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When Do After-Market IPO Prices Stabilize? Evidence From Malaysian Fixed-Price IPOs

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This paper examines the issue of pre-listing investor demand of IPO and its relation to the IPO immediate short term performance, using a sample of 283 Malaysian fixed-price IPOs from January 2004 to December 2011. It is hypothesized that in a fixed-price offering, when there is no stabilization activities (unlike the case of book-built IPOs in the US) taking place, the post-listing price movement behaves in accordance to a speculative bubble, especially in IPOs with high pre-listing investor demand. Surprisingly, in general, the findings indicate that it takes shorter period of time for prices of Malaysian fixed-price IPOs to stabilize compared to book-built IPOs in the US (Boome, Dahya & Shi 2010). With regard to listing board, the prices of IPOs listed on the ACE Market seems to take longer time to stabilize, perhaps due to speculative nature of IPOs listed on that listing board.

Field of Research: Finance

1. Introduction

In the developed markets in the West, price stabilization mechanism or the over-allotment (Greenshoe) option is used to ensure the price of an IPO (usually book-built IPO) will not trade below the offer price, during the first month of its listing. In the US, underwriter price stabilization usually lasts for up to 4 weeks (Asquith, Jones & Kieschnick 1998). Despite the emphasis in the literature that price stabilization is carried out only for IPOs that are trading at or below their offer price, Aggarwal (2000) finds that underwriters in the US are actively engaged in after-market activities even for IPOs that are trading slightly above the offer price. The price stabilization mechanism was introduced to the Malaysian market in 2008, with effect from the 11th of January 2008. Companies that are eligible to use this mechanism are those that are listed on the Main Board (since August 2009, those IPOs listed on the Main Market; with the combination of Main Board and Second Board into Main Market) and have an offer size not less than RM100 million. In the Malaysian context, the stabilization period is within the 30-calendar days beginning from the first trading day of an IPO, and the stabilization activities can only be carried out if the market price of the IPO is below its offer price.

As suggested by Aggarwal and Rivoli (1990), IPOs are subject to over-valuation or fads in the early after-market trading, and investor's optimism in the aftermarket can result in an over- or under- reaction in first few weeks of trading. The current study examines the relation between the pre-listing investor demand and the speculative bubble that develops after the IPO is listed on the market. In short, this paper is trying to determine how long will it take for the bubble to burst in a market where fixed-

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pricing mechanism is employed, with no price stabilization activities taking place. In a somewhat related study in the US, Boome, Dahya and Shi (2010) examine the information aggregation process of an after-market trading of 2,040 US IPOs between 1993 and 2000, and find that it takes approximately one week for all IPO-related information to be reflected in the market price. They attribute this "fast" information aggregation to book-building pricing mechanism and to the highly liquid IPO after-market. This means that, in the case of book-built IPOs in the US, it takes approximately one week for prices of IPOs to stabilize or to reflect their "true" value. In the Malaysian context, book-built IPOs are still not common and the Malaysian capital market is still considered an emerging market with lesser degree of liquidity compared to developed markets in the West. Unlike book-built IPOs, the offer price of a fixed-price IPO is not determined via solicitation from potential buyers, and as such the issuing firm has very little information regarding the potential investor demand for the IPO, with the offer price that has been fixed. Since there is no soliciting activity taking place, it is hard for both the issuing firm and the potential investors to determine the "true" value of the IPO. This means that all information about the "true" value of an IPO is not being fully reflected in the offer price at the time when the price is fixed. Over-subscription ratio can, at least, tell whether investors are under- or over-optimistic about the future's prospect of an IPO. An IPO with a very high over-subscription ratio indicates a high degree of investor optimism about the firm, which can lead to high level of under-pricing. It is hypothesized that over-optimism among investors will lead to high trading and speculative activities, which later results in speculative bubbles that can last for a period of time when the bubbles burst. As such, one would expect that in general, Malaysian IPOs will take longer than one week to reflect its true value due to uncertainty regarding their "true" values, and due to illiquid nature of Malaysian capital market. In addition, one would expect IPOs with high pre-listing investor demand will have higher levels of under-pricing compared to IPOs with low demand due to over-optimisms among the investors (which will be carried over to the secondary market), especially from those investors who are not successful in their early bid.

As pointed out by Hong, Scheinkman and Xiong (2006), with more investors' participation, there will be better risk-sharing which can lead to a larger bubble, and with more investors there will also be greater divergence of opinion which can also lead to larger bubble. In line with this line of argument, it is hypothesized that IPOs with high pre-listing investor demand will have higher levels of under-pricing and longer price stabilization period compared to low-demand IPOs. As suggested by Agarwal, Liu and Rhee (2008), in the case of Hong Kong IPOs, high investor demand will be more likely to result in a speculative bubble in an IPO due to investor over-optimism regarding the firm's future. Moreover, Malaysian fixed-price IPOs should experience a longer period (more than a week) of price stabilization compared to book-built IPOs in the developed US market (as reported by Boome, Dahya and Shi (2010)), due to the not-so-liquid Malaysian capital market and higher uncertainty regarding the "true" value of the IPOs that employ fixed-price pricing mechanism rather than book-building mechanism.

