Do Malaysian spin-offs create value?

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ABSTRACT

This paper investigates the short and long-run share return performance of Malaysian spin-off firms during the period January 1980 to April 2011. Using daily and monthly data, we examine performance of spin-off firms against the benchmarks of Malaysia All-Shares indices. We find that the parent firms significantly outperformed the market during the few days surrounding the announcement date even after an adjustment for size. This indicates both that the market anticipates increased value for parent firm's shareholders and a potential exploitable stock market pricing inefficiency. In the long-run analysis (three-years), however after allowing for size we fail to find abnormal performance for either parents or spun-off firms.

Key words: Spin-offs, share returns performance, market efficiency, size effect

JEL Classification: G14

1.0 Introduction

A crucial question in corporate spin-offs is whether the action creates wealth for shareholders over the short and long-run periods. Earlier studies in other countries suggest that spin-offs generate positive abnormal returns over the few days surrounding the announcement. However, the evidence on the long-run share returns performance of firms is more mixed. The present study fills a gap in the literature by discovering how Malaysian spin-off firms perform in both the long-run and the short-run.

It makes several contributions. First, as there is no extant evidence on the influence of the firm size effect in the event of a spin-off in the Malaysia capital market, the present study adds to a growing body of international evidence in corporate spin-offs decision. Second, we employ two novel market indices; Malaysia All-Shares Equal Weight Index (MAS-EWI) and Malaysia All-Shares Value Weight Index (MAS-VWI)[1]. Both benchmarks are more comprehensive than any used in previous Malaysian event studies which commonly adopt two popular market indices, namely FTSE Kuala Lumpur Composite Index (KLCI) and FTSE Bursa Malaysia EMAS Index which fail to represent the broader Malaysia market[2]. Third, we use Cumulative Abnormal Returns (CARs), Buy-and-Hold Abnormal Returns (BHARs) and Market Model as the abnormal return metrics to provide a more comprehensive analysis of share return performance, whereas previous international studies used only one of these models in their analysis.

[1] Both benchmarks cover all sizes of all firms (based on the market capitalization).

[2] Each benchmark comprises of different cohorts of firms based on market capitalization. The FTSE Bursa Malaysia KLCI Index consists of 30 largest firms in the market, whilst the FTSE Bursa Malaysia EMAS Index constitutes the top 100 largest firms and 261 small capitalization firms (as at 16th February 2011).

In the following we define a corporate spin-off as occurring when the shares of a subsidiary are distributed on a pro-rata basis to the original shareholders of the parent firms. Following the transaction, the subsidiary becomes an independent firm; therefore the parent firm has no controlling relationship with it. The former parent shareholders, however now own two different securities; the shares from the parent and the shares from the newly spun-off firm.

Spin-off activity by Malaysian listed firms began in the late 1980s in tandem with the development of the capital market. It has gathered momentum with increasing numbers of corporate spin-offs during the bull-run period of 1993 to 1994; and also in the years following the 1997 crisis. Out of 36 cases, 67% of the spin-off announcements occurred during the bear periods from 1999 to 2006. Through a case-by-case review from financial press announcements and other documents (for example firm annual report) we discovered that the spin-off event in Malaysia is claimed by most managers to be motivated by operating efficiency gains through increased corporate focus. Managers spin-off their unrelated activities to concentrate on their core businesses in order to eliminate negative synergies between the divested assets (spun-offs) and the remaining assets (parents). Evidence in other countries suggests that the action leads to better share performance and thus creates value (Daley et al. 1997; Desai and Jain 1999; Veld and Veld-Merkuovela 2001; Murray, 2008).

We study a sample of 36 spin-offs completed between January 1980 and April 2008. In a previous study, examining 85 Malaysian firms, Yoon and Ariff (2007) find a significant positive cumulative average abnormal return (CAAR) of +22.7% in a two-day (day -1 to day 0) event window surrounding the announcement date during

the period of 1986 to 2003. It is unfortunate that they do not study long-run share returns performance and the influence of the firm size effect. Therefore the present work represents the first comprehensive study of corporate spin-offs in Malaysia capital market in the short and long-run periods against the MAS-EWI and MAS-VWI.

Indications of the size effects are seen in the different results when we switch from equal- weighted index to value weighting (we find a reverse size effect in Malaysia with large firms outperforming).

Our study finds that: (1) before size adjustment, there was a significant outperformance (up to +5.40% above the market) in the short-run period surrounding the spin-offs announcement day (from day -1 through day +1) for parent firms; (2) before size adjustment, parent firms significantly outperformed the MAS-EWI, on average by +19.61%, but significantly underperformed the MAS-VWI, on average by -18.74% in the three-year holding period following the completion month of the spin-offs; (3) before size adjustment, spun-off firms significantly outperformed the MAS-EWI, on average by +29.19%, but insignificantly underperformed the MAS-VWI, on average by -12.90% in the three-year period following the month of their listing; (4) before size adjustment, combined firms (parents plus spun-off firms) insignificantly outperformed the MAS-EWI, on average by +16.50%, but significantly underperformed the MAS-VWI, on average by -23.48% in the three-year holding period following the completion month of spin-offs; (5) after comprehensive size adjustment, our results confirm the presence of spin-off effect for parent firms during the short-run; (6) after comprehensive size adjustment in the three-year holding period, we observe there is no significant spin-off abnormal return

for parents, spun-offs and combined firms; (7) when sample firms are divided into small and large groups on the basis of their market capitalizations, we find smaller parent firms perform better than their larger counterparts in the short-run, however the results are mixed and inconclusive over the long-run period. Overall, these findings imply that spin-offs produce positive abnormal share returns in the short-run period; but fail to demonstrate abnormal performance after adjusting for size in the long-run period.

The remainder of the paper is organized as follows. Section 2 describes a brief literature review concerning the short and long-run share returns performance of spin-off firms. Section 3 explains the sample selection and data. Section 4 describes the methodologies used in the present study. Section 5 presents the results for both short and long-run share returns performance of Malaysian spin-off firms. Section 6 concludes the paper.

2.0 Literature Review

A spin-off effect has been shown in the US and European studies (e.g. Hite and Owers 1983; Schipper and Smith 1983; Miles and Rosenfeld 1983; Rosenfeld, 1984; Cusatis et al. 1993; Desai and Jain 1999; Krishnaswami and Subramaniam 1999; Kirchmaier, 2003; Veld and Veld Mekuovela 2004). The US studies generally show that investors who purchase and then sell shares in the spin-off announcement window (short-run period) and those who hold for three year periods following the completion of spin-offs (long-run period) gain high positive returns. In Europe the evidence is more mixed with three-year holding period studies (e.g. Kirchmaier, 2003; Veld and Veld Merkuovela, 2004) failing to find evidence that spin-offs create value.

Using 146 non-taxable[3] and voluntary US spin-off firms over the 1965-1988 period, Cusatis et al. (1993) investigate value creation through spin-offs by measuring the share return performance of parent, spun-off, and combined firms. They use the buy-and-hold investment strategy against the benchmark of equal-weighted matched-firms portfolios (adjusted to size and industry). They report significantly positive abnormal returns for spun-offs, their parents and combined firms in the three year holding periods.

