



## **Share Price and Trading Volume Reactions to Lockup Expiration in Malaysian IPOs**

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### **ABSTRACT**

This paper examines the market reaction at the expiration of initial public offering (IPO) lockup on share prices and trading volume. The sample consists of 292 IPOs listed on Bursa Malaysia between May 2003 and December 2012. IPO lockup in Malaysia is mandatory as opposed to voluntary where it is negotiated between firms and underwriters. Using the market model event study method, the result shows a significant negative abnormal return at the expiration of the lockup period. Thus, the study provides evidence that contradicts the semi-strong form of the efficient market hypothesis (EMH). According to EMH, the expiration of the lockup period which is public knowledge should not be accompanied with a significant abnormal return. In addition, the study also shows the existence of higher abnormal trading volume at lockup expiration.

**Keywords:** Efficient Market, Event Study, Initial Public Offering, Lockup

**JEL Classification:** G14

### **1. INTRODUCTION**

An initial public offering (IPO) is where a firm's shares are offered to the public for the first time. In this event, firms create new shares, or existing shareholders offer to sell a certain fraction of their own shares, resulting in the changes of the ownership structure. These shares are initially sold on the primary market, leading to its debut on the stock exchange. The terms lock-up, lock-in or share moratorium has similar meaning which is an important part of IPOs. It refers to the restricted period during which the insiders (promoters as in the case of Malaysia) are prohibited from selling their shareholdings after the listing of the IPO. Once the lockup period expires, insiders are free to liquidate their locked-up shares. This could lead to a substantial impact on the market because the number of shares available increases intensely.

In general, most IPOs have lockup provisions or agreements which are disclosed in the IPO prospectus. In addition, there are several reasons that can be associated with the existence of lockup agreements. Besides preventing selling pressure from insiders, lockup agreements ensure the incentives between

the insiders and outsiders are closely aligned, provide a commitment device to moral hazard problem, and serve as a rent extraction mechanism for influential underwriters. Furthermore, the requirements of lockup period vary from one country to another. There are two types of lockup agreements engaged by IPO firms; either mandatory or voluntary. A mandatory lockup is regulated by the regulators in the country, whereas a voluntary lockup is an agreement between IPO issuers and their underwriters.

In Malaysia, lockup is regulated by the Securities Commission, both in terms of the percentage of shareholdings and the lockup length. Commencing to be effective on May 3, 1999 for certain IPOs, there have been regulatory changes on May 1, 2003 and August 9, 2009 with regards to lockup provisions. The latest revision is seemed to be most restrictive and vigilant where all IPO firms are subjected to lockup provisions. Meanwhile, the Bursa Malaysia which is previously known as the Kuala Lumpur stock exchange, comprises of main market and ACE market. However, the multi-staged lockups are imposed only on the ACE market.

The effect of lockup period is driven primarily by the observation of the market reaction at the expiration. Pioneering work on lockup expirations is found in well-known studies originated from the US (e.g., Ofek and Richardson, 2000; Brav and Gompers, 2000 and 2003; Field and Hanka, 2001; Bradley et al., 2001; Brau et al., 2004), and the UK (e.g., Espenlaub et al., 2001). However, since Brav and Gompers (2003) plea for more research using the variation in global lockup requirements, studies from international equity markets have begun to surface.

According to the semi-strong form of efficient market hypothesis (EMH), the current price fully incorporates all publicly available information which coincides with the public knowledge of the lockup expiration dates at the time of the IPO. Hence, there should be no predictable share price movements at the expiry of the lockup periods. In line with this, Ofek and Richardson (2000), Brav and Gompers (2000), and Bradley et al. (2001) argue that since the date of the lockup expiration is known when the company goes public, this price impact should be captured by the market immediately after the IPO starts trading. Thus, on average, the abnormal return around the lockup release should be zero. However, previous studies either mandatory or voluntary lockup agreements on price impact have documented mixed evidence in terms of supporting or contradicting the EMH.

This study adds to the literature by examining the market reaction in terms of share prices and trading volume at the expiration of lockup period in Malaysian IPOs. It focuses only on the first stage lockup expiry and incorporates the last two lockup regimes. The remainder of this paper is organized as follows. Section 2 reviews previous literature in relation to the impact of lockup expiration on share prices and trading volume. Section 3 describes the data and research methods designed for the study. Section 4 discusses the empirical results of both share price and trading volume performances at lockup expiration. Section 5 provides the summary and conclusions of the study.