The motivation for this study is multi-dimensional. Firstly, studies, such as Yong and Isa (2003) and Yong (2007b), find that over-subscription ratio (a proxy for investor demand) has a significant relation with the level of under-pricing of Malaysian IPOs. However, there is no attempt made to try to relate investor demand with the speculative bubble hypothesis. From an investor's point of view, it is important to know whether a high demand for an IPO issue will result in a speculative bubble in the

after-market trading activities due to a supposedly high trading activity following the high demand for that particular IPO during the pre-market period. The current study fills this void.

Secondly, in line with the first motivation, according to Welch (1992), bandwagon effects may develop if potential investors choose to pay attention to what other investors are doing (i.e. purchasing), regardless of whether or not they themselves posses favourable information regarding the IPO. As such, an IPO issuer is "forced" to under-price its IPO in order to induce the first few potential buyers, and later hopefully will induce other investors to follow suit. In a way, the under-pricing of IPOs is used as a tool for creating a "demand effect" in an IPO exercise. In the current study, over-subscription ratio is used as a proxy for investor demand. A high over-subscription ratio indicates a high demand for an IPO. It is hypothesized that a high investor demand for an IPO will result in a high level of under-pricing and thus, high levels of speculative bubble in the IPO after-market. Unlike Yong (2011) who suggests that bandwagon effect may explain the under-pricing phenomenon in Malaysian IPOs, the current study look at this issue in a more detailed analysis.

Finally, the current study examines whether firm size is related to speculative bubble and price stabilization period. None of the previous studies has examined this issue. In this study, listing board is used as a proxy for firm size, where IPOs listed on the Main Market is considered to be large-sized firms and those listed on the ACE Market are considered to be small-sized firms. This study examines whether listing board has any relation with speculative bubble and price stabilization period in Malaysian IPOs. Since IPOs listed on the ACE Market are mostly small-sized firms and regarded to be quite speculative, it is hypothesized that IPOs listed on the ACE Market will have higher levels of speculative bubbles and longer price stabilization period as compared to their counterparts on the Main Market.

The rest of this paper is organized as follows. Following the introduction, Section 2 presents the literature review, and Section 3 describes the methodology. Section 4 presents the findings and the discussion of the findings. Finally, Section 5 concludes the paper and discusses the implication of the findings.

2. Literature Review

Studies that report the existence of under-pricing (or positive initial return) in initial public offerings (IPOs) are voluminous, both in the developed as well as in the developing markets. A comprehensive review of these studies can be found in Ritter (2003), and in Yong (2007a) for Asian markets. Explanations, such as winner's curse, prospect theory, lawsuit avoidance, speculative bubble hypothesis, signalling hypothesis, and bandwagon effect, to name a few, are offered in trying to explain this under-pricing phenomenon, especially in the developed markets. Unfortunately, research that employs some of the under-pricing explanations in the developed markets has yet to be fully examined in the context of the Malaysian IPOs, primarily due to unavailability of relevant data for meaningful studies.

In the past, rather than employing those specific models in trying the explain the existence of under-pricing in Malaysian IPOs, most studies on Malaysian IPOs deals with the relationship of some unique or specific feature of Malaysian IPOs and how it relates to under-pricing. These past studies examine issues such as underwriters' reputation and management earnings forecast (Jelic, Saadouni & Verhoeven 2001),

earnings management (Ahmad-Zaluki, Campbell & Goodacre 2011), owner's participation and lock-up provision (Wan-Hussin 2005), proportion of IPO shares allocated to Bumiputra investors (How et al. 2007), privatization IPOs versus other IPOs (Paudyal, Saadouni & Briston 1998), firm size (Yong 1996), over-subscription ratio (Yong & Isa 2003), over-subscription ratio and firm size (Yong 2007b), investor's opportunity cost of fund and over-subscription ratio (Low & Yong 2011), board structure (Yatim 2011), intellectual capital (IC) disclosures in IPO prospectuses (Rashid et al. 2012), government public policy and regulatory intervention (Prasad, Vozikis & Ariff 2006), disposition effect and flippers (Chong 2009), and shariah-compliant IPOs (Abdul Rahim & Yong 2010).