Similarly, Desai and Jain (1999) compute the buy-and-hold abnormal returns of 155 US firms using a matching firm methodology in the three-year holding period. They show results for combined, spun-off and parent firms separately for focus-increasing[4] and non focus-increasing sub-samples. Consistent with Cusatis et al. (1993), they find evidence of outperformance for both combined and spun-off firms relative to their equal-weighted matching firms in the three-year holding period following the completion of the spin-offs. The average buy-and-hold abnormal returns in the three-year holding period are positively significant at +19.82% and +32.31% for combined and spun-off firms, respectively. However, for parent firms, the result shows a positive but insignificant abnormal return of +15.18% in the three-year holding period.

Veld and Veld-Merkuovela (2004) investigate the short and long-run wealth effect of 156 spin-off announcements by European firms over the period from January 1987 to September 2000. During these years, most spin-offs occurred in the United Kingdom (70), followed by Sweden (24), Germany (14) and Italy (11). The study indicates that for all countries, the cumulative average abnormal return, CAAR is

[3] See Cusatis et al. (1993, p. 295).
[4] A spin-off is considered to be a focus-increasing when the standard industrial classification (SIC) code of the subsidiary is different from its parent.

+2.62% over the event window from day -1 to day +1, significant at the 1% level. The abnormal returns for smaller event windows (e.g between day -1 to day 0, and day 0 alone) also indicate significantly positive results at the 1% level[5]. Using the equal-weighted matching-firm approach, the authors declare, after examining the share returns performance in the three-year holding period that parent, spun-off and combined firms insignificantly underperform their corresponding matching firms.

Kirchmaier (2003) investigates the short and long-run effects of the spin-off event on shareholder wealth using a sample of 48 European firms. Following a similar approach to Veld and Veld-Merkuovela (2004) he finds positive significant announcement effects of +4.1% for the two-day event period (day 0 to day +1) and +5.4% during the three-day event period (day -1 to day +1), respectively. For longer holding periods, the combined performance of both parent and spun-off firms results is a statistically insignificant abnormal return of +4.2% from day +0 to day +699 compared with the overall market benchmark. Spun-off firms appear to outperform the market whereas parent firms don't; spun-off firms demonstrate a statistically significant abnormal return of +17.3% (day +0 to day +699). The parent firms insignificantly underperformed the market by -5.9% (day +0 to day +699).

In addition, Kirchmaier investigates the performance effects of both large and small spin-off firms with size measured at the announcement date and the execution date of spin-off. Kirchmaier finds spin-offs by small firms outperformed larger ones by a considerable margin. Prior to the announcement period (from day -10 through day -1), the small parent firms statistically outperformed their larger peers on average by +8%. Similarly, during the period surrounding the spin-off announcement (from day

[5] The results show cumulative average abnormal returns of +1.74% for day -1 to day 0; and +1.19% for day 0, respectively.

-2 to day +1), the small parent firms perform better than the large parent firms by +3.0%, statistically significant at 1% level. In the three-year holding period following the spin-offs transaction, the group of smaller parent firms outperformed the group of larger parent firms (+47.9% compared with +34.5%). Likewise, the small spun-off firms statistically outperformed the larger spun-off firms (+50.7% compared with +27.1%). In summation, the overall findings are consistent with the presence of size effect documented in other finance literatures in which smaller firms outperformed those of larger firms.

3.0 Sample Selection and Data

To ensure a comprehensive study all parent and spun-off firms traded on the Main Board, the Second Board and MESDAQ of Bursa Malaysia from 1st January 1980 to 30th April 2008 are identified. This enables the present study to analyze one to three years' post spin-off performances up to April 2011. We identify 36 Malaysian parent firms conducting spin-offs.

Two event dates are specified for this analysis, the spin-off announcement date and the completion month of the spin-off. The announcement date is designated as the one in which the event first receives a mention in the financial press. On the other hand, the event month is defined as the month on which the new spun-off firm is listed, and trading its shares begins on Bursa Malaysia. The identities of both parent and spun-off firms are obtained from the Investors Digest and Bursa Malaysia's website. These sources of announcements are then cross-checked with the relevant press and financial announcements, for instance Nexis Business and News database, local English newspaper, individual firm's website and its annual report. Combined firms are created by weighting the returns of parents and that of the spun-off firms

by the market value of equity of the completion month of spin-off. As a spin-off involves a pro rata distribution of shares of a subsidiary, creating combined firms provides information about the return that an investor would have realized if he had held on the shares of both parent and spun-off firms following the completion month of spin-offs (Desai and Jain 1997).

In the case of daily data, defining t=0 as the announcement date, t=-20 days to t=+20 days represents the event period or observation period, and t=-220 days to t=-21 constitutes the estimation period (to apply in the Market Model for obtaining the value of alpha, α and beta, β). Share price data are collected from the Datastream database. Specifically, the data comprised of individual parent and spun-off firms' adjusted closing price (adjusted for dividends).

4.0 Methodology

To analyze short-run share return performance, we employ the Market Model (henceforth MM) and Cumulative Abnormal Returns (henceforth CARs). Buy-and-Hold Abnormal Returns (henceforth BHARs) is used to measure the share returns performance over the long-run period. Fama (1998) in his study notes that the choice of weighting scheme depends on the hypothesis of interest to the researcher. Loughran and Ritter (2000, p.363, note 2) state that "if one is trying to measure the abnormal returns on the firms undergoing some event, then each firm should be weighted equally.... [this] will produce point estimates that are relevant from the point of view of a manager, investor, or researcher attempting to predict the abnormal returns associated with a random event". Veld and Veld-Merkuovela (2004) claim that they prefer equal weighted portfolio returns to test whether the random event of spin-offs is associated with long-run superior performance.

Therefore, we adopt equal weighted portfolio returns because spin-offs are random events that occur intermittently from January 1980 to April 2008.

4.1 Market Model and Cumulative Abnormal Returns (CARs) Model

Following the Market Model, the daily abnormal returns for security j of spin-off firms in event period t is computed as:

$$\hat{A}R_{jt} = R_{jt} - \left(\hat{\alpha}_j + \hat{\beta}_j R_{mt}\right)$$

Where, $\hat{A}R_{jt}$ and R_{jt} are the daily abnormal return and the daily actual return of security j in event period t, respectively. R_{mt} is the daily market return of MAS-EWI and MAS-VWI in event period t. The parameters of alpha, $\hat{\alpha}_j$ and beta, $\hat{\beta}_j$ are the regression intercept and the slope of characteristic line, respectively; estimated for security j over the estimation period (e.g. 200 trading days) by running the ordinary least squares (OLS) regression.

Based on the Cumulative Abnormal Returns (CARs) Model, the performance of an individual security is adjusted to the performance of a market index. Therefore, the daily abnormal returns of any security j is given as the difference between daily actual return and the corresponding daily return on the market index during period t, and are computed as follows:

$$AR_{jt} = R_{jt} - R_{mt}$$

The abnormal return for each security j (derived from the above two models) is observed for each day in the event period and averaged across N firms or securities using the following equation:

$$AAR_t = \frac{1}{N}\sum_{j=1}^{N} AR_{jt}$$

Where, AAR_t is the daily average abnormal return in event period t and N denotes the number of securities in the sample.

