK	0.512	0.468	0.455	1.061	1.004	0.989

(continued)

Independent Variables	PANEL A: Three-year BHARs			PANEL B: Five-year BHARs		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	(1.075)	(0.978)	(0.947)	(1.097)	(1.034)	(1.016)
D_ACE	2.100***	1.703**	1.426**	4.361***	3.974***	3.712***
	(2.894)	(2.419)	(1.983)	(3.621)	(3.153)	(2.757)
TOPHOLD	0.156**	0.160***	0.166***	0.170*	0.178*	0.180*
	(2.492)	(2.595)	(2.679)	(1.798)	(1.890)	(1.872)
$TOPHOLD^2$	-0.0016***	-0.0017***	-0.0017***	-0.00186**	-0.0019**	-0.0019**
	(-2.831)	(-2.924)	(-2.985)	(-1.982)	(-2.061)	(-2.030)
D_2004	1.322*	1.469**	1.502**	3.238***	3.390***	3.408***
	(1.798)	(2.002)	(2.102)	(2.963)	(3.120)	(3.059)
D_2005	0.453	0.638	0.764	3.879***	4.062***	4.142***
	(0.544)	(0.773)	(0.955)	(2.736)	(2.911)	(3.045)
D_2006	1.275	-0.104	0.0674	3.727**	2.266	2.478
	(1.208)	(-0.0970)	(0.0650)	(2.381)	(1.261)	(1.372)
D_2007	3.525***	3.438***	3.500***	4.618***	4.517***	4.578***
	(3.871)	(3.765)	(3.892)	(3.746)	(3.699)	(3.708)
D_FINANCE	-4.137***	-4.233***	-4.117***	-6.199**	-6.315**	-6.114**
	(-3.024)	(-3.293)	(-3.234)	(-2.434)	(-2.564)	(-2.470)
D_REITS	-1.894***	-1.487*	-1.599**	-4.892***	-4.471***	-4.599***
	(-2.634)	(-1.791)	(-2.009)	(-3.823)	(-3.193)	(-3.323)
D_INDUST*D_2003	3.093**	2.945**	3.519**	4.430**	4.305*	5.079**
	(2.090)	(1.995)	(2.329)	(2.021)	(1.965)	(2.215)

(continued)

Independent Variables	PANEL A: Three-year BHARs			PANEL B: Five-year BHARs		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
D_TECH*D_2006		4.276**	4.061**		4.480	4.195
		(2.307)	(2.174)		(1.632)	(1.530)
UNDERPRICE*D_TECH			0.0184**			0.0167
			(2.159)			(0.968)
Constant	-4.083	-4.664	-4.543	7.549	6.706	7.284
	(-0.807)	(-0.941)	(-0.921)	(0.924)	(0.823)	(0.871)
Observations	349	349	349	333	333	333
R-Squared	0.2158	0.2348	0.2504	0.2076	0.2128	0.2187
Adj. R-Squared	0.1577	0.1756	0.1873	0.1458	0.1487	0.1495
F-Stat	17.74***	17.00***	28.75***	11.95***	11.64***	64.60***
Ramsey (P-Value)	0.1748	0.2106	0.1508	0.0109	0.0585	0.0382

***, **, and * denote significance at the 1 percent, 5 percent and 10 percent levels.

Table 4 shows a consistently positive effect of VOLATILITY on the three-year and five-year performances, which supported the risk-return theory that return increased with an increase in risk. The variable had a statistically and economically significant influence on the long-term performance of Malaysian IPOs. This finding contradicted the divergence of opinion hypothesis that volatility is negatively associated with the long-term performance of IPOs (Miller, 1977; Gao et al., 2006). According to Miller (1977), optimistic investors always overvalue the stock at the initial offer, particularly when there is higher uncertainty about the firm's value, and they adjust their initial overvaluations when more information is available to the market, which later leads to poor long-term performance.