In an early attempt to use one of the models used in the developed markets, Annuar and Shamsher (1998), by employing Grinblatt-Hwang (1989) signalling process model, conclude that this model is not able to explain the existence of under-pricing in Malaysian IPOs. Chong (2009), using disposition effect as introduced by Shefrin and Statmen (1985), concludes that disposition effect exists among Malaysian IPO investors whereby investors are more willing to flip winning IPOs compared to losing IPOs. Recently, Yong (2011) suggests that bandwagon effect may explain the under-pricing phenomenon in Malaysian IPOs. He also concludes that winner's curse exists in Malaysian IPOs.

In the US, price stabilization mechanism is used to ensure the price of an IPO will not trade below the offer price, and the underwriter price stabilization usually lasts for up to 4 weeks (Asquith, Jones & Kieschnick 1998). Even-though price stabilization activities are meant for IPOs that trade below their offer prices, Aggarwal (2000) finds that underwriters in the US are still actively engaged in after-market activities even for IPOs that are trading slightly above the offer price. As pointed out by Aggarwal and Rivoli (1990), IPOs are subject to fads in the early after-market trading, and as such, investor's optimism can result in an over- or under- reaction during the first few weeks of trading. Boome, Dahya and Shi (2010), however, find that it takes only about one week for US IPOs to stabilize their prices, and they attribute this "fast" price stabilization to book-building pricing mechanism used in the US, and to the highly liquid US IPO after-market.

As argued out by Hong, Scheinkman and Xiong (2006), with more investors' participation, there will be better risk-sharing which can lead to a larger bubble, and as such IPOs with high pre-listing investor demand will have higher levels of under-pricing and longer price stabilization period compared to low-demand IPOs. Agarwal, Liu and Rhee (2008), in the case of Hong Kong IPOs, find that an IPO with relatively high investor demand will be more likely to result in a speculative bubble due to investor over-optimism regarding the firm's future. It is expected that in the case of Malaysian fixed-price IPOs, it will take more than a week for these prices to stabilize, as compared to about one week for book-built IPOs in the developed US market as reported by Boome, Dahya and Shi (2010), due to the not-so-liquid Malaysian capital market and higher uncertainty regarding the "true" value of the IPOs that employ fixed-price pricing mechanism rather than book-building mechanism.

3. Methodology

The sample for this study comprises of 283 fixed-price IPOs listed on Bursa Malaysia from January 2004 to December 2011. January 2004 is chosen as the beginning

period of this study in line with the change of name of the Malaysian stock market from Kuala Lumpur Stock Exchange to Bursa Malaysia beginning in January 2004.

Prior to the 3rd of August 2009, there were three listing boards of Bursa Malaysia, namely, the Main Board, the Second Board and MESDAQ. Starting from 3rd of August 2009, when a new classification of listing on Bursa Malaysia was introduced, IPOs are either listed on the Main Market (also for stocks that were previously listed on either Second Board or Main Board) and on the ACE Market (also for stocks that were previously listed on MESDAQ market). Therefore, beginning in August 2009, the sample comprises of all fixed-price IPOs listed on the Main Market as well as on the ACE Market.

Fixed pricing is the most common IPO pricing mechanism in Malaysia. Unlike book-built offer, with a fixed-price offer, the offer price is set prior to allocation to subscribers, and in the case of demand exceeds supply, shares are rationed on a pro rata or lottery basis. In the current study, the focus is on the fixed-price IPOs and as such book-built IPOs are excluded from this study. Anyway, the number of book-built IPOs is less than 10 during our sample period, which is not that significant. IPOs that are classified as REITs are also excluded.

The sample comprises of fixed-price IPOs with no price stabilization mechanism (or Greenshoe option), and also IPOs with Greenshoe option but do not exercise the option. This means that even-though a company may have the price stabilization mechanism attached to its IPO, it is still included in this study if it does not exercise that Greenshoe option, since the option can only be exercised within the first 30 calendar days starting from its first trading day, if the market price is below the offer price. For instance, Xingquan International Sports Holdings (listed in 2009) is excluded from the sample because it exercises the Greenshoe option, whereas Petronas Chemical (listed in 2010) is included because it does not exercise the option. MSM Malaysia Holdings (listed in 2011) , a company with the price stabilization mechanism, is excluded from the sample due to its pricing mechanism, which is book-building, even-though it does not exercise its Greenshoe option. A company by the name of Berjaya Retail (listed on the 16th of August 2010, and later delisted on the 3rd of May 2011) is also excluded from the sample due to its infrequent trading days (less than 5 days in total, during the first month of its listing). Altogether, the sample comprises of 283 fixed-price IPOs.

The information used in this study is compiled from Bursa Malaysia website (http://www.bursamalaysia.com and http//:www.klse.info/counters/historical-prices/) and the Star Online website (http:// biz.thestar.com.my/marketwatch/ipo). Information on over-subscription ratio is compiled from various newspapers' reports, especially the information made available on the BiznewsDatabank website (http://www.biznewsdb.com), Malaysian Issuing House (MIH) website (http://www.mih.com.my), and MIDF website (http://www.midf.com.my/cms/news/news89).