Finally, the $CAAR_{(t_1,t_2)}$ is computed by summing the daily average abnormal returns, AAR_t over days from period t_1 to period t_2 as follows:

$$CAAR_{(t_1,t_2)} = \sum_{t=t_1}^{t_2} AAR_t$$

4.2 Buy-and-Hold Abnormal Returns (BHARs)

The main justification for including BHARs for long-run abnormal returns is that this approach is able to accurately simulate the effect of a spin-off event on the investor's portfolio due to its more accurate compounding approach compared with CARs.

The three-year holding period return is examined by computing the compounded monthly Buy-and Hold Return, BHR_{jT} for both parent and spun-off firms in time t as follows:

$$BHR_{jT} = \left[\prod_{t=1}^{T} (1 + r_{jt}) \right] - 1$$

Where, r_{jt} is the monthly actual return on security j in event period t. T is designated as number of months in event period t.

The Buy-and-Hold Returns, BHR_{mT} for the market benchmarks, proxied by the MAS-EWI and MAS-VWI are:

$$BHR_{mT} = \left[\prod_{t=1}^{T} (1 + r_{mt}) \right] - 1$$

r_{mt} is the corresponding monthly index level of MAS-EWI and MAS-VWI in event period t.

The Buy-and-Hold Abnormal Returns for each security or firm in event period t are computed as:

$$BHAR_{jt} = \left[\prod_{t=1}^{T} (1 + r_{jt}) - 1 \right] - \left[\prod_{t=1}^{T} (1 + r_{mt}) - 1 \right]$$

Where, $BHAR_{jt}$ is the Buy-and-Hold Abnormal Return of security j in event period t.

4.3 The statistical tests

The statistical significance of the cumulative average abnormal returns is calculated following Brown and Warner (1980, 1985) and the t-value for the daily cumulative average abnormal returns, $CAAR_{(t_1,t_2)}$ from period t_1 to period t_2 as follows:

$$t = CAAR_{(t_1,t_2)} / \sigma(AAR_t) * T^{\frac{1}{2}}$$

Where, $CAAR_{(t_1,t_2)}$ is the daily cumulative average abnormal return from period t_1 to period t_2, $\sigma(AAR_t)$ is the standard deviation of daily average abnormal return and T denotes the total number of days in event period t.

The test-statistic for the monthly buy and hold abnormal returns, $BHAR_{(t_1,t_2)}$ during the clustering period from t_1 to period t_2 is calculated as:

$$t = \overline{BHAR}_{(t_1,t_2)} / \sigma(BHAR_t) / T^{\frac{1}{2}}$$

Where, $BHAR_{(t_1,t_2)}$ is the monthly average buy and hold abnormal return from period t_1 to period t_2, $\sigma(BHAR_t)$ is the standard deviation of monthly average buy and hold abnormal return in event period t and T is the total number of firms in the sample.

To measure the significant difference in abnormal returns between the small and large spin-off firms, we employ non parametric test Mann-Whitney Rank Test.

5.0 Results

5.1 Short-run performance of parent firms following the spin-offs announcement

Tables 1 and 2 report evidence of the percentage daily abnormal returns (adjusted to the market) on parent firms from day -20 through day +20 against the MAS-EWI and MAS-VWI benchmarks[6].

[Tables 1 and 2 about here]

Though the CARs Model and the MM exhibit insignificant results over the periods prior to the spin-off announcement; the cumulative average abnormal returns (henceforth CAARs) are persistently positive for both market benchmarks around the date of announcement.

Notably, all the abnormal return metrics (CARs Model and MM), demonstrate positively significant abnormal returns in the three-day event window, from day -1 through day +1. Using the MAS-EWI as a benchmark, spin-offs generate positively significant CAARs of +4.99% and +5.06% for the CARs Model and MM, respectively. When the abnormal return metrics are measured against the MAS-VWI, the CAARs for the CARs Model and MM are +5.40% and +5.04%, respectively. Both abnormal returns are positively significant at 5% level.

The presence of strongly significant positive abnormal returns for parent firms in the three-day event window (day -1 through day +1) is of considerable interest, indicating that the market anticipates considerable shareholder wealth enhancement.

[6] As a robustness check, we compute the statistical significance level using the standard deviation (employed in the t-statistics' calculation) based on the pre-event estimation period. The pre-event estimation period is estimated from day -220 to day -21. The results show significant improvements in the significance level for all event windows. However, we do not report them in the present paper.

Although our findings are slightly greater than those documented in the US (e.g. Desai and Jain 1999), they are comparable to several European studies (Kirchmaier, 2003; Veld and Veld-Merkuovela 2004).

Interestingly, we also observe that parent firms outperform both market benchmarks in the five-day event window (day +1 through day +5) following the spin-off announcement date. However, using the MAS-VWI as a benchmark, only the MM is found to show a significant CAAR of +3.88% (at the 10% level). Unfortunately neither the CARs Model nor the MM posits significant results (though both methods record positive abnormal returns) when the MAS-EWI is used as a market benchmark. So we find it difficult to conclude on this evidence alone that we have found a strongly expressed exploitable market pricing inefficiency, especially considering that transaction costs have not been deducted (see later).

5.2 Long-run performance of parents, spun-offs and combined firms following the completion month of spin-offs

Although Lyon et al. (1999, p.198) remind us that "analysis of long-run abnormal return is treacherous", a number of methods are proposed[7]. Extensive literature favours the use of the BHAR method as it copes better with the effect of compounding compared with CAR (e.g. Ritter, 1991; Barber and Lyon 1997). In modern event studies, the most commonly accepted methodology is the BHAR approach. Therefore, we engage this method to capture the effect of a spin-off event on the investor's portfolio over the long-run period[8].

[7] See for example Barber and Lyon (1997), Fama (1998) and Lyon et al. (1999).

[8] To double check the results presented by the BHAR Model, we analyze the long-run share returns performance using the CAR Model. By adjusting the share returns of spin-off firms to the market benchmarks of MAS-EWI and MAS-VWI, we find that the CAR Model produces results consistent with the BHAR, therefore we do not report them in this paper.

Table 3 presents the percentage monthly buy-and-hold abnormal returns (adjusted to the market) for the full sample of parents, spun-offs and combined firms in the three year holding periods following the completion month of spin-offs against the MAS-EWI and MAS-VWI benchmarks.

[Table 3 about here]

In Panel A, we find parent firms significantly outperformed (at the 10% level) the MAS-EWI, on average by +19.61% in the three-year holding period following the listing of spun-off firms. Our result supports the earlier finding reported by Cusatis et al. (1993). When the buy-and-hold returns of parent firms are measured against the market benchmark of MAS-VWI, the parent firms show a contrary result. The parent firms demonstrate negative and significant ABHAR of -18.74% over three years, indicating that in the Malaysia market as a whole large firms outperformed small firms during the study period.

In Panel B, the results suggest that spun-off firms significantly outperformed the MAS-EWI, on average by +29.19% over the thirty-six months holding periods pursuant their listing month. We find that the long-run share returns performance of the spun-off firms is better than the parent firms (perhaps they are more focused on their core business than their corresponding parent firms, as claimed by most Malaysian spin-offs managers). This result thus supports the extant evidence documented in both European (e.g. Kirchmaier, 2003) and US (e.g. Cusatis et al. 1993; Desai and Jain 1999) markets. In contrast, using the MAS-VWI as a benchmark, the result shows that spun-off firms insignificantly underperformed the

market, on average by -12.90% over the three-year holding period following the completion month of spin-off.