The dummy variable representing the ACE Market (D_ACE) exhibited positive associations with the long-term performance of IPOs. This outcome suggested that IPOs from the ACE Market outperformed those from the Main Market. Notably, this positive relationship was particularly significant in the case of five-year BHARs, where the coefficient stood at 4.36 percent in MODEL 4. The IPOs listed on the ACE Market had 4.36 percent higher BHARs than the Main Market IPOs in the five years. This finding is consistent with the results of Ahmad-Zaluki et al. (2007) and How et al. (2007), who documented that the Second Board outperformed by 0.4 percent and 28.2 percent, respectively, in the long run (three-year BHARs). The percentage of top shareholdings had a concave relationship with the long-term performance of the IPOs. TOPHOLD and TOPHOLD2 were statistically significant in the three-year and five-year holding periods.

It can be observed that the dummy variable for 2007 (D_2007) had a positive effect on the three-year and five-year BHARs. The coefficients were also statistically and economically significant. This outcome indicated that the firms listed in 2007 experienced at least 3.4 percent higher returns in the long period than the other listing years. Moreover, D_2004 and D_2005 were positively associated with the three-year and five-year BHARs. Nevertheless, the 1 percent significance was only reported in the five-year BHARs, not in the three-year BHARs. The finding showed a strong economic effect of the finance sector (D_FINANCE) on the three-year and five-year performances of the IPOs. The negative coefficient was also statistically significant at the 1 percent and 5 percent levels in the three-year and five-year BHARs, respectively. The real estate investment trusts (REITs) sector (D_REIT) dummy variable appeared to negatively influence the long-

term performance of IPOs, particularly in the five-year BHARs. The coefficient of approximately 4.5 indicated that the REITs IPO had a five-year return of about 4.5 percent below other sectors. This negative performance of D_FINANCE and D_REIT was not a surprise because about half of the IPO samples under these sectors were listed before the 2007 and 2008 global financial crises. As a result, the five-year performance measurement for these two sectors included the global financial crisis period.

Regarding the effects of interaction, the interactive variables of D_INDUST*D_2003 and D_TECH*2006 appeared to have a positive relationship with the three-year and five-year BHARs. These outcomes suggested that the industry and technology sectors' IPOs listed in 2003 and 2006, respectively, outperformed the market in the long term. Nevertheless, the 5 percent significance level was found across the models only in the three-year BHARs in PANEL C. The D_TECH*D_2006 variable did not have a statistically significant influence on the five-year BHARs. The interactive variable of UNDERPRICE*D_TECH had a small economic effect on the performance of IPOs. The 1 percent change in the initial returns of the technology sector contributed about 0.0184 percent increase in the three-year BHARs. The variable was statistically significant at 5 percent only in the three-year BHARs.

Further Test

Finally, this section explains the results on the determinants of long-term IPO performance by performing regression only with significant variables. The regression results for the three-year and five-year periods against the ten explanatory variables are presented in Table 5. Overall, the directions of all variables remain unchanged, as found in the previous analysis. The dummy ACE Market variable had an economically and statistically significant effect on the long-term performance of Malaysian IPOs, particularly in the three- and five-year periods. Consistent with the earlier finding, the ACE Market IPOs performed better than the Main Market IPOs in the long term. The volatility variable, which is a proxy for the divergence of opinion among the optimistic and pessimistic investors, showed a moderate effect on the long-term performance of the IPOs. A 1 percent increase in the standard deviation increased the BHARs by 0.5 percent. As shown in the table, the coefficient of TOPHOLD was positive, while the coefficient of $TOPHOLD^2$ was negative. Both coefficients were

significant at the minimum 5 percent level. This evidence suggested that the relationship between the long-term returns and TOPHOLD was concaved. To recall, TOPHOLD is measured as a cumulative percentage of shares held by the largest shareholders (at least 5% of the firm shares) immediately after the IPOs. The effect of concentration ownership first follows the incentive alignment hypothesis that concentration ownership helps to improve firm value. At a certain point, concentration ownership reduces the firm value as predicted in the entrenchment hypothesis.