## 2. LITERATURE REVIEW

This section reviews the literature available for evaluating the impact of the expiration of lockup period on share price and trading volume behavior. The founding work on lockup expirations is initiated in well-known studies in the US, conducted by Ofek and Richardson (2000), Brav and Gompers (2000 and 2003), Field and Hanka (2001), Bradley et al. (2001), Garfinkle et al. (2002), and Brau et al. (2004). Using sample sizes of 1053, 1948 and 2794, 1948, 2529, 775, and 3049 IPOs respectively, together with sample periods that covers from 1988-2000, these studies find statistically significant negative abnormal returns upon lockup expirations. In addition, other US studies are reported by Gao (2005) and Yung and Zender (2010). They also provide similar results of significant negative returns by using samples consisting of 2422 and 4025 IPOs, respectively with sample periods ranging from 1988 to 2006. These studies also show evidence of increasing in trading volume.

Meanwhile, studies outside the US such as the UK, Europe and Asia have reported mostly insignificant negative abnormal returns at the expiration of the lockup periods. Using a sample of 188 IPOs

by UK-incorporated companies with clear-cut expiry dates for a period of 1992-1998, Espenlaub et al. (2001) observe statistically insignificant negative abnormal returns. However, Hogue (2011) finds significant negative abnormal returns using a sample of 831 UK IPOs during the period from 1999 to 2006. In Germany, Nowak (2004) finds significant negative abnormal returns using a sample of 142 IPOs during a period of 1997-1999. In addition, Goergen et al. (2006) show insignificant negative abnormal returns for both France and Germany using 268 and 138 IPOs, respectively for a period ranging from 1996 to 2000. In a more recent study using 167 Italian IPOs for a period from 1999 to 2008, Boreiko and Lombardo (2013) also do not find any significant abnormal returns. However, studies by Nowak (2004) and Boreiko and Lombardo (2013) who also examine the trading volume indicate the existence of higher trading volume.

In Asia, there are few studies conducted in relation to IPO lockup expiration on share prices and trading volume. Using 127 Taiwanese IPOs during the period from 1995 to 1999, Chen et al. (2005) find insignificant negative abnormal returns at lockup expiry. In Hong Kong, Goergen et al. (2010) also find insignificant change in share price using a sample of 272 IPOs between 1999 and 2005. Moreover, these studies also show the increased in trading volume. However, Mahajan and Singh (2011) who examine 165 lockup period expirations in India show both insignificant negative abnormal returns and trading volume for the period 2003-2009. In other countries like Canada, Kryzanowski and Liang (2008) examine 97 IPO firms for the period 1997-2005 while in MENA region, Hakim et al. (2012) observe 60 IPOs during the period 1999 to 2008. Both studies provide mixed evidence where significant negative abnormal returns are reported only in MENA region.

In summary, the impact of lockup periods expiration on share prices varies among countries because each country has its own unique lockup provisions. The presence of statistically significant negative abnormal returns contradicts the semi-strong form of the EMHs. Furthermore, those studies who also examine the trading volume mostly are accompanied by higher trading volume.

## 3. DATA AND METHODOLOGY

The data used in this study are those firms listed on Bursa Malaysia between 1 May 2003 and 31 December 2012. 1 May 2003 is chosen as a starting period since it represents the first regulatory change in relation to lockup period after it is made compulsory on 3 May 1999. Both databases of Bursa Malaysia website and DataStream are used as data sources. In addition, several data conditions are imposed in order to include in the final sample; an offering involving new ordinary shares only, the firms are subjected to lockup provisions and remained listed throughout the expiration of the lockup period, and must be incorporated in Malaysia. Furthermore, firms listed under finance, trust, REITs, and closed-end funds sectors are excluded due to different statutory requirements in preparing firms' annual reports. After imposing these selection criteria, only 292 IPOs made up the final sample. Among the sample firms, 52% (152 firms) falls under the Main Market.