In Panel C, though the combined firms outperformed the MAS-EWI in the three-year holding period following the completion month of spin-offs, the ABHAR at +16.50% is statistically insignificant. Nevertheless, we find that the combined firms are associated with significant negative ABHAR when the MAS-VWI is used as a benchmark. The ABHAR for combined firms over the thirty-six months holding periods is -23.48%, statistically significant at 5% level. Not surprisingly, our finding substantially differed from those that in the US (e.g. Cusatis et al. 1993; Desai and Jain 1999) and European (e.g. Kirchmaier, 2003; Veld and Veld-Merkuovela 2004) studies.

5.3 Index Performance of the FTSE Bursa Malaysia Index Series

We have already pointed out an indication that Malaysian large firms outperformed small firms; we now examine this in more detail. FTSE Asia Research (June, 2009) reports that Malaysian small capitalization firms consistently underperformed large capitalization firms over the 12-year period (1997-2008). We analyze the index performance of the FTSE Bursa Malaysia Index Series over the 15-year period (1996-2011) as a preliminary to investigating whether the size effect subsumes the spin-off effect. The historical index performance of the FTSE Bursa Malaysia Index Series is shown in Table 4 and Figure 1. Since the price index data for all Index Series (excluding FTSE Bursa Malaysia Kuala Lumpur Composite Index) is officially available in Datastream on 1st January 1996, our analysis begins on the particular date.

[Table 4 and Figure 1 about here]

We find that the FTSE Bursa Malaysia KLCI, a large cap index, has outperformed other indices over a long-run period. Over the 15 years period, the FTSE Bursa Malaysia KLCI generates substantial positive cumulative returns, up to +44.01%. Over the same period, the FTSE Bursa Malaysia Fledgling Index records the worst share returns performance of -29.43%; followed by the FTSE Bursa Malaysia Small Cap Index with negative cumulative returns of -18.13%.

From Figure 1, we notice that both the FTSE Bursa Malaysia Fledgling and Small Cap indices outperformed the FTSE Bursa Malaysia KLCI during the bull periods of 1996 (prior to the 1997 financial crisis) and 2000. Nevertheless, we observe that the trend is reversed during the bear periods, from 2001 to 2006. The large capitalization firms continue to demonstrate superior performance in the subsequent years. It is important to note that our test period of one to three years' post spin-off performances coincides with the several periods of Malaysia bear markets. Two-thirds of the spin-off events occurred during the period 1999 to 2006, following the 1997-98 massive decrease in Malaysia share prices, disproportionately affecting small capitalization firms more than large capitalization firms. Our findings thus support the results documented by Nathrah (2006). Using all firms listed on the Bursa Malaysia during the period from 1994 to 2003, she observes that a reversed size effect is seen during the bear months; and a small firm effect tends to occur during the bull months.

To show the size composition of our sample firms, we present the percentage of spin-off firms based on the size-ranked decile portfolios (in Table 5) with the largest

market capitalization portfolio in deciles 1 and the smallest market capitalization in deciles 10.

[Table 5 about here]

Clearly the percentage of spun-off firms is distributed fairly evenly across the deciles. On the other hand, approximately 70% of the total number of parent firms is categorized in the largest market capitalization quintile; hence we need to test if the performance of spin-off firms is a manifestation of size effect.

5.4 Size adjustment

To ascertain whether there is a spin-off effect independent of a size effect, a full size adjustment analysis is conducted. Following Arnold and Baker (2007), we create "size-adjusted portfolios". To generate these, we firstly take the completion month of a spin-off and on that date allocate all the shares in the Malaysia market into deciles on the basis of market capitalization. Size decile 1 consists of the largest market capitalization firms, whilst size decile 10 includes firms with the smallest market capitalization. This allows us to then observe the returns for the size decile appropriate for the sample firm. We then have data for the returns (for each of our 36 spin-off firms) over the 36 months following the spin-off completion as a result of belonging to a size decile. If these returns are subtracted from the actual returns for the sample firm, we have the size-adjusted returns, and can then comment on whether the size effect subsumes the spin-off effect. We conducted a similar analysis for the few days around the spin-off announcement by forming size decile for each sample parent firm at the date of announcement and observing the average returns for size decile that the sample firm falls into.

Table 6 demonstrates the percentage monthly size-adjusted abnormal returns for the full sample of parents, spun-offs and combined firms in the three-year holding period following the completion month of spin-offs. Table 7 displays the daily size-adjusted abnormal returns for parent firms in the 41-trading day (day -20 through day +20) surrounding the announcement date.

[Table 6 and 7 about here]

After adjusting for size, our results confirm the presence of a spin-off effect for parent firms during the few days surrounding the announcement date. The size-adjusted abnormal returns (SAARs) in the three-day event window (day -1 through day +1) and in the five-day event window (day +1 through day +5) are recorded at +4.81% and +4.21%, respectively; indicating that the short-run outperformance of parent firms persist following the size-adjustment analysis. Interestingly, the size adjustment increases the strength of evidence in favour of a pricing inefficiency. In the five days following the announcement there is jump in returns indicating some post-announcement drift. But the results are significant only at the 10% level.

In contrast to the results obtained using market adjusted buy-and-hold abnormal returns as reported previously in Table 3, we observe there is no significant spin-off abnormal return for parents, spun-offs and combined firms over the three-year holding period after eliminating the influence of size; thus any spin-off effect is subsumed by the size effect.

5.5 Short-run and long-run performances of small and large spin-off firms

We stratified the sample firms by size based upon their market capitalization at the announcement date (for parents) and the completion month of spin-offs (for both parents and spun-offs). Four subsamples are thus created, dividing spin-off firms into large and small parent and spun-off firms, respectively. Table 8 shows the percentage daily abnormal returns (adjusted to the market) for small parent firms and large parent firms during the period surrounding the spin-off announcement (day -20 through day +20). Table 9 reports the percentage monthly abnormal returns (adjusted to the market) for both small and large parent firms during the 36-month holding period following the completion month of spin-offs. Table 10 presents the percentage monthly abnormal returns adjusted to the market of small and large spun-offs in the three-year holding period following their listing date. Each table shows whether the abnormal returns of the small spin-off firms are significantly different from their corresponding large spin-off firms.

[Tables 8, 9 and 10 about here]

Of the two models, the MM reports the best performance of small parent firm relative to their larger peers over the period from day -20 through day +20. The group of small parent firms outperformed the group of large parent firms, on average by +14.51% to +6.38% (MAS-EWI) and +16.60% to +4.80% (MAS-VWI). The difference in abnormal returns between the two samples is statistically significant at 5% level (MAS-EWI) and 1% level (MAS-VWI), respectively. It can be seen that the outperformance of small parent firms is more pronounced when the abnormal returns are measured against the MAS-VWI.

In the 20-trading days (day +1 through day +20) after the spin-off announcement date, we can see that both CARs Model and MM record superior performance of small parent firms relative to their larger counterparts. We find small parent firms outperformed large parent firms, on average by +4.47% to +2.68% (CARs Model) and +5.09% to +3.18% (MM). The difference in abnormal returns between the two samples (as shown in both methods) is statistically significant at 1% level. In the long-run period, the overall results are mixed and inconclusive.