Initial return is calculated as the percentage change in price from the offer price to the closing price of the first day of trading. In some cases, the offer price for retail investors is different from the offer price for institutional investors. In this study, offer price refers to the offer price for retail investors. The offer price for retail investor is used because it reflects the public allocation rather than non-public (i.e. institutional) allocation.

In this study, over-subscription ratio is used as a proxy for pre-listing investor sentiment, or rather, investor demand, specifically the demand by the retail investors (individual rather than institutional investors); as such, over-subscription ratio refers to the over-subscription ratio for retail investors. A high over-subscription ratio indicates a high demand for an IPO by the retail investors who are supposed to be not so knowledgeable (or uninformed) about the "true" value of the IPO as opposed to the institutional (informed) investors. The sentiment that exists among these uninformed investors will be carried over into the secondary market (or when the IPO is traded in the open market), where the unsuccessful investors will compete heavily in the secondary market in order to be able to purchase the IPO, and this speculative trading activity will result in speculative bubbles in this highly demanded IPO for a period longer than that of the low demand IPO. In line with this argument, it is conjectured that an IPO with high over-subscription ratio will result in a longer period of speculative bubble and a high level of price increase during the first 20 days of its trading in the after-market. The analysis is conducted for a period of 20 trading days, which is approximately equivalent to 4 trading weeks, in line with the stabilization period of 30-calendar days practiced in Malaysia.

In order to evaluate the impact of investor sentiment on the speculative bubble and the stabilization period, these 283 IPOs are grouped into three equally-weighted portfolios based on the pre-listing investor demand or the over-subscription ratio, consisting of low-demand IPOs, medium-demand IPOs and high-demand IPOs. The lowest over-subscription ratio quartile is assigned to the low-demand IPO portfolio, and the highest over-subscription ratio quartile is assigned to the high-demand IPO portfolio. The rest of the IPOs are assigned to the medium-demand IPOs. Similar methodology for grouping IPOs based on investor demand is used by Agarwal, Liu and Rhee (2008) in the case of Hong Kong IPOs. Portfolios are also formed based on listing board, in order to capture the size effect on the speculative bubble that may exist.

Percentage return on day *t* for portfolio *i* is calculated as:

$$R_{i,t} = [(P_{i,t} - P_{i,t-1})/ P_{i,t-1}] \times 100,$$

where, $R_{i,t}$ refers to the percentage return received by portfolio *i* during trading on day *t*, $P_{i,t}$ is the closing price for portfolio *i* on day *t*, and $P_{i,t-1}$ is the closing price on the previous trading day. Daily returns for up to the 20th trading days are calculated for each portfolio, based on either the over-subscription ratio or the listing board. A period of 20 trading days (or 4 weeks of trading) is used to represent an approximately 30 calendar-days from the first day of trading, in line with the 30-day calendar period for stabilization process practiced in Malaysia.

An independent *t*-test is carried out to test the null hypothesis that the return on any given day *i* is not significantly different from zero. A sequence of non-significant day *i*'s returns will give an indication of stabilization in IPO's prices. A sequence of negative day *i*'s returns will give an indication that the bubbles have subsided to a level that reflects a "fair" or "proper" value for the IPO, and the cumulative values of these negative day *i*'s returns can tell us how much (in percent) the price has dropped from its peak to the "fair" value. Due to a higher level of speculative trading activities in highly demanded IPOs, it would be expected that the level of price drop will be higher in highly demanded IPOs compared to low demand IPOs. It would also be expected to

see similar pattern in IPOs listed on ACE Market due to speculative nature of these IPOs as compared to IPOs listed on the Main Market.

In addition to daily return, weekly return is also calculated for week 1 up to week 4, as follows:

$$R_{i,w} = [(P_{i,w} - P_{i,w-1})/ P_{i,w-1}] \times 100,$$

where, $R_{i,w}$ refers to the percentage return received by portfolio *i* during trading on week *w*, $P_{i,w}$ is the closing price for portfolio *i* on week *w* (day 5 for week 1, day 10 for week 2, day 15 for week 3 and day 20 for week 4), and $P_{i,w-1}$ is the closing price on the previous week's trading (day 1 for week 1, day 5 for week 2, day 10 for week 3 and day 15 for week 4). A period of 4 weeks is chosen to commensurate with the 30 calendar days of price stabilization period.

4. Findings and Discussion

4.1 Descriptive Statistics

Table 1 presents a summary of the characteristics of the 283 IPOs used in this study, for the period between January 2004 and December 2011. The average initial return (offer-to-close) is 21.42 percent, with a median of 9.37 percent, a minimum of –66.67 percent and a maximum of 263.64 percent. This average initial return (offer-to-close) is substantially lower than the figure 36.38 percent reported by Yong (2007b) for the period 1999-2003.