Table 5

Regression Analysis for the Three-Year and Five-Year BHARs

Independent Variables	Three Year BHARS	Five-Year BHARS
VOLATILITY	0.458***	0.587***
	(3.538)	(2.661)
D_ACE	1.446***	4.091***
	(2.787)	(4.038)
TOPHOLD	0.148**	0.193**
	(2.513)	(2.316)
$TOPHOLD^2$	-0.00156***	-0.00211**
	(-2.893)	(-2.479)
D_2005	-0.0880	2.572*
	(-0.131)	(1.672)
D_2007	2.571***	2.347**
	(3.923)	(2.263)
D_FINANCE	-4.226***	-6.764***
	(-5.113)	(-5.622)
D_REITS	-1.702***	-3.842***
	(-3.107)	(-4.628)
D_INDUST*D_2003	2.948**	3.527*
	(2.154)	(1.702)
D_TECH*D_2006	3.380**	5.466***
	(2.215)	(2.963)
Constant	-3.401*	-3.307
	(-1.940)	(-1.214)
Observations	349	333
R-Squared	0.209	0.1739
Adj. R-Squared	0.1859	0.1483
F-Stat	15.26***	18.13***
Ramsey p-value)	0.0689	0.0537

The model estimates showed that IPOs listed in 2005 had a limited effect on their performance in the Malaysian market, while those listed in 2007 strongly influenced their long-term performance. With regards to the firm sector, this study found that the finance and REITs sectors had a negative effect on the three-year and five-year BHARs. The variables were statistically and economically significant in influencing the performance of IPOs. Interestingly, this study revealed that the interaction between the dummy technology sector and the year 2006 (D_TECH*D_2006) appeared to strongly affect the five-year BHARs after excluding the insignificant variables from the model. The positive coefficient of 5.5 indicated that the technology IPOs listed in 2006 had a higher performance than the other sectors listed in the same year.

CONCLUSION

By focusing on the Malaysian IPOs listed on both the Main Market and the ACE Market between 2002 and 2010, this study examined the determinants of the long-term performance of IPOs. The finding revealed that the volatile price of IPOs in the early aftermarket positively and significantly affected the long-term performance of IPOs in the Malaysian market. The evidence was robust across the models. The positive coefficient of VOLATILITY provided substantial support to the risk-return theory in that investing in high-risk IPOs may reward the investors with higher expected returns. The dummy ACE Market also appeared to have positively influenced the three-year and five-year performances of IPOs. The variables significantly affected IPOs' performance both statistically and economically. This outcome suggested that the ACE Market IPOs performed better in the long run than the Main Market IPOs. The results for the dummy ACE Market also revealed that the level of risk was positively related to IPO returns.

Other variables that significantly influenced long-term performance were TOPHOLD and $TOPHOLD^2$. Concentration ownership showed a concave relationship with long-term performance. Nevertheless, the economic effect of $TOPHOLD^2$ was relatively small compared to TOPHOLD. Even though numerous previous studies (see Levis, 1993; Dimovski & Brooks, 2004; Cai et al., 2008; Kutsuna et al., 2009; Chi et al., 2010) have argued that the level of initial under-pricing influences long-term performance, this study found only a weak effect of initial under-pricing on the long-term performance

of IPOs, which was inconclusive. The negative coefficient remained insignificant (statistical or economic) even after being controlled by the year and sector.

Including year dummies and sector dummies in the regression revealed that the long-term performance varied in selected years depending on the holding period. The years 2004, 2005 and 2007 were found to be statistically significant with a positive association with the five-year BHARs. These three years also provided a significantly economic effect on the five-year returns. Further investigation on the effects of the listing year disclosed that IPOs listed in 2007 were economically and statistically significant and positively influenced the long-term performance of Malaysian IPOs. This study assumed that the IPOs listed in 2007 comprised high-quality firms. Their average performance remained significantly positive even during the economic downturn. The long-term performance was not statistically significant in terms of the differences across various sectors, except for the finance (D_FINANCE) and REITs (D_REIT) sectors. The estimated model reported a significant inverse effect of the D_FINANCE and D_REIT variables on the three-year and five-year BHARs.