To examine the share price reaction to lockup expiration, event study method is employed. Abnormal returns surrounding the expiration of lockup period is estimated using the market model as stated in equation (1):

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (1)$$

Where  $R_{it}$  is the return for firm  $i$  on day  $t$  in estimation period,  $R_{mt}$  is the average returns for all firms in Bursa Malaysia on day  $t$  (FBM KLCI is used as the market index),  $\alpha_i$  and  $\beta_i$  are the intercept and the slope parameters for firm  $i$ , and  $\varepsilon_{it}$  is the error term. Abnormal returns for each firm are calculated by finding the difference between actual returns and expected returns for a given time period as shown in equation (2):

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt}) \quad (2)$$

Abnormal returns are computed over a 21-day period, beginning 10 days prior to and ending 10 days after the event date ( $t = 0$ ). To ensure the results are not affected by time variation in beta, an estimation approach is employed to measure abnormal returns. The approach relies on beta estimates obtained from regressing firm daily share returns commencing 100 days prior ( $t = -110$ ) and ending 11 days prior ( $t = -11$ ) to the event date on the Bursa Malaysia KLCI value-weighted return index. Daily average abnormal returns (AARs) for the lockup expiration date and the twenty surrounding days are calculated in equation (3) as follows:

$$AAR_t = \left(\frac{1}{N}\right) \sum_{i=1}^N AR_{it} \quad (3)$$

Where  $N$  represents the number of securities in the sample. Cumulative AARs (CAARs) are constructed by aggregating AARs throughout the event window, beginning with  $t = \tau_1$ , and continuing through  $t = \tau_2$ , as shown in equation (4):

$$CAAR_{\tau_1, \tau_2} = \sum_{\tau=\tau_1}^{\tau_2} AAR_{\tau} \quad (4)$$

Where  $\tau_1$  and  $\tau_2$  represent the beginning and ending days, respectively, over which the AARs are accumulated. The statistical test is carried out whereby abnormal returns must be examined to determine whether, on average, the event date (expiration date) has significantly affected the share price.

To examine the abnormal trading volume, method used in Field and Hanka (2001) is employed. Abnormal daily trading volume is measured relative to each firm's pre-unlock mean daily trading volume over days  $-60$  to  $-11$  as shown in equation (5):

$$Abnormal\ Volume\ \omega_{i,T} = \frac{V_{i,T}}{\frac{1}{50} \sum_{t=-60}^{-11} V_{i,t}} - 1 \quad (5)$$

where  $V_{i,T}$  is the trading volume (from DataStream) for firm  $i$  on day  $T$ . The ratio of daily volume to its mean which is obtained earlier are then subtracted by one and averaged across firms to get an estimate of abnormal volume  $AV_{i,T}$  across each day surrounding the unlock day.

## 4. RESULTS AND DISCUSSION

Table 1 presents the AARs and CAARs surrounding the lockup expiration over 21-day event window.

The daily AARs are significantly negative at 1% level on day  $-7$  and day  $+1$  with returns of  $-0.62\%$  and  $-0.59\%$ , respectively. Meanwhile, for the closer period surrounding the unlock day, the AARs are negative on day  $-4$  through day  $+3$ , except on day  $0$ . The returns ranged from  $-0.14\%$  on days  $-3$  and  $-2$  to  $-0.59\%$  on day  $-1$ . Table 1 also tabulates the CAARs around the expiration of the lockup. Virtually, CAARs are found to be negative and appear to be quite small from day  $-7$  to day  $-4$ . However, from day  $-3$  to day  $+10$ , the cumulative returns are larger where it peaks at  $-1.47\%$  on day  $+3$ . Furthermore, the CAARs over the 21 event days are illustrated graphically in Figure 1 where steeper fall can be observed from day  $-4$  to day  $-1$ , and day  $+1$  to day  $+3$ .