The average over-subscription ratio is 34.25 times, with a median of 14.10 times, a minimum of -0.94 times, and a maximum of 377.96 times. This average over-subscription ratio is substantially lower than the figure 46 times reported independently, by Dawson (1987) and Yong (1991), and the figure 43.71 times reported by Yong and Isa (2003) for the period 1990-1998. It is slightly higher than the figure 32.32 times reported by Yong (1997) for the period 1990-1994, and substantially higher than the figure 22.06 times reported by Yong (2007b) for the period 1999-2003.

On average, the number of shares issued is 73.62 million, with an average offer size of RM111.89 million. The average offer price is RM0.83, median of RM0.70, minimum of RM0.16 and maximum offer price of RM5.05.

Table 1: Descriptive statistics of initial return, over-subscription ratio, number of shares issued, offer price and size of offer, for the period 2004-2011

	Mean	Median	Std. Dev.	Min.	Max.
Initial return (%)	21.42	9.37	47.78	-66.67	263.64
Over-subscription ratio (times)	34.25	14.10	53.78	-0.94@	377.96
Number of shares issued (million)	73.62	36.51	174.47	3.71	2480.00
Offer price (RM)	0.83	0.70	0.63	0.16	5.05
Size of offer (RM million)	111.89	22.54	761.69	1.80	12524.00

Notes:
1) Sample size, n=283.
2) @ An under-subscription of 94 percent, or subscribed by only 6 percent of the overall issue.

4.2 Initial Return and Over-Subscription Ratio According to Listing Board

Table 2 further details the descriptive statistics of the initial return (offer-to-close) and the average over-subscription ratio based on the listing board. Overall, as shown in Panel A, for the period before the 3rd of August 2009, the average initial return for IPOs listed on the Main Board is the lowest at 16.87 percent compared to other IPOs listed on either the Second Board or MESDAQ. Those IPOs listed on the Second Board have an average initial return of 19.45 percent, while those IPOs listed on MESDAQ registers highest average of 36.76 percent. These figures point to the existence of *size effect* in Malaysian IPOs, namely, the smaller the firm (as represented by small-sized IPOs listed on MESDAQ as opposed to large-sized IPOs listed on the Main Board) the higher is the return, due to perceived risk inherent in small-sized companies. For the period after the 3rd of August 2009, as shown in Panel B, the same situation is also true, where the average initial return for the Main Market (representing large-sized companies) is only 4.10 percent whereas the average initial return for the IPOs listed on the ACE Market (representing small-sized companies) is approximately 5 times higher, at 24.29 percent. For the overall period 2004-2011, as shown in Panel C, the result indicates the existence of the *size effect,* where the average initial return for IPOs listed on the Main Market is approximately half of that for IPOs listed on the ACE Market. For comparison, Yong (2007b) reports an average initial return (offer-to-close) of 19.14 percent for IPOs listed on the Main Board, an average of 41.40 percent for IPOs listed on the Second Board, and an average initial return of 59.57 percent for those IPOs listed on MESDAQ, for the period 1999-2003.

Table 2: Descriptive statistics of initial return (in percent) and over-subscription ratio (times), according to listing board, for the period 2004-2011

		initial return (offer-to-close) (%)				over-subscription ratio (times)			
	n	mean	median	min.	max.	mean	median	min.	max.
Panel A: Before 3rd of August 2009#									
Main Board	55	16.87	10.00	-29.00	139.02	20.94	12.37	-0.30	98.08
Second board	68	19.45	6.65	-30.00	241.67	24.45	11.71	-0.94	377.96
MESDAQ	104	36.76	18.13	-66.67	263.64	52.34	29.78	0.00#	277.01
Overall	227	24.01	14.00	-66.67	263.64	36.38	17.24	-0.94	377.96
Panel B: After 3rd of August 2009#									
Main Market	37	4.10	3.29	-65.44	96.67	9.15	5.86	-0.10	63.92
ACE Market	19	24.29	17.11	-39.21	164.00	57.66	21.46	2.08	315.17
Overall	56	10.95	4.84	-65.44	164.00	25.61	10.36	-0.10	315.17
Panel C: Overall period 2004-2011									
Main Market@	160	15.01	5.86	-65.44	241.67	19.70	10.58	-0.94	377.96
ACE Market @	123	29.76	17.39	-66.67	263.64	53.16	29.65	0.00	315.17
Overall	283	21.42	9.33	-66.67	263.64	34.25	14.10	-0.94	377.96

Notes:
(1) # Before 3rd of August 2009, there were three listing boards of Bursa Malaysia, namely, the Main Board, the Second Board and MESDAQ. Starting from 3rd of August 2009, with the introduction of a new classification of listing, stocks are either listed on the Main market or on the ACE market. Main market caters for stocks previously listed on the Main Board and on the Second Board, whereas ACE market caters for stocks previously listed on the MESDAQ market.
(2) # Indicates fully subscribed.
(3) @ Reclassification of the listing board for IPOs listed before 3rd of August 2009 into either the Main Market (for IPOs listed on the Main Board and the Second Board), or into ACE Market (for IPOs listed on MESDAQ), and combine them with the existing IPOs listed on either market.