6.0 Summary and Conclusion

This study provides a number of new findings about Malaysian corporate spin-offs. Our results show that spin-offs generate positively significant abnormal returns for parent firms in a three-day event window (day -1 through day +1) by up to +5.40%. We also find that investors can possibly earn positive abnormal returns of +3.88% (as shown in MM) if they purchase and sell shares in the five-day event window (from day +1 through day +5) following the spin-off announcement date, but the statistical strength is not high. Evidence shows that parent firms continue to demonstrate short-run abnormal performance even after eliminating the influence of size. In the long-run analysis (three-year), however after allowing for size we fail to find abnormal performance for either parents or spun-off firms.

Overall, our results imply that spin-offs create (perhaps illusory) value in the short-run period following an adjustment for size; but we do not find evidence of long-run market outperformance after allowing for size. An interesting question arises from this work: *"What do the findings say about the efficiency of the stock market in pricing the shares?"*

We observe that there is the possibility of a reasonably consistent delay in the positive reaction by the investors in few days after the spin-off announcement, which is exploitable. Stoll and Whaley (1983), however claim that on the basis of currently available information, a market is inefficient only if it is possible for an investor to earn abnormal returns (adjusted to market) net of all transaction costs. To avoid mistakenly concluding that the Malaysia market is inefficient, and at the same time not to underestimate the transaction costs associated with the share purchases of parent firms, we now consider the average trading costs in the order-driven Malaysia share market.

Trading of shares on Bursa Malaysia involve the following costs: brokerage fees, clearing fees and stamp duty[9]. Taking these costs into our calculation, we find an average roundtrip transaction cost in buying and selling shares on Bursa Malaysia is approximately about +0.662% of the contract value[10]. Madun (2008) reports that a typical transaction cost in Malaysia share market is on average nearly +1% of the contract value; and fairly comparable to Singapore share market (around +1%) and Hong Kong share market (around +0.6%). Taking the highest estimated cost of 1%, it appears that an investor can possibly earn abnormal return net of transaction cost of +2.88% (3.88%-1.00%) by concentrating his investment on parent firms during the five-day event window (day +1 through day +5) following the spin-off announcement date. Therefore, we can plausibly argue that there are abnormal

[9] Estimates of brokerage fees, clearing fees and stamp duty are taken from the Bursa Malaysia website (http://www.bursamalaysia.com/website/bm/tradings/equities/transaction_cost.html). It should be noted the brokerage fees could change depending on the order size. For example, the minimum brokerage fees are +0.3% of contract value (retail trades valued above RM100, 000), +0.6% of contract value (retail trades below RM100, 000) and up to a maximum of +0.7% of the contract value. For simplicity, we apply the +0.3% of contract value in our calculation. We also take account of the +0.001% stamp duty and +0.03% clearing fee.

[10] We calculate the roundtrip transaction cost as follows:

Roundtrip transaction cost = (2 * brokerage fees) + (2 * stamp duty) + (2 * clearing fees)
= (2 * 0.3%) + (2 * 0.001%) + (2 * 0.03%)
= **+0.662%**

returns opportunities that can be exploited by investors and hence provide some evidence against the efficient stock market hypothesis.

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Table 1: Announcement period: share returns performance of the parent firms over a short-run adjusted for MAS-EWI.

Interval (day)	CARs Model			Market Model		
	CAARs	T-STAT	SIGNIFICANT	CAARs	T-STAT	SIGNIFICANT
-20 to +20	9.38%	1.55		10.00%	1.65	
-20 to 0	5.86%	1.08		5.97%	1.09	
-15 to 0	5.76%	1.07		5.39%	0.99	
-10 to +10	7.26%	1.26		7.96%	1.40	
-5 to +5	5.79%	1.92	*	6.07%	2.04	**
-3 to +3	4.96%	1.68		4.86%	1.66	
-2 to +1	4.78%	1.85	*	4.79%	1.90	*
-1 to 0	2.55%	1.49		2.71%	1.72	*
-1 to +1	4.99%	2.65	**	5.06%	3.00	***
0	2.13%	2.25	**	2.14%	2.27	**
0 to +1	4.57%	14.94	***	4.49%	21.59	***
0 to +3	5.43%	2.46	**	5.50%	2.60	**
0 to +5	5.49%	2.09	**	5.67%	2.27	**
0 to +7	5.06%	1.66		5.51%	1.92	*
0 to +10	4.24%	1.28		4.96%	1.58	
0 to +15	4.59%	1.34		4.94%	1.49	
0 to +20	5.65%	1.63		6.17%	1.83	*
+1 to +3	2.92%	1.33		2.78%	1.30	
+1 to +5	3.36%	1.51		3.53%	1.69	
+1 to +7	2.93%	1.15		3.37%	1.43	
+1 to +10	2.10%	0.77		2.82%	1.11	
+1 to +15	2.46%	0.88		2.80%	1.04	
+1 to +20	3.52%	1.23		4.03%	1.46	

Note:
0 denotes the announcement date of the spin-off event. Asterisks indicate statistical significance at the 10% (*), 5% (**) and 1% (***) level, respectively using a two-tailed test.

Table 2: Announcement period: share returns performance of the parent firms over a short-run adjusted for MAS-VWI.

Interval (day)	CARs Model			Market Model		
	CAARs	T-STAT	SIGNIFICANT	CAARs	T-STAT	SIGNIFICANT
-20 to +20	9.83%	1.60		10.04%	1.68	
-20 to 0	5.80%	1.08		5.76%	1.08	
-15 to 0	5.96%	1.12		5.40%	1.02	
-10 to +10	8.72%	1.50		8.33%	1.47	
-5 to +5	6.86%	2.15	**	6.36%	2.13	**
-3 to +3	5.79%	1.87	*	5.16%	1.76	*
-2 to +1	5.31%	1.92	*	4.89%	1.92	*
-1 to 0	2.68%	1.43		2.54%	1.54	
-1 to +1	5.40%	2.53	**	5.04%	2.68	**
0	2.27%	2.36	**	2.09%	2.25	**
0 to +1	5.00%	11.05	***	4.59%	11.38	***
0 to +3	6.16%	2.63	**	5.76%	2.71	**
0 to +5	6.34%	2.29	**	5.98%	2.39	**
0 to +7	6.09%	1.87	*	5.96%	2.08	**
0 to +10	5.26%	1.46		5.17%	1.61	
0 to +15	5.54%	1.49		5.41%	1.62	
0 to +20	6.31%	1.67		6.38%	1.87	*
+1 to +3	3.37%	1.40		3.08%	1.40	
+1 to +5	4.07%	1.69		3.88%	1.79	*
+1 to +7	3.82%	1.37		3.87%	1.58	
+1 to +10	2.98%	0.99		3.08%	1.14	
+1 to +15	3.27%	1.05		3.32%	1.20	
+1 to +20	4.04%	1.27		4.28%	1.50	

Note:
0 denotes the announcement date of the spin-off event. Asterisks indicate statistical significance at the 10% (*), 5% (**) and 1% (***) level, respectively using a two-tailed test.