The inclusion of the interactive effects between the sector and years suggested that the industrial products sector in 2003 and the technology sector listed in 2006 performed better in the long term. According to the Central Bank of Malaysia (2004), the industrial products sector recorded a strong expansion in 2003, with an output growth strengthening to 10.5 percent compared to -3.9 at the end of 2002. The output continued to grow to 12.7 percent in 2004. Moreover, the Malaysian government initiated a comprehensive programme for small and medium enterprises (SMEs) in 2003 to enhance their development. This programme is one of the reasons for the growth of the industrial sector, as most industrial companies are placed under SMEs. In the Ninth Malaysia Plan (2006–2010), the Malaysian government initiated the Multimedia Super Corridor Net Leap programme and expanded it into a network of cyber cities and centres throughout Malaysia (Economic Planning Unit, 2006). Under this programme, the emphasis is on raising the level of information and communications technology (ICT) usage in various sectors of the economy, including urban and rural areas, as well as involving different segments of society. This programme continues to be a platform that enables the country to promote the development of the technology industry.

From the long-term performance analysis, this study concludes that Malaysian IPOs' performance is better in the long term than those of other developed countries, such as the US, UK and Australia. Previous studies that involved developed countries have reported that, in the long term, their IPOs underperformed in the market. Due to poor long-term performance, several other studies in the US and the UK found that a significant number of their IPOs suffered from failure or being delisted from the market within five years of their listing.

Studying the performance of the IPOs and identifying the determinants are of great interest to many parties, such as investors, potential issuers, regulatory bodies and academic researchers. The findings of this study provide a better understanding of the performance of the IPO companies. A better understanding of the IPO performance can help investors make investment decisions by predicting the company's future performance based on its firm-specific and issue-specific characteristics. The results derived from the listing year and sector analysis can be informative for investors when formulating their investment strategies. In some cases, the IPO's performance varies across listing years and sectors. The understanding of the current performance of Malaysian IPOs allows regulators to take steps to improve the country's IPO process to become more efficient and effective. Finally, this study has an important impact on academic research because the findings can be used to further investigate IPO market performance. An analysis of the determinants of IPO performance led to outcomes that differ from those in the existing literature on other countries. The various factors affecting Malaysian IPOs' performance may motivate researchers to investigate this area further. The findings from this study can be a stepping stone for other researchers to conduct further research in this area, particularly in the emerging market.

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ENDNOTES

[1] Jagannathan et al. (2015) provides a summary of IPO methods used in various countries.

[2] Based on a sample of 420 IPOs, 90% of the companies used the fixed-pricing method. Another 10% used the book-building pricing method.

[3] This study identified the significance level of D_FINANCE and D_REITS in the multiple regression analysis with year and sector effects. However, the full results are excluded from this study.

REFERENCES

Abu Bakar, N., Rosbi, S., & Uzaki, K. (2019). Evaluation of long-term performance for initial public offerings using market adjusted cumulative abnormal returns (MACAR): A case study of Islamic finance in Malaysia. *International Journal of Advances in Scientific Research and Engineering, 5*(1), 51–58. https://doi.org/10.31695/ijasre.2019.33050

Abukari, K., & Vijay, J. (2011). Long term performance and predictability of initial public offerings (IPOs). In *FMA Annual Meeting Program* (pp. 176-190). Ottawa.

Agarwal, S., Liu, C., & Rhee, S. G. (2008). Investor demand for IPOs and after market performance: Evidence from the Hong Kong stock market. *Journal of International Financial Markets, Institutions and Money, 18*(2), 176–190. https://doi.org/10.1016/j.intfin.2006.09.001

Aggarwal, R., Leal, R., & Hernandez, L. (1993). The aftermarket performance of initial public offerings in Latin America. *Financial Management, 22*(1), 42. https://doi.org/10.2307/3665964

Ahmad-Zaluki, N. A., Campbell, K., & Goodacre, A. (2007). The long run share price performance of Malaysian initial public offerings (IPOs). *Journal of Business Finance and Accounting, 34*(1–2), 78–110. https://doi.org/10.1111/j.1468-5957.2006.00655.x

Ahmad-Zaluki, N. A., & Kect, L. B. (2012). The investment performance of MESDAQ market initial public offerings (IPOs). *Asian Academy of Management Journal of Accounting and Finance, 8*(1), 1–23.