As shown in Panel A, for the period before 3rd of August 2009, the Main Board registers an average over-subscription ratio of 20.94 times, the Second Board registers an average of 24.45 times, while MESDAQ registers the highest average over-subscription ratio of 52.34 times. As in the case of average initial return where the average initial return is the highest for smaller firms (IPOs listed on MESDAQ), the smaller firms are also highly demanded by retail investors, perhaps due to the perceived speculative nature of these small-sized companies. For comparison, Yong and Isa (2003) report an average over-subscription ratio of 29.87 times for the Main Board, and an average of 52.46 times for the Second Board, for the period 1990-1998. Yong (2007b) reports an average of 14.94 times for the Main Board, an average of 23.56 times for the Second Board, and an average of 35.31 times for MESDAQ, for the period 1999-2003. For the period after the 3rd of August 2009, as shown in Panel B, the same situation is also true, where the average over-subscription ratio for IPOs listed on the ACE Market is 57.66 times, a very significant value as compared to the 9.15 times for IPOs listed on the Main Market (approximately one-sixth of that of the IPOs listed on the ACE Market). For the overall sample period 2004-2011, as shown in Panel C, again the average over-subscription ratio for IPOs listed on the Main Market is lower (19.70 times) compared to an average of 53.16 times for IPOs listed on ACE Market. All of these figures point to the existence of a “size effect” in the Malaysian IPOs.

4.3 Descriptive Statistics of Portfolios Formed Based on Over-Subscription Ratio

Table 3 presents the descriptive statistics of the portfolios formed based on the over-subscription ratio. As shown in Panel A, low demand portfolio has an average over-subscription ratio of 1.44 times, with a median of 1.11 times. High demand portfolio has an average over-subscription ratio of 100.19 times, with a median of 69.85 times, whereas the medium portfolio has an average of 17.45 times with a median of 13.89 times.

Table 3: Descriptive statistics of over-subscription ratio and initial return, according to portfolio formed based on over-subscription ratio

	Portfolio based on Over-subscription Ratio			
	Low (n=70)	Medium (n=142)	High (n=71)	Overall (n=283)
Panel A: Over-subscription ratio (times)				
Mean	1.44	17.45	100.19	34.25
Median	1.11	13.89	69.85	14.10
Std. Dev.	1.45	10.64	73.22	53.79
Minimum	-0.94	4.29	44.98	-0.94
Maximum	4.26	44.92	377.96	377.96
Panel B: Initial return (percent)				
Mean	6.13	15.06	49.23	21.42
Median	1.74	6.76	33.33	9.33
Std. Dev.	39.92	43.44	52.12	47.76
Minimum	-65.44	-66.67	-41.67	-66.67
Maximum	241.67	263.64	215.00	263.64

Panel B of Table 3 shows the descriptive statistics of initial return of each one of the three portfolios formed. The low demand portfolio has an average initial return of 6.13 percent with a median of 1.73 percent, whereas the high demand portfolio has an average of 49.23 percent with a median of 33.33 percent. The medium portfolio has an average initial return of 15.06 percent with a median of 6.76 percent. These figures clearly indicate a strong correlation between the demand for IPOs and the initial return, that is, the higher the demand for an IPO the higher is the initial return. The result indicates the existence of *bandwagon effect* in the Malaysian IPOs. For comparison, for the case Hong Kong IPOs, Agarwal, Liu and Rhee (2008) find that IPOs with high investor demand realize large positive initial returns, but IPOs with low investor demand realize negative initial returns. Earlier, Derrien (2005), using French IPOs, also find that large individual investors' demand leads to high IPO prices and large initial returns.