Table 3: Long run performance: share returns performance of the parents, spun-offs and combined firms adjusted for MAS-EWI and MAS-VWI.

Panel A: Parent firms

Interval (month)	BHARs Model (MAS-EWI)			BHARs Model (MAS-VWI)		
	BHARs	T-STAT	SIGNIFICANT	BHARs	T-STAT	SIGNIFICANT
EX + 1 TO EX + 12	5.67%	0.47		-7.25%	-0.60	
EX + 1 TO EX + 24	1.78%	0.21		-18.46%	-2.14	**
EX + 1 TO EX + 36	19.61%	182	*	-18.74%	-1.75	*
EX + 13 TO EX + 24	6.52%	0.93		0.68%	0.10	
EX + 25 TO EX + 36	21.57%	2.31	**	7.44%	0.85	

Panel B: Spun-off firms

Interval (month)	BHARs Model (MAS-EWI)			BHARs Model (MAS-VWI)		
	BHARs	T-STAT	SIGNIFICANT	BHARs	T-STAT	SIGNIFICANT
EX + 1 TO EX + 12	11.24%	0.99		-2.59%	-0.22	
EX + 1 TO EX + 24	33.08%	1.88	*	12.44%	0.66	
EX + 1 TO EX + 36	29.19%	2.51	**	-12.90%	-0.98	
EX + 13 TO EX + 24	27.68%	2.31	**	22.54%	1.72	*
EX + 25 TO EX + 36	16.58%	1.83	*	0.15%	0.01	

Panel B: Combined firms

Interval (month)	BHARs Model (MAS-EWI)			BHARs Model (MAS-VWI)		
	BHARs	T-STAT	SIGNIFICANT	BHARs	T-STAT	SIGNIFICANT
EX + 1 TO EX + 12	1.20%	0.12		-11.83%	-1.20	
EX + 1 TO EX + 24	1.43%	0.20		-19.44%	-2.56	**
EX + 1 TO EX + 36	16.50%	1.60		-23.48%	-2.26	**
EX + 13 TO EX + 24	9.79%	1.44		3.30%	0.49	
EX + 25 TO EX + 36	16.13%	2.12	**	1.50%	0.21	

Note:
EX denotes the listing month of the spun-off firms. Asterisks indicate statistical significance at the 10% (*), 5% (**) and 1% (***).
Panel A indicates the average buy-and-hold abnormal returns (ABHARs) for the parent firms against the market benchmarks of MAS-EWI and MAS-VWI.
Panel B presents the average buy-and-hold abnormal returns (ABHARs) for the spun-off firms against the MAS-EWI and MAS-VWI benchmarks.
Panel C shows the results of average buy-and-hold abnormal returns (ABHARs) for the combined firms against the novel benchmarks of MAS-EWI and MAS-VWI.

Table 4: Monthly cumulative returns of the Bursa Malaysia Index Series (January 1996 – January 2011).

Indices	FTSE Bursa Malaysia KLCI	FTSE Bursa Malaysia EMAS Index	FTSE Bursa Malaysia Mid 70 Index	FTSE Bursa Malaysia Small Cap Index	FTSE Bursa Malaysia Fledgling Index
Number of constituents	30	360	70	260	431
Market Capitalization (RM)	485,666.50	690,859.41	137,745.02	67,447.92	18,958.84
1 Month (%) from 1996	2.75	2.60	3.08	0.30	4.16
3 Month (%) from 1996	12.71	13.45	14.34	19.04	40.15
6 Month (%) from 1996	1.21	1.33	2.19	3.59	18.27
12 Month (%) from 1996	15.28	18.87	26.66	19.66	27.46
36 Month (%) from 1996	-43.96	-47.88	-55.87	-55.43	-52.95
60 Month (%) from 1996	-31.05	-37.88	-52.91	-57.40	-53.07
120 Month (%) from 1996	-13.40	-27.34	-40.66	-64.36	-55.79
132 Month (%) from 1996	12.69	-2.41	-14.22	-48.10	-44.22
144 Month (%) from 1996	32.01	17.37	-2.42	-28.86	-37.18
156 Month (%) from 1996	-16.20	-27.99	-42.54	-58.42	-58.28
168 Month (%) from 1996	19.30	5.44	-13.01	-33.22	-39.37
180 Month (%) from 1996	44.01	30.12	17.25	-18.13	-29.43

Note:

1. Price Index data for FTSE Bursa Malaysia EMAS, FTSE Bursa Malaysia Mid 70, FTSE Bursa Malaysia Small Cap and FTSE Bursa Malaysia Fledgling indices is officially available in Datastream on 1st January 1996.
2. FTSE Bursa Malaysia KLCI comprises the 30 largest firms in the FTSE Bursa Malaysia EMAS Index by full market capitalization.
3. FTSE Bursa Malaysia EMAS comprises the constituent of the FTSE Bursa Malaysia Top 100 Index (constitute of FTSE Bursa Malaysia Mid 70 Index and FTSE Bursa Malaysia KLCI) and FTSE Bursa Malaysia Small Cap Index.
4. FTSE Bursa Malaysia Mid 70 Index comprises 70 medium size firms in the FTSE Bursa Malaysia EMAS Index by full market capitalization.
5. FTSE Bursa Malaysia Small Cap Index comprises those eligible firms within the top 98% of the Bursa Malaysia Main Market excluding constituents of the FTSE Bursa Malaysia KLCI and FTSE Bursa Malaysia Mid 70 Index.
6. FTSE Bursa Malaysia Fledgling Index comprises of the Main Market firms that meet stated eligibility requirements but not in the top 98% by full market capitalization and are not constituents of the FTSE Bursa Malaysia EMAS Index.

(Source: Number of constituents, market capitalizations (in Ringgit Malaysia) and the features of FTSE Bursa Malaysia Index Series are obtained from the website of Bursa Malaysia, as at 28/03/2011)

Table 5: Percentage of spin-off firms undertaking spin-offs based on the size-ranked deciles.

Size Deciles		Percentage of Parent Firms	Percentage of Spun-off Firms
1	(largest market capitalization)	31.43%	17.14%
2		40.00%	8.57%
3		11.43%	17.14%
4		8.57%	5.71%
5		2.86%	11.43%
6		2.86%	5.71%
7		2.86%	11.43%
8		0%	5.71%
9		0%	14.29%
10	(smallest market capitalization)	0%	2.86%

Note:
Size deciles are created using the market capitalizations on the completion month of spin-offs.

Table 6: Size adjusted long-run performance: share returns performance of the parents, spun-offs and combined firms.

