INDIVIDUAL INVESTORS' PARTICIPATION AND DIVERGENCE OF OPINION IN NEW ISSUE MARKETS: EVIDENCE FROM MALAYSIA

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ABSTRACT

We investigate the effects of individual investors' participation on after-market divergence of opinion (DOP) for 269 Malaysian fixed-price initial public offerings (IPOs). Our findings show that individual investor participation moderates the relationship between initial performance and after-market investors' opinion. Furthermore, our findings suggest that individual investors who participate in initial public offerings dispose their holdings quickly to take advantage of DOP in the after-market. However, the after-market investors are not willing to pay higher for IPOs sold by the participating individual investors. Our analysis across market conditions shows that the initial performance of IPOs with greater individual investor participation in (i) hot issues is inversely related to after-market DOP and, (ii) cold issues is positively related to after-market DOP (indicating signs of aversion to losses).

JEL: G02, G11, G14, G18, G12, L10

KEYWORDS: Divergence of Opinion, Individual Investors' Participation, Post-IPO Performance, Offer Turnover, Underpriced IPOs, Loss Aversion

INTRODUCTION

Behavioral finance embodies the notion that individual cognitive biases influence investors' trades in financial markets. For instance, a number of past studies have clearly established that individual cognitive biases affect investors' heterogeneous beliefs regarding the distribution of future returns on equity investments. Consequently, market outcomes are partially determined by individual investors' aggregated equity trading behavior.

The different ways by which individual investors update their respective beliefs about the distribution of future returns is termed as divergence of opinion (Wang and Liu, 2014, and Miller, 1977). The divergence of opinion (DOP) phenomenon is typically captured by the changes in trading volume of a particular equity following an event (Miller, 1977, Karpoff, 1986, Harris and Raviv, 1993, Kandel and Pearson, 1995, Hong and Stein, 2007, Garfinkel 2009, and Wang and Liu, 2014). Many past empirical studies have shown that DOP is typically greater in new issue markets such asinitial public offerings (IPOs). However, most of the past studies scrutinize on the effects of DOP on the underpricing of IPOs, while studies on volume behavior is relatively scarce. For the few studies that scrutinized on volume behavior, the findings suggest that higher flipping of institutional trade lead to lower post-IPO performance. Even though institutional investors involved in the flipping of IPO only account for a relatively small proportion of overall trading volume in the after-market. (Krigman, Shaw and Womack, 1999, Aggarwal 2003, Bayley, Lee and Walter, 2006, Ellis, 2006, and Boehme and Colak, 2012). Overall, the relationship between the

participation of individual investors and after-market DOP within the context of IPOs is under researched even though they constitute key elements of volume behavior.

As a response to the paucity of research identified, we scrutinize on the DOP phenomenon and individual investors participation in an emerging market setting. In this regard, we have chosen the Malaysian IPO market as the volume of trading activity is much greater compared to other emerging markets in Asia. Furthermore, recent studies have shown that the IPO turnover ratio in Malaysia is on a rising trend (from 7% as reported by Chong, Ali and Ahmad, 2009 to 77% as reported by Low and Yong, 2013) while initial performance has declined from a previous high of 166% (see Dawson, 1987) to as low as 26.54% (see Low and Yong, 2013). In addition, the first-year post-IPO performance is relatively low for instance, Dawson, (1987) reported an 18.2% increase, Paudyal, Saadouni and Briston, (1998) obtained a figure of 2.4%, and Ahmad-Zaluki and Lim, (2012) reported 12.54%).

In comparison, empirical studies on DOP in Western capital markets reported considerably lower volume movements on the first day. For instance, in the US, the median and mean IPO turnover ratios were between 33% to 81.97% (Krigman, et al. 1999, Aggarwal, 2003). In Australia, the mean IPO turnover ratio was 22% (see Bayley et al. 2006), 24% for Greece and 20% for France (see Chahine, 2007). In Malaysia, the rising trading volume followed by declines of both initial as well as post-IPO performance suggests that investors may be facing difficulties in estimating the values of new offerings.

