ASIAN ACADEMY *of* MANAGEMENT JOURNAL *of* ACCOUNTING *and* FINANCE

AAMJAF, Vol. 8, No. 1, 1–23, 2012

THE INVESTMENT PERFORMANCE OF MESDAQ MARKET INITIAL PUBLIC OFFERINGS (IPOs)

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ABSTRACT

This study provides evidence on both the short-run and long-run investment performance of Malaysian initial public offering (IPO) companies that are listed on the MESDAQ Market. The factors that influence the performance are also investigated. In line with past Malaysian studies, the results of the raw and market-adjusted initial returns show that IPO companies are significantly underpriced in the short-run. However, in the long-run, both the CAR and the BHAR methods reveal that these companies underperform the market. Our results concerning the long-run performance contrast with the results observed by previous Malaysian studies using a sample of companies listed on the Main Board and/or the Second Board. However, they are consistent with the results reported in other countries. We find that companies in the technology sector, issued in a hot issue period and underpriced IPO, perform less well in the long-run, which supports the fad hypothesis of long-run underperformance. Our results suggest that investors who purchase IPO shares on the MESDAQ Market gain high positive returns in the short-run but do not fare well in the long-run. This study provides new information to investors when choosing IPOs listed on Bursa Malaysia.

Keywords: IPO, Malaysia, underpricing, long-run performance, MESDAQ Market

INTRODUCTION

The study of initial public offering (IPO) companies' performance has attracted great interest from global researchers and academic scholars. The global evidence and associated results suggest that IPO companies generate positive short-run (initial) returns, usually known as underpricing. For example, Kirkulak (2008) reports that Japanese IPOs generate a statistically significant 49.93% return in the short-run. The empirical evidence also shows that IPO companies underperform the market in the long-run. Goergen, Khurshed and Mudambi (2007) reported that in the three-year period following IPOs, the cumulative average abnormal

return (CAR) and the buy-and-hold abnormal return (BHAR) for U.K. IPOs are –20.76% and –21.98%, respectively, and are significantly different from zero at the 1% level.

IPOs are very important in most countries, particularly in developing countries such as Malaysia. IPO pricing and performance should be monitored via research to determine whether the financial market is efficient. In Malaysia, IPO companies must be listed on the Kuala Lumpur Stock Exchange (KLSE), currently known as Bursa Malaysia, to become publicly traded companies. There are three boards available – the Main Board, the Second Board, and the MESDAQ Market. Companies listed on the Main Board are typically (but not always) larger than those listed on the Second Board. The MESDAQ Market is a market for technology-based listing companies.[1]

Considerable research has been conducted on the performance of IPO companies, both locally and overseas. Among non-Malaysian published studies, Sahi and Lee (2001) examined the short-run performance of property company IPOs in the U.K. In China, Li and Naughton (2007) examined board characteristics, initial returns and long-run performance of IPO companies. Malaysian published studies include, among others, Corhay, Teo and Tourani-Rad (2002), and Ahmad-Zaluki, Campbell and Goodacre (2007), who investigated the long-run share price performance of IPO companies listed on the Main Board and the Second Board of Bursa Malaysia.

A recently published study by Ahmad-Zaluki et al. (2007) reported that there have been limited studies relating to the Malaysian market. Most studies of new equities issues in Malaysia examine only the short-run performance. They argue that the results concerning the long-run performance of Malaysian IPOs from the existing studies are inconclusive. Furthermore, all the prior studies that have been conducted in Malaysia used a sample of IPO companies that were listed either on the Main Board, the Second Board or both. To date, no research has been carried out examining the long-run performance of IPO companies listed on the MESDAQ Market. Therefore, there is a need to extend the existing research and investigate MESDAQ Market IPOs to add to the existing knowledge on the overall performance of the Malaysian IPO market. This paper is also motivated by the inconsistent results in previous studies of IPOs in the Malaysian market and uses an alternative market as well as more recent data. We have also extended our analysis of what factors influence the level of short-run returns by including two new variables: technology/non-technology company and hold/cold issue period. The inclusion of these two variables in our regression model of short-run performance and in our cross-sectional analysis of long-run performance provides a strong contribution to the Malaysian IPO literature.

Using a sample of 93 MESDAQ Market IPO companies, we find that our sample is significantly underpriced in the short run. However, in the long run, both the CAR and the BHAR methods that we employed reveal that these companies underperform the market. Our results contrast with the results observed in earlier Malaysian studies on companies listed on the Main Board and/or the Second Board in Malaysia. However, they are consistent with the results reported in other countries. We find that companies in the technology sector, those issued in a hot issue period, and companies with higher initial returns perform less well in the long run. Overall, our results support the fad hypothesis of long-run underperformance.

LITERATURE REVIEW

Theoretical Explanation and Prior Evidence on Short-run and Long-run Performance

The best-known pattern associated with IPO pricing is the occurrence of large positive initial returns that are credited to investors. A number of explanations have been advanced for positive short-run returns, including Winner's Curse (Rock, 1986), Legal Liability (Tinic, 1988), Dynamic Information Acquisition (Benveniste & Spindt, 1989), Signalling (Allen & Faulhaber, 1989), Informational Cascades (Welch, 1992), and Ownership and Control (Brennan & Franks, 1997).

Another pattern associated with IPOs is that IPOs generally underperform in the long-run (Ritter, 2003). A number of theories have been propounded to explain these phenomena, including Signalling (Allen & Faulhaber, 1989), Divergence of Opinion (Miller, 1977), Fad Hypothesis (Aggarwal & Rivoli, 1990); Window of Opportunity (Ritter, 1991) and Measurement Problems (Eckbo, Masulis, & Norli, 2000).