4.4 After-Market Returns

Table 4 details the initial returns and the after-market returns (for both daily and weekly) for each of the portfolios formed either based on the over-subscription ratio or the listing board. As shown in Panel A, the average initial return for low demand IPOs

is only 6.13 percent, a figure that is not significantly (*p*-value=0.203) different from zero. This insignificant value indicates that the offer price of an IPO in the low demand IPOs is a "true" reflection of its "fair" value or price, and as such there is no significant increase in its price in the secondary market. This also means that there is no speculative bubble in the low demand IPOs. As shown in Panel B, there is a non-significant decrease of -0.28 percent during the second day of trading, which indicates that the prices, more or less, stabilize on the second day of trading. However, the return drops significantly on Day 3, with a return of -1.47 percent (*p*-value= 0.001). The returns continue to drop, even-though not statistically significant in most cases, until Day 7. From Day 2 to Day 7, the cumulative drop in returns equals 3.47 percent. Based on the number of positive returns versus negative returns within the first 20-trading days, it shows that occurrence of negative returns exceeds that of the positive returns, an indication that there is an overall decrease in value from the closing price of the first day of trading. This phenomenon can point to the existence of over-pricing in low demand IPOs, and this slight over-pricing is corrected during the after-market trading activities. Based on weekly performance, as shown in Panel C, there is a significant decrease in return (return=-3.11 percent, with *p*-value=0.024) during the first week of trading, and the returns stabilize after that. This means that price stabilization for low demand IPOs takes place in one week.

As shown in Panel A, the average initial return for high demand IPOs is highly significant at 49.23 percent. As shown in Panel B, there is substantial drop in return of -2.06 percent on Day 2, even-though it is not significant at the 5 percent level. From Day 3 to Day 7, all the daily returns are not significantly different from zero, an indication that the prices stabilize immediately during the after-market trading. In Panel C, none of the weekly returns is significant at the 5 percent level, an indication that prices stabilize immediately in the secondary market, confirming the daily returns. As in the case of low demand IPOs, the number of negative returns exceeds that of the positive returns within the first 20-trading days, an indication that there is an overall decrease in value from the closing price of the first day of trading. This overall price decrease, plus the fact that there is a huge price increase from the offer price to the closing price, can point to the existence of speculative bubbles in high demand IPOs. Even-though it is hypothesized that high demand IPOs should exhibit a longer period of price stabilization, somehow the results indicate otherwise, perhaps due to active trading activities in these IPOs that result in prices being corrected almost immediately.

For medium demand IPOs, the average initial return is 15.06 percent, and it is significant at the 1 percent level. None of the daily returns are significantly different from zero, an indication that prices stabilize immediately in the secondary market. However, a significant first week return of -2.83 percent indicates that in general, there is speculative bubble in medium demand IPOs, and the prices only stabilize after one week of trading. Again, as in the case of low and high demand IPOs, the number of negative returns exceeds that of the positive returns, an indication of an overall drop in price from the closing of the first day of trading.

For the Main Market, the average initial return is 15.01 percent, a figure which is significant at the 1 percent level. For the ACE Market, the average initial return is almost twice that of the Main Market at 29.76 percent. For both markets, the daily returns are mostly non-significant, except for Day 3 and Day 9 for the Main Market, and Day 5 for the ACE Market. The prices seem to stabilize after Day 3, in the case of the Main Market, and after Day 5 for the ACE Market. This indicates that it takes

longer for prices of IPOs listed on the ACE Market to stabilize, perhaps due to speculative nature of IPOs listed there. The number of negative returns exceeds the number of positive returns for both markets, but the number of negative returns is higher for ACE market compared to the Main Market.

Table 4: After-market returns according to portfolio formed based on investor demand and listing board