Panel A: Parent firms

Interval (month)	Size Adjusted Abnormal Returns (BHARs Approach)		
	SAARs	T-STAT	SIGNIFICANT
EX + 1 TO EX + 12	-1.01%	-0.11	
EX + 1 TO EX + 24	-4.19%	-0.63	
EX + 1 TO EX + 36	-8.09%	-0.87	
EX + 13 TO EX + 24	3.15%	0.55	
EX + 25 TO EX + 36	-0.68%	-0.09	

Panel B: Spun-off firms

Interval (month)	Size Adjusted Abnormal Returns (BHARs Approach)		
	SAARs	T-STAT	SIGNIFICANT
EX + 1 TO EX + 12	2.24%	0.25	
EX + 1 TO EX + 24	8.90%	0.86	
EX + 1 TO EX + 36	5.58%	0.48	
EX + 13 TO EX + 24	11.06%	1.68	
EX + 25 TO EX + 36	4.70%	0.61	

Panel C: Combined firms

Interval (month)	Size Adjusted Abnormal Returns (BHARs Approach)		
	SAARs	T-STAT	SIGNIFICANT
EX + 1 TO EX + 12	-4.35%	-0.56	
EX + 1 TO EX + 24	-6.22%	-1.02	
EX + 1 TO EX + 36	-9.24%	-1.01	
EX + 13 TO EX + 24	3.33%	0.62	
EX + 25 TO EX + 36	-1.81%	-0.26	

Note:
EX denotes the listing month of the spun-off firms. Asterisks indicate statistical significance at the 10% (*), 5% (**) and 1% (***).
Panel A indicates the size-adjusted abnormal returns (SAARs) for the parent firms adjusted for the size-control portfolio returns.
Panel B presents the size-adjusted abnormal returns (SAARs) for the spun-off firms adjusted for the size-control portfolio returns.
Panel C shows the results of size-adjusted abnormal returns (SAARs) for the combined firms adjusted for the size-control portfolio returns.

Table 7: Size adjusted announcement period: share returns performance of the parent firms.

Interval (day)	Size-Adjusted Abnormal Return (CARs Approach)		
	SAARs	T-STAT	SIGNIFICANT
-20 to +20	8.40%	1.30	
-20 to 0	4.32%	0.78	
-15 to 0	5.18%	0.95	
-10 to +10	8.55%	1.41	
-5 to +5	6.70%	2.15	**
-3 to +3	5.96%	2.14	**
-2 to +1	5.16%	2.10	**
-1 to 0	2.35%	1.10	
-1 to +1	4.81%	2.13	**
0	2.25%	2.23	**
0 to +1	4.70%	22.57	***
0 to +3	6.70%	3.50	***
0 to +5	6.45%	2.45	**
0 to +7	5.93%	1.67	
0 to +10	5.49%	1.44	
0 to +15	5.88%	1.48	
0 to +20	6.33%	1.57	
+1 to +3	3.42%	1.72	*
+1 to +5	4.21%	1.86	*
+1 to +7	3.68%	1.17	
+1 to +10	3.25%	0.98	
+1 to +15	3.63%	1.06	
+1 to +20	4.08%	1.17	

Note:
0 denotes the announcement date of the spin-off event. Asterisks indicate statistical significance at the 10% (*), 5% (**) and 1% (***) level, respectively using a two-tailed test.

Table 8: Share returns performance of the small and large parent firms over the short-run period adjusted for MAS-EWI and MAS-VWI.

Panel A: Share returns performance of the small and large parent firms adjusted for MAS-EWI

Interval (day)	CARs Model		Market Model	
	CAARs (small firms)	CAARs (large firms)	CAARs (small firms)	CAARs (large firms)
-20 to +20	11.81%(1.09)[c]	6.95%(1.57)[c]	14.51%(1.36)[c]	6.38%(1.41)[c]
-20 to 0	7.35%(0.73)	4.27%(1.31)	9.42%(0.94)[b]	3.20%(0.96)[b]
-15 to +15	8.15%(0.76)	8.06%(1.97)	10.25%(0.97)[c]	6.54%(1.54)[c]
-15 to 0	6.68%(0.66)	4.85%(1.65)	8.16%(0.81)[b]	3.18%(1.03)[b]
-10 to +10	7.89%(0.75)[c]	6.72%(1.76*)[c]	8.86%(0.89)[c]	7.25%(1.91*)[c]
-5 to +5	6.14%(1.45)	5.93%(2.06*)	5.98%(1.47)	6.15%(2.12**)
-5 to 0	3.77%(.125)[a]	1.55%(0.91)[a]	3.83%(1.32)[a]	1.51%(0.80)[a]
-2 to +1	6.11%(1.78*)	3.93%(1.86*)	6.13%(1.95*)	3.72%(1.81*)
-1 to 0	3.58%(1.45)	1.82%(1.53)	3.69%(1.71)	1.93%(1.74*)
-1 to +1	6.50%(2.69**)	4.02%(2.44**)	6.45%(3.10***)	3.95%(2.77**)
0	3.02%(1.78*)	1.51%(2.17**)	2.92%(1.75)	1.52%(2.15**)
0 to +1	5.94%(53.92***)	3.70%(5.40***)	5.68%(35.22***)	3.54%(7.04***)
0 to +3	4.73%(1.26)	6.35%(4.58***)	4.44%(1.23)	6.35%(4.57***)
0 to +5	5.39%(1.31)	5.89%(2.56**)	5.07%(1.29)	6.16%(2.91***)
0 to +7	5.08%(1.14)	5.33%(1.90*)	4.93%(1.16)	5.98%(2.36**)
0 to +10	3.63%(1.76)	4.82%(1.57)	3.80%(0.84)	5.89%(2.01*)
0 to +15	4.49%(0.90)	4.72%(1.48)	5.01%(1.07)	4.88%(1.50)
0 to +20	7.49%(1.46)[a]	4.19%(1.24)[a]	8.01%(1.65)	4.70%(1.38)
+1 to +3	2.59%(0.84)	3.44%(2.09*)	2.31%(0.77)	3.15%(2.07*)
+1 to +5	2.37%(0.72)[a]	4.39%(1.94*)[a]	2.15%(0.69)[a]	4.64%(2.24**)[a]
+1 to +7	2.05%(0.58)[b]	3.82%(1.43)[b]	2.01%(0.60)[b]	4.46%(1.86*)[b]
+1 to +10	0.61%(0.32)[c]	3.31%(1.16)[c]	0.88%(0.25)[c]	4.37%(1.60)[c]
+1 to +15	1.47%(0.26)[c]	3.21%(1.10)[c]	2.09%(0.55)[c]	3.36%(1.12)[c]
+1 to +20	4.47%(0.22)[c]	2.68%(0.87)[c]	5.09%(1.25)[c]	3.18%(1.02)[c]

Note:
0 denotes the announcement date of the spin-off event. Asterisks indicate statistical significance at the 10% (*), 5% (**) and 1% (***) level of the difference between the return for the sample firms and the market, respectively using a two-tailed test. Using non parametric Mann-Witney Rank Test a, b and c represent the significant difference in abnormal returns between the sample of small and large firms at the 10%, 5% and 1% level, respectively.
Panel A presents the share returns performance of the small and large parent firms adjusted for MAS-EWI.