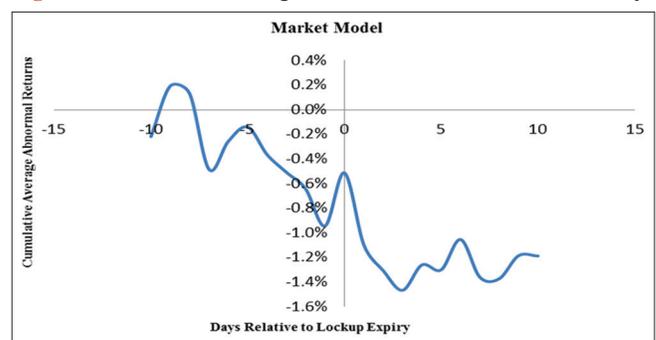
Meanwhile, Table 2 tabulates the CAARs for several event windows. Different results are observed for CAARs around the expiration date. Significant negative returns are recorded at smaller windows surrounding the event date for windows  $(-3,+3)$ ,

**Table 1: Abnormal returns around lockup expiration date**

Days	AAR (%)	P	CAAR (%)
-10	-0.22	0.2931	-0.22
-9	0.41	**0.0475	0.19
-8	-0.06	0.7640	0.13
-7	-0.62	***0.0030	-0.49
-6	0.23	0.2707	-0.26
-5	0.12	0.5765	-0.14
-4	-0.22	0.2808	-0.36
-3	-0.14	0.4893	-0.51
-2	-0.14	0.5096	-0.65
-1	-0.30	0.1493	-0.94
0	0.43	**0.0376	-0.51
1	-0.59	***0.0048	-1.10
2	-0.21	0.3147	-1.31
3	-0.16	0.4406	-1.47
4	0.21	0.3217	-1.26
5	-0.04	0.8492	-1.30
6	0.25	0.2357	-1.05
7	-0.31	0.1396	-1.36
8	-0.01	0.9540	-1.37
9	0.19	0.3670	-1.19
10	0.00	0.9905	-1.19

\*\*\*Significant at 1% level, \*\*Significant at 5% level, \*Significant at 10% level, AAR: Average abnormal returns, CAARs: Cumulative average abnormal returns

**Figure 1: Cumulative average abnormal returns over 21 event days**



(-2,+2) and (-1,+3). Only window (-3,+3) is significant at 5% level with return of -1.10%, whereas the other two windows are observed to be significant at 10% level with returns of -0.80% and -0.82% for windows (-2,+2) and (-1,+3) respectively. For the five-day event window (-2,+2), the negative abnormal return is in line with the findings of Bradley et al. (2001) with returns of -1.61%, being significant at 1% level. For the other 5-day event window (-1,+3), the significant return of -0.82% corresponds with Ofek and Richardson (2000) 5-day cumulative abnormal return for window (-4,0) amounting to -2.03%, which is significant at 1% level. Furthermore, event window of seven-day (-3,+3) is significantly negative at 5% level with CAAR of -1.10%. The significant negative return is corresponding with the CAAR of -1.9% as reported by Field and Hanka (2001) for seven-day window (-5,+1) with significant level of 1%.

Based on the results presented, this study finds statistically significant negative abnormal returns at the expiration of the lockup period which is in line with the US studies. However, both the negative abnormal returns and the significant levels are slightly lower for this study with mandatory lockup provisions compared to those reported in the US with voluntary lockup agreements. In line with this, Hakim et al. (2012) find that prices decline at lockup expiration for mandatory lockup in the MENA region much the same as in the US. Consistent with the study reported by Nowak (2004), the drop in share price is significantly larger for the expiration of voluntary lockup agreements than for mandatory provision of lockup period. The existence of the significant negative abnormal returns surrounding the lockup expiration further indicates the contradicting evidence of the EMH.

As mentioned earlier, Bursa Malaysia is represented by the main market and the ACE market. In order to confirm the statistical significance of the abnormal returns between these two groups at the expiration of the lockup period, independent samples t-test with unequal variances and nonparametric test for independent samples using various event windows are conducted. The results of the statistical tests are shown in Table 3.

From Table 3, p-value for mean difference indicates statistical insignificant for all event windows between the main market and the ACE market. Similarly, no statistical significance is observed for p-value in the Mann-Whitney nonparametric test. The results therefore show that there is no significant difference in cumulative abnormal returns at the lockup expiration between the main market and ACE market.

Meanwhile, the event-day abnormal trading volume is performed in order to examine whether the share price changes at the expiration of the lockup are associated with greater abnormal volume. The tendency of promoters (insiders) to dispose shares at lockup expiration allows for the investigation of the behavior of trading volume whether it is abnormally high surrounding the event. The results are illustrated in Figure 2 for day -60 through day +50.