There is another pattern associated with IPOs, namely 'hot issue' markets. This refers to the time-series behaviour of first-day returns and the number of companies coming to market, in which high initial returns tend to be followed by rising IPO volumes (Ritter, 1984).

Several studies were undertaken in Malaysia to investigate the short-run and the long-run share price performance of IPOs, including Paudyal, Saadouni and Briston (1998), Jelic, Saadouni and Briston (2001), Corhay et al. (2002), Ahmad-Zaluki et al. (2007) and How, Jelic, Saadouni and Verhoeven (2007). Jelic et al. (2001) and Paudyal et al. (1998) examined the performance of Malaysian IPOs using only Main Board sample companies. Jelic et al. (2001)

used a sample of 182 IPOs for the period from January 1980 to December 1995, while Paudyal et al. (1998) employed 95 IPOs for the period from January 1984 to September 1995, based on the availability of data. Both studies measured initial return by calculating the raw return and the market-adjusted initial return. Jelic et al. (2001) measured long-run performance by using both the BHAR and the wealth-relative (WR) methods, while Paudyal et al. (1998) employed the BHAR method to measure long-run performance.

Jelic et al. (2001) found that there is an extremely high and statistically significant positive short-run performance and a statistically significant positive long-run return up to three years after listing. However, Paudyal et al. (1998) found that on average, Malaysian IPOs are underpriced and privatisation IPOs (PIPOs) offer significantly higher short-run returns than other IPOs. In addition, regression-based analysis reveals that over-subscription, market volatility, proportion of shares sold, underwriter reputation, and ex ante risk explained the variation in the excess returns offered by Malaysian PIPOs. However, the Paudyal model can only explain 10% and 36% of other IPOs and the whole sample, respectively, and neither PIPOs nor other IPOs significantly outperformed the market over three years. Their analysis further revealed that the IPOs with higher initial returns underperformed the market, while those with low initial returns outperformed the market. Jelic et al. (2001) found that there is no evidence that IPO offers underwritten by more prestigious underwriters are better long-term investments compared to those underwritten by less prestigious underwriters. Their results indicate a negative association of upward bias in management earnings forecasts with IPO performance during the first twelve months after the IPOs. However, Paudyal et al. (1998) found that IPOs underwritten by reputable underwriters are significantly better long-term investments compared to IPOs underwritten by less reputable underwriters.

Ahmad-Zaluki et al. (2007) used a sample of 454 Malaysian IPO companies listed on the Main Board and the Second Board between 1990 and 2000, while Corhay et al. (2002) employed 258 samples for the period from 1992 to 1996. Ahmad-Zaluki et al. (2007) used both an event-time and a calendar-time approach to analyse the long-run abnormal performance, while Corhay et al. (2002) used an event-time approach to measure performance. Both obtained similar results, finding that the cumulative average abnormal returns (CAR) and the buy-and-hold returns (BHAR) significantly outperform the market. However, Ahmad-Zaluki et al. (2007) found that under the calendar-time approach of the Fama-French (1993) three-factor model, the significant abnormal performance disappears. They also found no difference between the long-run performance of Main Board and Second Board IPOs. However, they reported that listing year, issue proceeds, and initial returns are performance-related. Corhay et al. (2002) found that there is a positive relationship between CAR and book-to-market

equity (B/M), earnings-to-price (E/P) and cash flows-to-price (C/P); IPO size is inversely related to CAR.

How et al. (2007) examined Malaysian share allocation and IPO performance by using a sample of 322 Second Board IPO companies from 1989 to 1992. They measured short-run performance by calculating the raw return and the market-adjusted initial return. The CAR and BHAR methods were used to determine long-run performance. Their study showed that Bumiputera investors and the Malaysian public received almost an equal allocation and made similar profits per issue. On average, Malaysian IPOs are underpriced, with a market-adjusted initial return of 101.57%, and in the long run, irrespective of whether equally weighted or value-weighted market adjusted returns are used, sample IPOs do not perform poorly.

Studies on IPO performance are not limited to the Malaysian market, but have also been performed in other countries such as the U.K. (e.g., Goergen et al., 2007), Greece (e.g., Tsangarakis, 2004; Kenourgios, 2007), Sri Lanka (e.g., Peter, 2007), China (e.g., Li & Naughton, 2007), Japan (e.g., Kirkulak, 2008), Spain (e.g., Alvarez & Gonzalez, 2005) and India (e.g., Marisetty & Subrahmanyam, 2010). In general, most of the studies find a positive market-adjusted initial return, ranging from 8.04% in Greece to 134.43% in China. However, most of the studies find that IPO companies underperform the market in the long-run.

Factors Influencing the Level of Initial Returns

This study has identified several factors that may influence the level of initial returns, including sector (technology or non-technology) and issue period (hot or cold). Prior studies suggest that the level of underpricing is higher in riskier IPOs. Unfortunately, riskier IPOs will be more underpriced than less risky ones. Because more than half of the IPOs listed on the MESDAQ Market are technology-related companies, we segregated our sample into technology and non-technology sectors. We expect that the substantial underpricing can be attributed to a large number of technology companies going public. We hypothesise that there should be a positive relationship between technology sector and initial returns because technology companies are inherently riskier investments than non-technology companies; therefore, they must provide investors with a higher return to compensate for the increased risk.

The performance of IPOs, both in the short term and long term, can vary according to the market conditions in which they are issued (dating back to Ibbotson & Jaffe, 1975; Ritter, 1984). Loughran and Ritter (1995) defined years with large numbers of IPOs as 'hot issue' periods, and they defined years with

small numbers of IPO's as 'cold issue' periods. This IPO activity variable is also used by Kooli and Suret (2004), Boubakri, Kooli and L'Her (2005), and Jaskiewicsz, Gonzalez, Menendez and Schiereck (2005), among others. Ritter (1984) shows that IPOs tend to cluster at certain hot issue periods. Ritter also demonstrates that IPOs issued during a hot issue period experience higher initial returns. Therefore, we expect that hot issue period IPOs have a positive relationship with initial returns.