Allen, D. E., Morkel-Kingsbury, N. J., & Piboonthanakiat, W. (1999). The long-run performance of initial public offerings in Thailand. *Applied Financial Economics, 9*(3), 215–232. https://doi.org/10.1080/096031099332294

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. https://doi.org/10.1111/j.0306-686X.2005.00596.x

Arini, R. E., & Iskandar, Y. (2022, February). The effect of benchmark, money raised, market value, and magnitude of underpricing towards abnormal return shares on the long-term performance of initial public offerings in Indonesia. In *International Conference on Economics, Management and Accounting (ICEMAC 2021)* (pp. 142–151). Atlantis Press.

Aussenegg, W. (2006). Underpricing and the aftermarket performance of initial public offerings: The case of Austria. In *Initial Public Offerings* (pp. 187-213). Butterworth-Heinemann.

Barber, B. M., & Lyon, J. D. (1997). Detecting long-run abnormal stock returns: The empirical power and specification of test statistics. *Journal of Financial Economics, 43*(3), 341–372. https://doi.org/10.1016/S0304-405X(96)00890-2

Bayley, L., Lee, P. J., & Walter, T. S. (2006). IPO flipping in Australia: Cross-sectional explanations. *Pacific-Basin Finance Journal, 14*(4), 327–348. https://doi.org/10.1016/j.pacfin.2006.01.002

Belghitar, Y., & Dixon, R. (2012). Do venture capitalists reduce underpricing and underperformance of IPOs? *Applied Financial Economics, 22*(1), 33–44. https://doi.org/10.1080/09603107.2011.597720

Bildik, R., & Yilmaz, M. K. (2006). The market performance of initial public offerings in the Istanbul stock exchange. *SSRN Electronic Journal, 2*(2), 49-76. https://doi.org/10.2139/ssrn.952514

Bird, R., & Yeung, D. (2012). How do investors react under uncertainty? *Pacific-Basin Finance Journal, 20*(2), 310–327. https://doi.org/10.1016/j.pacfin.2011.10.001

Brav, A., Geczy, C., & Gompers, P. A. (2000). Is the abnormal return following equity issuances anomalous? *Journal of Financial Economics, 56*(2), 209–249. https://doi.org/10.1016/S0304-405X(00)00040-4

Cai, X., Liu, G. S., & Mase, B. (2008). The long-run performance of initial public offerings and its determinants: The case of China. *Review of Quantitative Finance and Accounting, 30*(4), 419–432. https://doi.org/10.1007/s11156-007-0064-5

Cai, J., & Wei, K. J. (1997). The investment and operating performance of Japanese initial public offerings. *Pacific-Basin Finance Journal, 5*(4), 389–417. https://doi.org/10.1016/S0927-538X(97)00021-8

Carter, R. B., Dark, F. H., & Singh, A. K. (1998). Underwriter reputation, initial returns, and the long-run performance of IPO

stocks. *The Journal of Finance, 53*(1), 285–311. https://doi.org/10.1111/0022-1082.104624

Central Bank Malaysia. (2004). *The Malaysian economy in 2004*. Central Bank Malaysia. http://www.bnm.gov.my/files/publication/ar/en/2004/cp01.pdf

Chemmanur, T. J., & Fulghieri, P. (1994). Investment bank reputation, information production and financial intermediation. *The Journal of Finance, 49*(1), 57–79.