Panel B: Share returns performance of the small and large parent firms adjusted for MAS-VWI

Interval (day)	CARs Model		Market Model	
	CAARs (small firms)	CAARs (large firms)	CAARs (small firms)	CAARs (large firms)
-20 to +20	14.25%(1.34)[c]	6.30%(1.32)[c]	16.60%(1.60)[c]	4.80%(1.07)[c]
-20 to 0	8.44%(0.87)[c]	3.68%(1.06)[c]	10.31%(1.07)[c]	2.12%(0.64)[c]
-15 to +15	10.22%(0.97)[a]	8.42%(1.92*)[a]	11.97%(1.16)[c]	6.13%(1.46)[c]
-15 to 0	7.16%(0.73)	4.99%(1.62)	8.61%(0.89)[b]	2.84%(0.92)[b]
-10 to +10	10.25%(1.01)[c]	7.50%(1.84*)[c]	10.92%(1.09)[c]	6.25%(1.60)[c]
-5 to +5	7.30%(1.68)	6.52%(2.12**)	7.25%(1.79*)[a]	5.65%(1.89*)[a]
-5 to 0	4.10%(1.44)[b]	1.76%(0.95)[b]	4.28%(1.61)[b]	1.03%(0.54)[b]
-3 to +3	6.43%(1.60)	5.27%(2.08*)	6.32%(1.67)	4.23%(1.71)
-2 to +1	6.54%(1.88*)	4.33%(1.95*)	6.44%(2.03)	3.65%(1.76*)
-1 to 0	3.59%(1.59)	1.94%(1.25)	3.61%(1.82)	1.69%(1.22)
-1 to +1	6.85%(2.80**)	4.24%(2.24**)	6.67%(3.14***)	3.74%(2.20**)
0	2.93%(1.77*)	1.75%(2.35**)	2.80%(1.72)	1.53%(2.19**)
0 to +1	6.19%(18.86***)	4.05%(7.34***)	5.86%(22.25***)	3.58%(6.95***)
0 to +3	5.17%(1.35)	6.95%(4.62***)	4.91%(1.36)	6.44%(4.87***)
0 to +5	6.13%(1.46)	6.51%(2.64**)	5.77%(1.46)	6.15%(2.86**)
0 to +7	6.12%(1.36)	6.07%(2.01*)	6.03%(1.45)	5.91%(2.27**)
0 to +10	4.91%(1.00)	5.54%(1.67)	4.96%(1.09)	5.34%(1.78*)
0 to +15	5.99%(1.19)	5.18%(1.46)	6.15%(1.32)[b]	4.82%(1.49)[b]
0 to +20	8.73%(1.68)[c]	4.37%(1.18)[c]	9.09%(1.88)[c]	4.20%(1.23)[c]
+1 to +3	3.10%(0.93)	3.59%(2.09*)	2.85%(0.90)	3.27%(2.22**)
+1 to +5	3.20%(0.89)	4.76%(2.00*)	2.97%(0.89)	4.61%(2.19**)
+1 to +7	3.19%(0.84)[a]	4.32%(1.53)[a]	3.23%(0.93)	4.37%(1.77*)
+1 to +10	1.98%(0.48)[c]	3.79%(1.25)[c]	2.16%(0.57)[b]	3.81%(1.37)[b]
+1 to +15	3.06%(0.72)[c]	3.43%(1.07)[c]	3.36%(0.86)[b]	3.29%(1.11)[b]
+1 to +20	5.80%(1.30)	2.62%(0.78)	6.30%(1.52)	2.67%(0.86)

Note:
0 denotes the announcement date of the spin-off event. Asterisks indicate statistical significance at the 10% (*), 5% (**) and 1% (***) level of the difference between the return for the sample firms and the market, respectively using a two-tailed test. Using non parametric Mann-Witney Rank Test a, b and c represent the significant difference in abnormal returns between the sample of small and large firms at the 10%, 5% and 1% level, respectively.
Panel B shows the share returns performance of the small and large parent firms adjusted for MAS-VWI.

Table 9: Long run performance: share returns performance of the small and large parent firms adjusted for MAS-EWI and MAS-VWI.

Panel A: Small parent firms

Interval (month)	BHARs Model (MAS-EWI)		BHARs Model (MAS-VWI)	
	ABHARs	T-STAT	ABHARs	T-STAT
EX + 1 TO EX + 12	-3.47%	-0.11	-8.71%	-0.33[b]
EX + 1 TO EX + 24	-18.05%	-0.96	-32.49%	-2.10*[b]
EX + 1 TO EX + 36	12.47%	0.61	-33.01%	-1.63
EX + 13 TO EX + 24	1.51%	0.09	-0.18%	-0.01
EX + 25 TO EX + 36	30.41%	2.07*	6.78%	0.44

Panel B: Large parent firms

Interval (month)	BHARs Model (MAS-EWI)		BHARs Model (MAS-VWI)	
	ABHARs	T-STAT	ABHARs	T-STAT
EX + 1 TO EX + 12	-6.68%	-0.63	-11.08%	-1.82*[b]
EX + 1 TO EX + 24	-8.33%	-0.57	-9.67%	-1.05[b]
EX + 1 TO EX + 36	-3.41%	-0.22	-17.04%	-1.42
EX + 13 TO EX + 24	0.77%	0.07	3.85%	0.53
EX + 25 TO EX + 36	8.45%	0.55	1.35%	0.13

Note:
EX denotes the listing month of the spun-off firms. Asterisks indicates statistical significance at the 10% (*), 5% (**) and 1% (*), respectively using a two tailed test. Using non parametric Mann-Whitney Rank Test, a, b, and c represent the significant difference in abnormal returns between the sample of small and large firms at the 10%, 5% and 1%, respectively.
Panel A presents the share returns performance of small parent firms adjusted for MAS-EWI and MAS-VWI benchmarks.
Panel B indicates the share returns performance of large parent firms adjusted for MAS-EWI and MAS-VWI benchmarks.

Table 10: Long-run performance: share returns performance of the small and large spun-off firms adjusted for MAS-EWI and MAS-VWI.

Panel A: Small spun-off firms

Interval (month)	BHARs Model (MAS-EWI)		BHARs Model (MAS-VWI)	
	ABHARs	T-STAT	ABHARs	T-STAT
EX + 1 TO EX + 12	20.97%	0.93	7.31%	0.31
EX + 1 TO EX + 24	33.80%	1.73	7.86%	0.36
EX + 1 TO EX + 36	32.07%	1.90*	-14.53%	-0.76
EX + 13 TO EX + 24	27.69%	1.51	16.78%	0.82
EX + 25 TO EX + 36	20.05%	1.51	4.82%	0.35

Panel B: Large spun-off firms

Interval (month)	BHARs Model (MAS-EWI)		BHARs Model (MAS-VWI)	
	ABHARs	T-STAT	ABHARs	T-STAT
EX + 1 TO EX + 12	1.78%	0.23	-12.02%	-1.64
EX + 1 TO EX + 24	33.55%	1.17	14.39%	0.48
EX + 1 TO EX + 36	27.69%	1.71	-10.52%	-0.62
EX + 13 TO EX + 24	30.03%	1.88*	26.33%	1.60
EX + 25 TO EX + 36	13.15%	1.03	-1.63%	-0.13

Note:
EX denotes the listing month of the spun-off firms. Asterisks indicates statistical significance at the 10% (*), 5% (**) and 1% (*), respectively using a two tailed test. Using non parametric Mann-Whitney Rank Test, a, b, and c represent the significant difference in abnormal returns between the sample of small and large firms at the 10%, 5% and 1%, respectively.
Panel A presents the share returns performance of small spun-off firms adjusted for MAS-EWI and MAS-VWI benchmarks.
Panel B indicates the share returns performance of large spun-off firms adjusted for MAS-EWI and MAS-VWI benchmarks.

Figure 1: Long-run return performance of FTSE Bursa Malaysia Index Series