	Average after-market return (%) for each portfolio, based on over-subscription ratio			Average after-market return (%) for each portfolio, based on listing board	
	Low (n=79)	Medium (n=142)	High (n=71)	Main (n=160)	ACE (n=123)
Panel A: Initial return (percent) or return on Day 1					
Day 1	6.13% (0.203)	15.06% **(0.000)	49.23% **(0.000)	15.01% **(0.000)	29.76% **(0.000)
Panel B: After-market daily return (percent)					
Day 2	-0.28% (0.694)	-0.83% (0.156)	-2.06% (0.064)	-0.63% (0.131)	-1.48% (0.083)
Day 3	-1.47**(0.001)	-0.32 (0.637)	-1.70 (0.104)	-1.15**(0.000)	-0.70 (0.456)
Day 4	-0.36 (0.562)	-1.09 (0.051)	-1.16 (0.273)	-0.70* (0.060)	-1.22 (0.136)
Day 5	-1.19*(0.020)	-0.57 (0.230)	0.20 (0.881)	0.29 (0.643)	-1.60**(0.004)
Day 6	-0.00 (0.999)	0.43 (0.364)	-0.60 (0.473)	-0.48 (0.159)	0.78 (0.212)
Day 7	-0.17 (0.641)	-0.63 (0.087)	0.04 (0.957)	-0.01 (0.966)	-0.78 (0.146)
Day 8	0.50 (0.439)	0.17 (0.742)	-0.92*(0.044)	0.01 (0.974)	-0.07 (0.908)
Day 9	-1.29*(0.048)	-0.52 (0.285)	-0.97 (0.057)	-0.67*(0.042)	-1.02 (0.086)
Day 10	-0.17 (0.666)	-0.19 (0.605)	-0.55 (0.299)	-0.25 (0.272)	-0.31 (0.527)
Day 11	-0.33 (0.618)	-0.35 (0.263)	-0.26 (0.536)	-0.34 (0.213)	-0.30 (0.506)
Day 12	-0.17 (0.814)	0.04 (0.902)	-0.31 (0.554)	0.06 (0.872)	-0.31 (0.446)
Day 13	0.26 (0.635)	-0.69 (0.051)	0.23 (0.643)	-0.10 (0.729)	-0.38 (0.395)
Day 14	0.13 (0.777)	0.17 (0.569)	-0.43 (0.341)	0.07 (0.755)	-0.07 (0.869)
Day 15	0.20 (0.633)	0.13 (0.673)	0.04 (0.947)	0.22 (0.372)	-0.00 (0.998)
Day 16	0.75 (0.190)	-0.37 (0.152)	0.54 (0.553)	-0.18 (0.401)	0.55 (0.387)
Day 17	0.96 (0.156)	-0.18 (0.517)	-1.27 (0.067)	0.13 (0.632)	-0.56 (0.303)
Day 18	-0.53 (0.171)	0.14 (0.692)	-0.41 (0.382)	0.03 (0.914)	-0.42 (0.291)
Day 19	1.07*(0.019)	0.00 (0.999)	-0.69 (0.158)	-0.07 (0.753)	0.30 (0.528)
Day 20	-0.27 (0.486)	5.84 (0.340)	0.61 (0.286)	5.48 (0.313)	-0.18 (0.679)
Changes	-ve =12; +ve =7	-ve =11; +ve =8	-ve =13; +ve =6	-ve =11; +ve =8	-ve =16; +ve =3
Panel C: After-market weekly return (percent)					
Week 1	-3.11% *(0.024)	-2.83% **(0.011)	-4.17% *(0.078)	-2.18% **(0.012)	-4.62***(0.006)
Week 2	-0.95 (0.491)	-0.62 (0.584)	-2.78*(0.082)	-1.26 (0.135)	-1.23 (0.381)
Week 3	0.19 (0.897)	-0.72 (0.303)	-0.67 (0.564)	-0.09 (0.887)	-0.99 (0.323)
Week 4	1.91 (0.068)	6.11 (0.380)	-1.55 (0.136)	6.00 (0.331)	-0.55 (0.552)
Changes	-ve =2; +ve =2	-ve =3; +ve =1	-ve =4; +ve =0	-ve =3; +ve =1	-ve =4; +ve =0

*Notes:*1) An independent *t*-test is conducted to test the null hypothesis that the after-market return on a given day (or week) is zero. 2) * and ** denote significant at 5% and 1% level, respectively. 3) *p*-values are shown in the parentheses.

5. Conclusion and Implication

This paper examines the issue of pre-listing investor demand and its relation to the after-market performances, using a sample of 283 Malaysian fixed-price IPOs from January 2004 to December 2011, in order to determine whether there is a relation between investor demand and price stabilization in the IPO after-market. It is hypothesized that in a fixed-price offering, when there is no stabilization activities (unlike the case of book-built IPOs in the US) taking place, the post-listing price movement behaves in accordance to a speculative bubble, especially in IPOs with high pre-listing investor demand. High pre-listing investor demand will create a temporary speculative bubble where the IPO's price is pushed up high above its true

value, and later stabilizes as the bubble bursts. Even-though the sample comprises of IPOs with no stabilization mechanism, the findings indicate that, in general, IPO prices stabilize as early as the second day of trading. Even-though it is hypothesized that a high demand IPO will take longer time to burst its bubble due to possible high level of speculative activities, the results do not support this; the bubble bursts almost immediately in the after-market. With regard to listing board, IPOs listed on the ACE Market seems to take longer time (about 5 days), perhaps due to speculative nature (which brings with it longer period of speculative trading activities) of IPOs listed on that listing board. Surprisingly, in general, the findings indicate that it takes shorter period of time for prices of Malaysian fixed-price IPOs to stabilize compared to book-built IPOs in the US, as reported by Boome, Dahya and Shi (2010) who find that it takes approximately one week for the prices of US IPOs to stabilize, even when book-building pricing mechanism is applied there, plus the fact that the US IPO after-market is highly liquid.

The results of this study somehow suggest that (at least in the case of Malaysian IPOs), with fixed-price IPOs, there is no need to have a price stabilization mechanism because the price can stabilize as soon the after-market trading begins. The implication of this finding is that there is no need for the regulatory agencies of Bursa Malaysia to worry about implementing the price stabilization mechanism for all fixed-price IPOs listed on Bursa Malaysia. Even without the mechanism, prices can still stabilize almost immediately once those IPOs begin trading in the secondary place.

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