Chi, J., Wang, C., & Young, M. (2010). Long-run outperformance of Chinese initial public offerings. *Chinese Economy, 43*(5), 62–88. https://doi.org/10.2753/CES1097-1475430505

Chorruk, J., & Worthington, A. C. (2010). New evidence on the pricing and performance of initial public offerings in Thailand. *Emerging Markets Review, 11*(3), 285–299. https://doi.org/10.1016/j.ememar.2010.04.001

Claessens, S., Djankov, S., Fan, J. P., & Lang, L. H. (2002). Disentangling the incentive and entrenchment effects of large shareholdings. *Journal of Finance, 57*(6), 2741–2771.

Corhay, A. (2002). The long run performance of Malaysian initial public offerings (IPOs): Value and growth effects. *Managerial Finance, 28*(2), 52–65. https://doi.org/10.1108/03074350210767690

Da Silva Rosa, R., Velayuthen, G., & Walter, T. (2003). The sharemarket performance of Australian venture capital-backed and non-venture capital-backed IPOs. *Pacific-Basin Finance Journal, 11*(2), 197–218. https://doi.org/10.1016/S0927-538X(02)00114-2

Dimovski, W., & Brooks, R. (2004). Initial public offerings in Australia 1994 to 1999, recent evidence of underpricing and underperformance. *Review of Quantitative Finance and Accounting, 22*(May), 179–198.

Dong, M., Michel, J. S., & Pandes, J. A. (2011). Underwriter quality and long-run IPO performance. *Financial Management, 40*(1), 219–251. https://doi.org/10.1111/j.1755-053X.2010.01140.x

Economic Planning Unit. (2006). *Ninth Malaysia Plan, 2006-2010*. Economic Planning Unit. http://www.epu.gov.my/en/rmk/ninth-malaysia-plan-2006-2010

Fan, J. P. H., Wong, T. J., & Zhang, T. (2007). Politically connected CEOs, corporate governance, and Post-IPO performance of China's newly partially privatized firms. *Journal of Financial Economics, 84*(2), 330–357. https://doi.org/10.1016/j.jfineco.2006.03.008

Gao, J., Cong, L. M., & Evans, J. (2015). Earnings management, IPO underpricing, and post-issue stock performance of Chinese SMEs. *The Chinese Economy, 48*(5), 351–371. https://doi.org/10.1080/10971475.2015.1067085

Gao, Y., Mao, C. X., & Zhong, R. (2006). Divergence of opinion and long-term performance of initial public offerings. *The Journal of Financial Research, 29*(1), 113–129. http://doi.wiley.com/10.1111/j.1440-1746.2007.05216.x

Goergen, M., Khurshed, A., & Mudambi, R. (2006). The strategy of going public: How UK firms choose their listing contracts. *Journal of Business Finance & Accounting, 33*(1–2), 79–101. https://doi.org/10.1111/j.1468-5957.2006.00657.x

Gompers, P. A, & Lerner, J. (2003). The really long-run performance of initial public offerings: The Pre-Nasdaq evidence. *The Journal of Finance, 58*(4), 1355–1392.

How, J. C. Y. (2000). Initial and long-run performance of mining IPOs in Australia. *SSRN Electronic Journal, 25*(1), 95–118. https://doi.org/10.2139/ssrn.224419

How, J., Jelic, R., Saadouni, B., & Verhoeven, P. (2007). Share allocations and performance of KLSE second board IPOs. *Pacific Basin Finance Journal, 15*(3), 292–314. https://doi.org/10.1016/j.pacfin.2006.09.002

Ibbotson, R. G. (1975). Price performance of common stock new issues. *Journal of Financial Economics, 2*(3), 235–272. https://doi.org/10.1016/0304-405X(75)90015-X

Jelic, R., Saadouni, B., & Briston, R. (2001). Performance of Malaysian IPOs: Underwriters reputation and management earnings forecasts. *Pacific-Basin Finance Journal, 9*(5), 457–486. https://doi.org/10.1016/S0927-538X(01)00013-0

Jewartowski, T., & Lizińska, J. (2012). Short-and long-term performance of Polish IPOs. *Emerging Markets Finance and Trade, 48*(2), 59–75. https://doi.org/10.2753/REE1540-496X480204

Jog, V. M., & Srivastava, A. (1997). The mixed results of Canadian IPOs. *Canadian Investment Review, 10*, 22–26.