The age of the company, issue size and company size are used as control variables to test the relationship between ex ante uncertainty and short-run performance. It is expected that there will be a negative relationship between ex ante uncertainty variables and short-run performance (i.e., the younger the company or the smaller the issue/company size, the higher the short-run returns).

Beatty and Ritter (1986), Titman and Trueman (1986), and Carter and Manaster (1990) suggested a negative relationship between underwriter prestige and underpricing. They advocated that prestigious underwriters will reduce agency costs experienced by companies related to the IPO. In addition, more prestigious underwriters tend to underwrite less risky IPOs to protect their reputations. Therefore, we expect a negative relationship between underwriter prestige and underpricing.

SAMPLE SELECTION AND METHODS

Data

This study examines the initial return and long-run share price performance of MESDAQ Market IPOs by using data for the period 2002 to 2005. The sample period examined is up to 2005 because this study examines 1- to 3-year post-IPO performance. It is also due to the need to study long-run post-IPO performance for three years after the offer (up to 2008). Given that the study was undertaken in early 2009, it was necessary to stop the sample period at 2005. The IPO companies' closing price on the first day of listing and the subsequent 36 monthly returns were collected from the DataStream database. The IPO companies' issue prices were extracted from prospectuses downloaded from the Bursa Malaysia website.

Following Ahmad-Zaluki et al. (2007), the monthly returns for each IPO company were then compared with the monthly returns of the market index on a rolling basis for each of the 36 months following the initial listing. Companies are required to have a complete returns history over the 36-month window. According to the FTSE index company website (http://www.ftse.com), the FTSE

Bursa Malaysia MESDAQ Index was launched on 10 September 2007. The information on base date and historical data is only available from 31 March 2006. As our performance analysis covers the period from 2002 to 2008, and because of the data constraints on the MESDAQ Market Index, the KL Composite Index (KLCI) was used as a market benchmark. To provide robustness for our analysis and to improve the reliability of our results, we also employed an alternative benchmark, the matching company technique, as used by Ahmad-Zaluki et al. (2007).

There were 104 companies listed on the MESDAQ Market during the period from 2002 to 2005. We excluded 11 companies for various reasons: missing company prospectus (2 companies), companies that had switched their listing board from the MESDAQ Market to the Main Board within three years after listing (1 company) and companies that were delisted within 3 years after listing on the MESDAQ Market (8 companies). Therefore, our final sample consisted of 93 companies, which comprised 89.72% of the whole IPO population during the period 2002 to 2005.

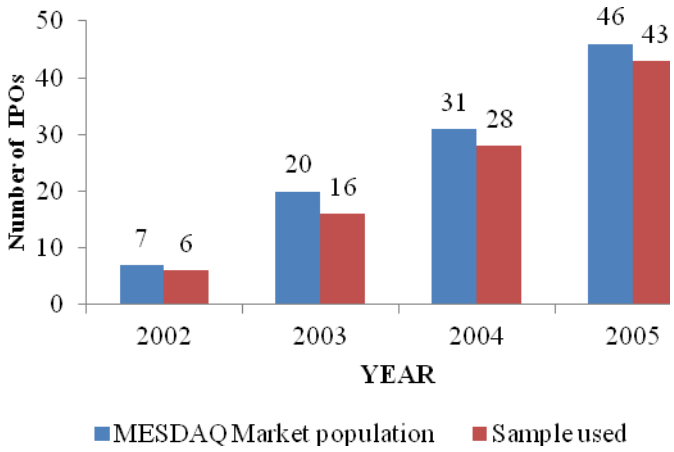

Figure 1. Distribution of IPO companies by year of listing

Figure 1 shows the distribution of these IPO companies by year of listing. There are two bars for each year, labelled 'MESDAQ Market population' and 'Sample used'. The figure shows that there is an increasing trend in the number of IPOs from 2002 to 2005 for both bars. For the sample used, the highest is 43 companies in 2005, which represents 46% of the sample, and the lowest is 6 companies in 2002, which represents 6% of the sample.

The 93 IPO companies are distributed into four sectors – Finance, Industrial Products, Technology and Trading/Services. The largest number of

companies in the sample were in the Technology sector, which had 58 companies (63%), followed by the Industrial Products sector (19%), the Trading/Services sector (16%), and the Finance sector (2%).

Methods

Measure of short-run performance

We examined the raw and market-adjusted initial returns to measure the short-run performance of IPOs. The raw initial return (RAW) on the first day of trading is calculated as follows:

$$r_{i,1} = \frac{(P_{i,1-}P_{i,0})}{P_{i,0}} \tag{1}$$

where, $r_{i,1}$ is the raw initial return for company *i* on the first day of trading, $P_{i,1}$ is the first day closing price of company *i*, and $P_{i,0}$ is the issue price of the company *i*. The market-adjusted initial return (MAIR) is calculated by adjusting the raw return with the return of the market. It is calculated as follows:

$$MAIR_{i,1} = r_{i,1} - r_{m,i} \tag{2}$$

where $MAIR_{i,1}$ is the market-adjusted initial return of company *i*, $r_{i,1}$ is the raw initial return for the company *i*, and $r_{m,i}$ is the return on the market, calculated for the period between company *i*'s listing date and its prospectus closing date.