From the plotted graph, it is observed that nearly all event days prior to lockup expiration have lower abnormal trading volume,

**Table 2: Cumulative average abnormal returns for various event windows**

Event window	CAAR (%)	p
(-10,+10)	-1.19	0.2117
(-10,-1)	-0.94	0.1504
(-5,+5)	-1.04	0.1294
(-5,-1)	-0.69	0.1384
(-3,+3)	-1.10	**0.0448
(-3,-1)	-0.58	0.1069
(-2,+2)	-0.80	*0.0853
(-1,+1)	-0.45	0.2077
(-1,+3)	-0.82	*0.0766
(-1,+5)	-0.66	0.2326
(-1,+10)	-0.54	0.4499

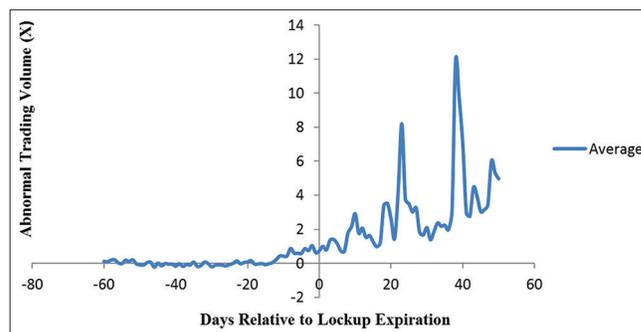
\*\*\*Significant at 1% level, \*\*Significant at 5% level, \*Significant at 10% level, CAARs: Cumulative average abnormal returns

**Table 3: Independent sample t-test and nonparametric test for main market and ACE market**

Event window	Main market (%)	ACE market (%)	p-value (mean difference)	p-value (Mann-Whitney)
(-10,+10)	-6.428	-5.940	0.947	0.446
(-10,-1)	-0.896	-5.787	0.316	0.871
(-5,+5)	-0.985	-5.899	0.335	0.227
(-5,-1)	-0.472	-5.708	0.281	0.791
(-3,+3)	-0.831	-6.181	0.297	0.815
(-3,-1)	-0.473	-5.484	0.307	0.534
(-2,+2)	-0.964	-5.416	0.375	0.173
(-1,+1)	-0.609	-0.289	0.775	0.582
(-1,+3)	-0.813	-0.832	0.990	0.433
(-1,+5)	-0.969	-0.326	0.695	0.118
(-1,10)	-5.988	-0.287	0.300	0.423

\*\*\*Significant at 1% level, \*\*Significant at 5% level, \*Significant at 10% level

**Figure 2: Abnormal trading volume around the unlock day**



except for those from day -10 towards the unlock day whereby the abnormal volume starts to increase and show an upward trend, peaking on day -2. The abnormal volume remains positive and higher from day -10 throughout 50 days after the unlock date. The results show that abnormal trading volume does not revert back to zero, indicating the trading volume has permanently changed after the expiration of the lockup period. At this time, insiders are free to sell their restricted shares and the heavy volume might be due to the trades originated from insiders. The positive abnormal trading volume is corresponding with the evidence from the US studies (e.g., Field and Hanka, 2001; Garfinkle et al., 2002; Brav and Gompers, 2003) of increasing trading volume at the expiration of the lockup. While outside the US, studies by Boreiko

and Lombardo (2013), Goergen et al. (2010), Chen et al. (2005) and Nowak (2004) also report increasing in trading volume in Italy, Hong Kong, Taiwan and Germany, respectively. Hence, this study indicates the existence of abnormal trading volume at lockup expiration.

## 5. CONCLUSION

This study examines the share prices and trading volume reactions at the expiration of Malaysian IPO lockups that span the period from May 2003 to December 2012. In general, the findings are consistent with previous evidence from the US, indicating that the Malaysian equity market is an inefficient market in relation to the semi-strong form of EMH. It is attributed to the unique features of mandatory lockup provisions where the regulation is imposed on both the percentage of shares that are subjected to a lockup and the lockup length. Hence, IPO firms are not allowed to shorten or prolonged the length of the lockup period. Since this study only focuses on the first stage of expiration of lockup period, there is insignificant difference in cumulative abnormal returns at the lockup expiration between the main market and ACE market. Hence, future study can be extended by including the multiple lockup expiration that take place in the ACE market. In addition, impact on lockup regulatory change and the determinant factors in relation to lockup expiration should also be explored.

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