Johnson, S., Porta, R. La., Lopez-De-Silanes, F., & Shleifer, A. (2000). Tunneling. *American Economic Review, 90*(2), 22–27. https://doi.org/10.1257/aer.90.2.22

Keloharju, M. (1993). The winner's curse, legal liability, and the long-run price performance of initial public offerings in Finland. *Journal of Financial Economics, 34*, 251–277.

Kim, J. B., Krinsky, I., & Lee, J. (1993). Motives for going public and underpricing: New findings from Korea. *Journal of Business Finance & Accounting, 20*(2), 195–211. https://doi.org/10.1111/j.1468-5957.1993.tb00659.x

Kiymaz, H. (2000). The initial and aftermarket performance of IPOs in an emerging market: Evidence from Istanbul stock exchange. *Journal of Multinational Financial Management, 10*(2), 213–227. https://doi.org/10.1016/S1042-444X(99)00027-4

Krishnan, C. N. V. V., Ivanov, V. I., Masulis, R. W., & Singh, A. K. (2011). Venture capital reputation, post-IPO performance, and 11.80304-405X(00)00071-4

Omran, M. (2005). Underpricing and long-run performance of share issue privatizations in the Egyption stock market. *Journal of Financial Research, 28*(2), 215–234. https://doi.org/10.1111/j.1475-6803.2005.00122.x

Ong, C. Z., Mohd-Rashid, R., & Taufil-Mohd, K. N. (2020). Leverage and IPO pricing: Evidence from Malaysia. *International Journal of Banking and Finance, 15*(1), 1-19. https://doi.org/10.32890/ijbf2020.15.1.9929

Paudyal, K., Saadouni, B., & Briston, R. J. (1998). Privatisation initial public offerings in Malaysia: Initial premium and long-term performance. *Pacific-Basin Finance Journal, 6*(5), 427–451. https://doi.org/10.1016/S0927-538X(98)00018-3

Ritter, J. R. (1991). The long-run performance of initial public offerings. *The Journal of Finance, 46*(1), 3–27.

Ritter, J. R., & Welch, I. (2002). A review of IPO activity, pricing, and allocations. *Journal of Finance, 57*(4), 1795–1828. https://doi.org/10.2307/3094524

Sahoo, S., & Rajib, P. (2010). After market pricing performance of initial public offerings (IPOs): Indian IPO market 2002-2006. *Vikalpa, 35*(4), 27–44. http://www.vikalpa.com/pdf/articles/2010/Vik354-03-ResSahoo.pdf

Securities Commission Malaysia. (2001). *Capital market masterplan Malaysia.* Securities Commission. https://www.sc.com.my/api/documentms/download.ashx?id=8ca2dab8-49ab-4378-b9a2-41642b77ce2e

Shari, W. (2022). Do Malaysian initial public offerings (IPOs) survive in the after-market? *Southeast Asian Journal of Economics, 10*(2), 145–179.

Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *The Journal of Finance, 52*(2), 737–783.

Su, D. (2004). Adverse-selection versus signaling: Evidence from the pricing of Chinese IPOs. *Journal of Economics and Business, 56*(1), 1–19. https://doi.org/10.1016/j.jeconbus.2003.07.001

Tam, O. K., & Tan, M. G. S. (2007). Ownership, governance and firm performance in Malaysia. *Corporate Governance: An International Review, 15*(2), 208–222. https://doi.org/10.1111/j.1467-8683.2007.00555.x

Thomadakis, S., Nounis, C., & Gounopoulos, D. (2012). Long-term performance of Greek IPOs. *European Financial Management, 18*(1), 117–141. https://doi.org/10.1111/j.1468-036X.2010.00546.x

Zhang, W., Xiong, X., Wang, G., & Li, C. (2022). Corporate ownership and political connections: Evidence from post-IPO long term performance in China. *Research in International Business and Finance, 59*(January) 2. https://doi.org/10.1016/j.ribaf.2021.101561