Factors influencing the level of initial returns

This study performs a multivariate analysis to identify factors that may influence the short- run performance. A regression analysis is performed to examine the level of IPO raw initial return in comparison to variables relating to the IPO business sector (technology or non-technology) and issue period (hot or cold), along with several additional control variables identified in the literature: company age, underwriter reputation, issue size and company size. Our choice of potential control variables is based on Malaysian evidence (Jelic et al., 2001; Ahmad-Zaluki et al., 2011) and other studies on short-run performance. We compute the significance levels as White's *t*-statistics to correct for heteroskedasticity. The ordinary least squares (OLS) multiple regression model is estimated as follows:

$$RAWIR_i = \alpha_0 + \beta_1 TECHD + \beta_2 HOTCOLD + \beta_3 AGE + \beta_4 UNDWR + \beta_4 lnPROCEEDS\, B_6\, lnMV + \varepsilon \quad (3)$$

where:

RAWIR	=	initial return (%) measured by comparing the share price (p_t) at the end of the first day of trading with the offer price (p_0): $(p_t-p_0)/p_0$;
TECHD	=	dummy variable = 1 for technology sector companies and zero otherwise;
HOTCOLD	=	dummy variable = 1 for companies that went public in the hot period (2004-2005) and zero otherwise;
AGE	=	company age in years;
UNDWR	=	dummy variable = 1 for prestigious underwriter as defined in Jelic et al. (2001) and Ahmad-Zaluki et al. (2011) and zero otherwise;
lnPROCEEDS	=	natural log of the gross proceeds raised from the IPOs;
lnMV	=	natural log of the market value at the time of the IPO computed as the number of shares outstanding times the closing price on the first trading day;
ε_i	=	error term

For hot and cold issue periods, we employed the definition used by Loughran and Ritter (1995), Kooli and Suret (2004), Boubakri et al. (2005), and Jaskiewicz et al. (2005). To be more precise, we follow the definition given by Jaskiewicz et al., defining hot issue periods as periods that have IPOs above the average number of IPOs during the period of study. However, we prefer to use median rather than mean because it is not affected by outliers (Jain & Kini, 2004). Thus, the hot issue periods are redefined in this study as the years that have numbers of IPOs above the median number of IPOs for the total period of study. The total number of the MESDAQ Market IPO companies over the period 2002-2005 is 104 companies, with a median value of 26 companies. As a result, the hot issue period dummy variable takes a value of '1' if the IPO for the company is issued in a year that has a total number of IPOs greater than 26, namely 2004 and 2005. The dummy variable takes a value of '0' if the IPO issued in the year 2002 or 2003, each of which had fewer than 26 IPOs. Therefore, we categorised both 2004 and 2005 as hot issue periods. However, companies listed for the years 2002 and 2003 are categorised as cold issue.

Measure of long-run share price performance

To measure the long-run share price performance, the cumulative average abnormal return (CAR) method and the buy-and-hold return (BHAR) method were used. The CAR from event month *q* to event month *s* is calculated by cumulating the average market-adjusted (matching company-adjusted) returns on a portfolio of *n* stock for the event time *q* to event time *s* and is calculated as follows:

$$CAR_{q,s} = \sum_{t=q}^{s} AR_{t.} \tag{4}$$

where $CAR_{q,s}$ is the cumulative average abnormal return from event time *q* to event time *s* and $AR_{t.}$ is the average market-adjusted (matching company-adjusted) return on a portfolio of *n* stock for the event time *t*.

Under the buy-and-hold strategy, stock is purchased at the first closing market price on the listing date and held for a specified time period. Following prior studies (e.g., Ahmad-Zaluki et al., 2007), one-, two- and three-year buy-and-hold abnormal returns are calculated to measure the long-run share price performance. The buy-and-hold abnormal return for each company is calculated as follows:

$$BHAR_{it} = \left[\prod_{t=start}^{36} (1 + r_{it}) - 1 \right] - \left[\prod_{t=start}^{36} (1 + r_{mt)} - 1 \right] \tag{5}$$

where $BHAR_{it}$ is the buy-and-hold abnormal return of company i in event month t, r_{it} is the monthly raw return on company i in event month t, starting from its first event listing month and continuing through the end of the three-year window, and r_{mt} is the monthly market return or matching company return. A positive value for BHAR indicates that the IPO outperformed the market or the matching company and a negative value indicates that the IPO underperformed the market or the matching company.

RESULTS

Short-run Performance

Table 1 reports the short-run performance for the 93 IPO companies listed on the MESDAQ Market. The mean raw initial return is 37.18%, which is statistically significant at the 1% level. After adjusting the raw initial return with the market benchmark (KL Composite Index), the mean initial return fell slightly to 36.37%.[2] The raw initial returns range from a low of –66.67% to a high of 263.64% for the overall sample. The lowest and the highest market-adjusted initial returns are –64.96% and 261.86%, respectively.

When we split our IPO sample by sector, we find that IPO companies categorised under the Trading/Services, Technology and Industrial Products sectors are significantly underpriced, at 64.56%, 34.89% and 27.24%, respectively. The finance sector shows a raw initial return of –12.50%, but this is not significant. Based on the findings reported in Table 1, we can conclude that investors who purchased IPO shares from companies listed on the MESDAQ Market for the period 2002 to 2005 gained high, positive short-run returns. The results of this study are consistent with the study of Ritter (1998), who finds that in general, IPO companies have large positive initial returns. However, the level of positive initial return is lower than what was observed in prior Malaysian studies.

Table 1
Short-run performance

Sector	Mean		Median		Minimum		Maximum	
	Raw	MAIR	Raw	MAIR	Raw	MAIR	Raw	MAIR
Finance (n = 2)	–12.50	–11.69	–12.50	–11.69	–25.00	–18.23	0.00	–5.15
Industrial Products (n = 18)	27.24***	26.98***	17.08	15.77	–17.95	–18.16	93.33	90.71
Technology (n = 58)	34.89***	33.96***	13.82	11.63	–66.67	–64.96	246.43	247.43
Trading/ Services (n= 15)	64.56***	63.36***	48.33	47.20	–29.73	–28.06	263.64	261.86
All (n = 93)	37.18***	36.37***	16.67	15.34	–66.67	–64.96	263.64	261.86

Note: This table reports the descriptive statistics of short-run performance by sector. After excluding six outliers in our sample, the mean and median short-run performance is 25.37% and 14%, respectively. Both of them are statistically significant at the 1% level.
*** denotes significantly different from zero at the 0.01 level.

Regression results

We estimated Equation 3 to test our hypotheses in a multivariate framework while controlling for additional factors that might influence the level of initial returns. Specifically, we performed a regression analysis to examine the relationships among the level of IPO raw initial return, business sector (technology or non-technology), and issuance period (hot or cold), together with several additional control variables identified in the Methods section.

Table 2 shows our bivariate correlation analysis among variables. It reports a modest correlation between underwriter reputation (*UNDWR*) and hot/cold issue period IPOs (*HOTCOLD*), and between company size (*lnMV*) and issue size (*lnPROCEEDS*), with correlations of –0.3189 and 0.5233, respectively. As reported in Table 2, none of our independent variables have high correlations, suggesting that multicollinearity is not likely to be a problem in our regression model.

Table 2
Correlation matrix for variables in the determinants of short-run performance

	IR	*TECHD*	*HOTCOLD*	*AGE*	*UNDWR*	*lnPROCEEDS*
TECHD	–0.1477					
HOTCOLD	–0.0949	–0.0664				
AGE	0.0397	–0.0209	–0.1396			
UNDWR	–0.0192	–0.1793*	–0.3189***	0.1153		
lnPROCEEDS	0.0145	–0.1650	–0.1764	0.1688	0.0203	
lnMV	0.2951***	–0.0980	–0.0485	–0.0586	0.0942	0.5233***

Note: This table shows the bivariate Pearson correlation between dependent and independent variables. *IR* is the level of raw initial returns, *TECHD* is a dummy equal to 1 for technology sector companies and zero otherwise, *HOTCOLD* is a dummy equal to 1 for companies listed during the hot issue period (2004-2005) and zero otherwise, UNDWR is a dummy equal to 1 for 'prestigious' underwriters and zero otherwise, *AGE* is the age of companies in years, *lnPROCEEDS* is the natural log of gross proceeds raised from the IPOs, and *lnMV* is the natural log of the market value computed as the number of shares outstanding times the closing price on the first trading day.
***, and * denote significantly different from zero at the 0.01, and 0.10 levels, respectively, using two-tailed tests.

Table 3 reports the short-run performance regression results using 87 IPOs after excluding the extreme outliers in the level of raw initial return. The extreme outliers had initial return values outside the range of ± 3 times the inter-quartile range beyond the upper and lower quartiles. The same procedure of identifying the extreme outliers is used by Ahmad-Zaluki and Wan-Hussin (2010). To scrutinise the existence of multicollinearity in the estimation of the

relationship between dependent and independent variables, the variance inflation factors (VIFs) for each independent variable are computed and reported in column 2 of Table 3.[3] Consistent with the correlation matrix showed in Table 2, VIFs for all our independent variables are below 2.0. These results suggest that multicollinearity is not likely to be a major issue driving our results.

During our testing period, 58 out of the 93 companies in our sample were in the technology sector. We divide IPOs into two broad categories, technology and non-technology. As reported in Table 3, we find that the technology dummy variable gives an unexpected sign but is insignificant. This result suggests that the short-run performance of technology IPOs is not significantly different to that of non-technology IPOs.

Table 3
Regression results for determinants of short-run performance

	VIF	Expected sign	Coeff	t-stat
Hypothesis variables				
TECHD	1.11	+	12.753	–1.27
HOTCOLD	1.17	+	–23.865	–1.87*
Control variables				
AGE	1.09	–	1.444	1.25
UNDWR	1.19	–	–12.626	–1.06
LnPROCEEDS	1.55	–	–16.130	–2.53**
LnMV	1.44	–	29.107	3.53***
Constant			175.905	2.07**
N		87		
Adj R-square		11.25%		
F-stat		3.69***		

Note: This table reports the OLS regression with the level of raw initial returns as the dependent variable. *TECHD* is a dummy equal to 1 for technology sector companies and zero otherwise, *HOTCOLD* is a dummy equal to 1 for companies listed during the hot issue period (2004-2005) and zero otherwise, UNDWR is a dummy equal to 1 for 'prestigious' underwriters and zero otherwise, *AGE* is the age of companies in years, *lnPROCEEDS* is the natural log of gross proceeds raised from the IPOs, and *lnMV* is the natural log of the market value computed as the number of shares outstanding times the closing price on the first trading day.
***, **, and * denote significantly different from zero at the 0.01, 0.05 and 0.10 levels, respectively, using White-corrected two-tailed tests.

As explained in "Factors influencing the level of initial returns", we categorised both 2004 and 2005 as hot issue periods. Meanwhile, companies listed for the years 2002 and 2003 are categorised as cold issue. We find that the

coefficient of the hot/cold issue period dummy is negative but weakly significant (at the 10% level). Inconsistent with Ritter (1984), our results suggest that the level of initial returns for companies listed during hot periods in Malaysia is lower than for those listed during the cold periods. Similar results were also observed by Cliff and Denis (2004), in that underpricing is lower when IPO volume is high. Further inspection of the data reveals that the percentage of IPO companies from the Technology sector is higher in cold issue periods (68%) than in hot issue periods (61%). Because Technology companies are inherently riskier investments than non-technology companies, they must provide investors with a higher return to compensate for the increased risk. Therefore, higher initial return is observed in the cold issue periods, which contained a higher percentage of technology company IPOs, than in the hot issue periods, although the difference is relatively small.

We find that the issue size variable is negatively and significantly related to short-run performance, suggesting that small-size issues have high ex ante uncertainty that produces a higher return to initial investors. Surprisingly, our company size variable has a positive relationship with short-run performance, suggesting that the larger the company size, the higher the initial returns. We find no evidence that company age and underwriter reputation influence the level of short-run performance.

Long-run Performance

Table 4 reports the average and cumulative average abnormal returns for the 36 months after the listing date for 93 IPOs between 2002 and 2005. Focusing on Columns 3 and 4, when the market benchmark is used, the results show that the average abnormal return was only significant in the 17th, 18th, 23rd, 24th, 25th, 27th, 28th, 29th and 34th month after the IPO.

It is evident that in the long-run, MESDAQ Market IPO companies tend to underperform the market; the CAR for 36 months post-IPO is –41.74%. As seen in Figure 2, the CAR becomes negative after the sixteenth month, and the CAR starts to decrease steadily from –4.31% in month 17 to –41.74% in month 36. The negative CAR starts to be significant only at month 24, continuing to month 36. The lowest CAR of –41.74% occurs in month 36 and is statistically significant at the 1% level. The underperformance of IPO companies can also be observed when the matching company benchmark is used. In 36 months post-IPO, the CAR is still negative at –17.44%, but insignificant.[4] The results of this study differ from prior Malaysian studies, such as Jelic et al. (2001), Corhay et al. (2002), Ahmad-Zaluki et al. (2007), and How et al. (2007). They found that Malaysian IPO companies outperformed the market in the three-year period by

24.83%, 41.71%, 32.63%, and 41.00%, respectively. Following Ahmad-Zaluki et al.'s (2007) argument, the difference in results may reflect the different sample composition in terms of sample size, influence of MESDAQ Market companies in the sample, and the different time period examined.

Table 4
Average and cumulative average abnormal returns

Month	*N*	AAR (%) KLCI-adjusted	*t*-stat	AAR (%) Matching company-adjusted	*t*-stat	CAR (%) KLCI-adjusted	*t*-stat	CAR (%) Matching company-adjusted	*t*-stat
1	93	2.18	0.54	4.28	1.05	2.18	1.17	4.28*	1.91
2	93	–0.83	–0.36	–0.15	–0.06	1.35	0.51	4.13	1.30
3	93	–2.49	–1.46	–3.35	–1.46	–1.14	–0.35	0.78	0.20
4	93	–2.12	–1.26	–1.71	–0.86	–3.27	–0.88	–0.94	–0.21
5	93	3.11	1.57	6.60***	2.69	–0.16	–0.04	5.66	1.13
6	93	1.63	0.74	1.63	0.66	1.47	0.32	7.29	1.33
7	93	–0.25	–0.15	1.48	0.67	1.22	0.25	8.77	1.48
8	93	0.31	0.24	0.42	0.16	1.53	0.29	9.19	1.45
9	93	–0.17	–0.11	2.71	1.61	1.36	0.24	11.90*	1.77
10	93	–0.71	–0.61	0.56	0.35	0.65	0.11	12.46*	1.76
11	93	0.84	0.47	1.44	0.76	1.49	0.24	13.90*	1.87
12	93	–0.99	–0.65	2.06	1.07	0.50	0.08	15.96**	2.05
13	93	2.78	0.98	1.81	0.62	3.28	0.49	17.77**	2.20
14	93	–0.82	–0.41	–0.22	–0.09	2.46	0.35	17.55**	2.09
15	93	–0.94	–0.58	–0.24	–0.11	1.52	0.21	17.32**	1.99
16	93	–0.72	–0.36	–2.22	–0.77	0.80	0.11	15.10*	1.68
17	93	–5.11***	–3.13	–4.96**	–2.63	–4.31	–0.56	10.14	1.10
18	93	–2.33*	–1.81	–2.59	–1.34	–6.64	–0.84	7.55	0.79
19	93	–1.54	–0.76	–1.27	–0.60	–8.18	–1.01	6.27	0.64
20	93	–2.25	–1.57	–1.71	–0.91	–10.43	–1.25	4.56	0.46
21	93	–0.08	–0.05	–0.20	–0.09	–10.52	–1.23	4.37	0.42
22	93	–1.26	–0.69	–1.30	–0.63	–11.77	–1.35	3.07	0.29
23	93	–2.86*	–1.92	–1.78	–1.03	–14.63	–1.64	1.29	0.12
24	93	–4.00***	–2.69	–0.79	–0.43	–18.63**	–2.04	0.50	0.05
25	93	–3.77***	–2.77	–1.44	–0.75	–22.40**	–2.41	–0.94	–0.08
26	93	–0.73	–0.47	–3.19	–1.60	–23.13**	–2.44	–4.13	–0.36
27	93	–3.08*	–1.89	–2.39	–1.06	–26.21***	–2.71	–6.52	–0.56
28	93	–5.47***	–4.45	–2.13	–1.33	–31.67***	–3.22	–8.65	–0.73

(continued on next page)

Table 4 *(continued)*

Month	N	AAR (%) KLCI-adjusted	*t*-stat	AAR (%) Matching company-adjusted	*t*-stat	CAR (%) KLCI-adjusted	*t*-stat	CAR (%) Matching company-adjusted	*t*-stat
29	93	–2.89**	–2.20	–0.59	–0.36	–34.56***	–3.45	–9.24	–0.77
30	93	0.71	0.38	1.82	0.84	–33.86***	–3.32	–7.42	–0.60
31	93	–1.37	–0.91	–1.37	–0.78	–35.23***	–3.40	–8.79	–0.70
32	93	–1.12	–0.47	–0.47	–0.19	–36.35***	–3.45	–9.27	–0.73
33	93	–2.19	–1.25	–0.09	–0.05	–38.54***	–3.60	–9.36	–0.73
34	93	–3.04**	–1.99	–5.47***	–2.70	–41.57***	–3.83	–14.83	–1.13
35	93	0.64	0.34	–0.65	–0.30	–40.93***	–3.72	–15.48	–1.17
36	93	–0.81	–0.45	–1.96	–0.67	–41.74***	–3.74	–17.44	–1.30

Note: *, **, and *** denote significantly different from zero at the 0.10, 0.05 and 0.01 levels, respectively

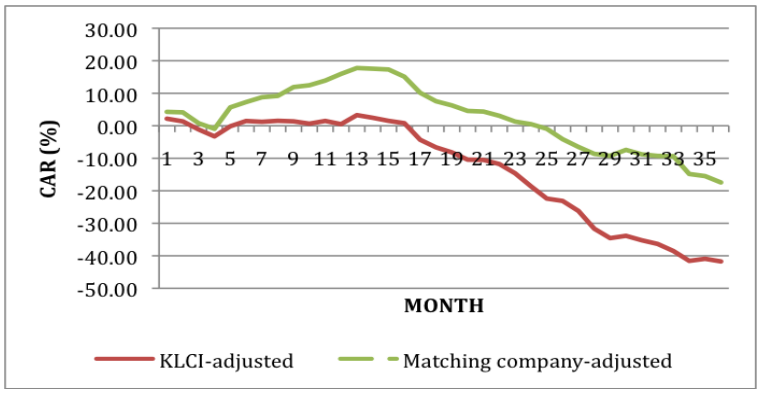

Figure 2. Cumulative average abnormal returns

Table 5 reports the long-run share price performance using the buy-and-hold return method. Column 2 of Table 5 reports the raw buy-and-hold returns for our IPO sample, while columns 3 and 5 report the results of the buy-and-hold abnormal return (BHAR), calculated as the difference between the raw returns and the market returns and matching company returns, respectively. Interestingly, the results show that IPO companies listed on the MESDAQ Market outperform the market in the first year of going public, with a BHAR of 12.54%, but this value is insignificant. The level of overperformance is greater when the matching company benchmark is used, with a BHAR of 31.43%, significant at the 5% level. In the second year and the third year, these companies underperform the market with a BHAR of –26.83% (significant at the 10% level) and –68.88% (significant at the 1% level), respectively.[5] Even though the level of underperformance in the third year is less severe when the matching company

benchmark is used, with a BHAR of –25.03%, it is statistically significant at the 5% level. Our results are consistent with the results of CAR, in which IPO companies listed on the MESDAQ Market tend to underperform both the market and the size-matched company in the long run.

Table 5
Buy-and-hold abnormal returns

Year	IPO BHR (%)	BHAR (%) KLCI	*t*-stat	BHAR (%) Matching company	*t*-stat
1	23.74	12.54	0.995	31.43**	2.513
2	21.41	–26.83*	–1.913	13.56	0.978
3	–20.64	–68.88***	–10.141	–25.03**	–2.280

Note: *, **, and *** denote significantly different from zero at the 0.10, 0.05 and 0.01 levels, respectively

Again, our findings are in contrast with the results of prior Malaysian studies by Jelic et al. (2001), Corhay et al. (2002), Ahmad-Zaluki et al. (2007), and How et al. (2007). They found that in using the BHAR method to measure the long-run performance, the Malaysian IPO companies outperformed the market in the three-year period by 21.98%, 39.58%, 17.86% and 28.23%, respectively. A possible reason for why the findings of the present study regarding long-run performance differ from those of all available past Malaysian studies is that those studies were conducted using IPO data listed on the Main Board and/or the Second Board. However, the results of the present study are consistent with those reported for other countries (e.g., China, Germany, India, Japan, Spain, Sri Lanka and the U.K.). Li and Naughton (2007), Bessler and Thies (2007), Marisetty and Subrahmanyam (2010), Kirkulak (2008), Alvarez and Gonzalez (2005), Peter (2007), and Goergen et al. (2007) reported that in the three-year period, IPO companies underperformed the market with a BHAR of –6.50%, –12.70%, –34.49%, –50.10%, –28.24%, –12.96%, and –21.98%, respectively.

Cross-sectional patterns of long-run performance

To investigate possible reasons for the long-run underperformance of MESDAQ Market IPOs, this section reports cross-sectional patterns of long-run performance. We split our sample companies into groups: technology and non-technology sectors, hot and cold issue period IPOs, and high, medium and low initial returns. To facilitate comparison with prior Malaysian studies, we present the results of BHAR using the matching companies benchmark. To provide robustness for our results, we report the results based on mean and median abnormal performance.

Panel A of Table 6 shows the BHARs for technology sector IPOs and non-technology sector IPOs. As shown in Panel A, both technology and non-technology sector IPOs underperform the matching companies benchmark. However, the technology sector IPOs show more dramatic underperformance than those in the non-technology sector. The mean and median levels of underperformance for companies in the technology sector are –34.49% and –28.36%, respectively. Both values are statistically significant at the 5% level. Meanwhile, the mean and median levels of underperformance for the non-technology sector are only –9.35% and –18.74%, respectively, and are insignificant. Our results support the fad hypothesis of Aggarwal and Rivoli (1990). This hypothesis suggests a non-rational temporary overvaluation, above intrinsic values, which is caused by investor over-optimism that eventually evaporates or causes long-run underperformance (Naceur & Ghanem, 2001). The severe underperformance in the technology sector, in comparison to the non-technology sector, may be due to the risky nature of technology sector IPOs.

Table 6
Cross-sectional patterns of buy-and-hold abnormal returns

	Mean	Median
Panel A: Sector		
Technology (*n* = 58)	–34.49**	–28.36**
p-value	0.023	0.028
Non-technology (*n* = 35)	–9.35	–18.74
p-value	0.561	0.322
Panel B: Hot issue period		
Hot period (*n* = 71)	–17.99*	–28.41**
p-value	0.091	0.047
Cold period (*n* = 22)	–47.72	–5.42
p-value	0.149	0.314
Panel C: Initial return (%)		
Low (*n* = 31)	–17.38	–16.51
p-value	0.324	0.342
Medium (*n* = 31)	–21.31	1.36
p-value	0.332	0.563
High (*n* = 31)	–36.39*	–32.87***
p-value	0.056	0.004
All	–25.03**	–27.40***
p-value	0.025	0.018

Note: *, **, and *** denote significantly different from zero at the 0.10, 0.05 and 0.01 levels, respectively

Panel B reports the results of long-run performance by the hot and cold issue period IPOs. The mean underperformance of hot issue period IPOs appears less severe than that of cold issue period IPOs. However, the result of the median is the reverse. Hot issue period IPOs show more underperformance (median = –28.41%, statistically significant at the 5% level) than cold issue period IPOs (median = –5.42%, insignificant). The difference in results between the mean and the median suggest the effect of outliers in the long-run BHAR. Consequently, we rely on the results of BHAR based on the median. Although it is not reported in the table, we also performed the same analysis using the market benchmark. We find that both the mean and median underperformances are more severe in the hot issue period than in the cold issue period. Our results suggest that underperformance occurs in years where there are a larger number of IPOs, which supports the 'window of opportunity' hypothesis and the findings of Loughran and Ritter (1995). However, this study is not in line with the findings of Ahmad-Zaluki et al. (2007).

The IPO companies in our sample are also segmented by level of initial returns: low, medium and high. There is an equal number of IPOs in each category (31). As shown in Panel C, there is a tendency for high initial return groups to have the worst long-run performance. Both the mean and median BHARs show statistically significant underperformance of –36.39% (at the 10% level) and –32.37% (at the 1% level), respectively. However, the level of mean and median underperformance for the low initial return group is less severe and insignificant. Our results suggest that underpriced issues perform less well in the long run. This finding is consistent with Kirkulak (2008), who suggests that long-run underperformance is due to the temporary overvaluation of IPOs by investors in early trading. As a whole, our results support the fad hypothesis, which predicts that companies with the highest initial returns will have the lowest subsequent returns.

CONCLUSION

This paper examines the short-run and long-run share price performance of Malaysian IPO companies listed on the MESDAQ Market from 2002 to 2005. Consistent with past Malaysian studies, the results of market-adjusted initial returns show that IPO companies are significantly underpriced in the short run. However, in the long run, both the CAR and the BHAR methods report that Malaysian IPO companies listed on the MESDAQ Market underperform the market. Our results contrast with prior studies using Malaysian data finding that IPO companies listed on the Main Board and/or the Second Board tend to outperform the market in the long-run. The difference in results may be because more than half of our sample consisted of technology-based companies. These

companies are found to have more severe underperformance than their counterparts. In addition, companies that went public during hot issue periods and companies with high initial returns perform less well in the long run. Our long-run performance analysis supports the fad hypothesis of Aggarwal and Rivoli (1990) in explaining underperformance. Overall, our results suggest that investors who purchase IPO shares on the MESDAQ Market gain high positive returns in the short run but do not fare well in the long run.

NOTES

1. As of 3 August 2009, the Main Board and the Second Board were merged and renamed the MAIN MARKET. Meanwhile, the MESDAQ Market was revamped and renamed the ACE MARKET.
2. We have spent considerable time collecting additional data for companies listed on the Main Board and the Second Board to compare the initial returns with companies listed on the MESDAQ Market. Using a sample of 145 IPO companies listed on the Main Board and the Second Board, we find that the mean raw and market-adjusted initial returns for both listing boards are slightly lower (20.36% and 19.37%, respectively) than the initial returns given by companies listed on the MESDAQ Market. When we further split these samples into the Main Board and the Second Board, we find that both the mean raw and market-adjusted initial returns for the Main Board are lower than for the Second Board (raw initial returns: Main Board = 15.08% vs. Second Board = 23.88%, market-adjusted initial returns: Main Board = 14.50% vs. Second Board = 22.79%). All of these figures are significant at the 1% level. Similar results are also observed by Rahim and Yong (2010) in their study on initial returns of Malaysian IPOs using data from 1999–2007.
3. Neter et al. (1985) suggested that a multicollinearity problem can be indicated by having the VIF = 10.
4. One might wonder whether the results using matching company benchmark are more reliable than using KLCI as a benchmark. We suggest that the results are less reliable when using KLCI as a benchmark because MESDAQ is not comparable to the companies included in the KLCI. We used KLCI as a market benchmark due to data limitations, as mentioned in our method section.
5. Additional analysis on data for IPO companies listed on the Main Board and the Second Board shows that these companies underperformed the market in the three-year post-IPO period with a BHAR of –48.36% (significant at the 1% level). After splitting the data into Main Board and Second Board companies, we find that Main Board IPO companies perform less well than Second Board IPO companies (–52.89% vs. –45.30%). Both values are significant at the 1% level. However, the level of underperformance for both Main Board and Second Board companies is lower than what was observed for the companies listed on the MESDAQ Market

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