Another valid consideration is the fact that fixed-price offers dominate the Malaysian IPO market, primarily due to the fact that such offers are favoured by individual investors (Chowdhry and Nanda, 1996). This observation is unsurprising as a large number of individual investors participate in the Malaysian equity market (see, Chong, 2009, Chong et al., 2009). These individual investors are more prone to the effects of DOP as they tend to be less knowledgeable (Yong, 2010, Chong, 2009). These distinctive characteristics provide added justification for our choice of investigating the DOP phenomenon amongst investors in the Malaysian IPO market. Moreover, Bayley et al. (2006) have demonstrated that IPOs with greater individual investor participation actually perform better in the long-run. It must be noted that the greater importance accorded to the role of individual investors is a fairly recent development as, traditionally, these investors are dismissed as being largely noise traders that have little importance. In summary, our paper investigates the role individual investors in the Malaysian IPO market as well as the influence of their participation on the after-market DOP.

LITERATURE REVIEW

From the behavioral perspective, divergence of opinion (DOP) can occur as investors update their beliefs through a myriad of ways (Goetzmann & Massa, 2005), and the resulting differences generate large volume movements in the capital markets (see Wang and Liu, 2014, Garfinkel, 2009, Hong and Stein, 2007, Goetzmann and Massa, 2005, Kandel and Pearson, 1995, Harris and Raviv, 1993, and Karpoff, 1986). In addition, many academics contend that investors' opinions tend to diverge more significantly when it comes to IPOs as compared to 'seasoned' stocks in the market (see, for example, Boehme and Colak, 2012, Gao, Mao and Zhong, 2006, Diether, Malloy and Scherbina, 2002). Here, differences in beliefs that investors hold will trigger disagreements about the future distributions of IPO returns in the after-market, which induces excessive trading. Since the after-market investors are faced with a choice of either buying the IPOs or other investment choices available in the market, their trading is likely to be impacted by the attention on pertinent IPO characteristics.

According to Chahine (2007) and Chong et al. (2009), investors will be attracted to buy IPOs with a greater pre-market interest, despite the higher premiums typically attached to such offers. When it comes to IPOs, individual investors are also unlikely to hold their optimal allocation of shares especially for longer periods. According to Ellis (2006), high volumes of trading occur when an IPO's original long-

term investors adjust their portfolios to optimal positions. In addition, IPOs that are many times over-subscribed may also spur the rationing of allocations. For instance, some investors may wish to accumulate more shares, as they may have received only a portion of their desired holdings in the allocation process. On the other hand, others may wish to liquidate (flip) their respective allocations at prices higher than the offer price rather than build up their holdings (at higher market prices). The attention that these investors show is best reflected by the subscription ratio. Greater subscription ratio indicates that there is greater attention in the primary market, and this could have an impact on the opinion formed in the after-market. In this regard, Chahine (2007) show a positive weak association between the subscription ratio and after-market DOP of fixed-price IPOs. However, Low and Yong (2013) found an insignificant relationship between the subscription ratio and turnover ratio. Nevertheless, we hypothesize (H1) that the subscription ratio, which captures pre-market investors' interest, positively relates to after-market DOP with higher participation of individual investors.

Overall volume behavior is assumed to be a result of persistent early trading which eventually depresses prices over the long-run. However, Bayley et al. (2006) and Chong et al. (2009) argue that greater offer turnover on the first-day of trading is positively related to post-IPO performance. In contrast, Krigman et al. (1999), Houge, Loughran, Yan and Suchanek (2001) and Gounopoulos (2006) found that lower turnover IPOs in initial trading would result in significant outperformance when compared to those with higher turnover after a year of trading. Similarly, Boehme and Colak (2012) support this relationship between turnover and post-IPO performance. An alternative argument is that such a phenomenon is possibly attributed to the type of participants. This is because, in the US, the participation of institutional investors is greater in new share offerings. In fact, US-based offerings are made using the book-building method, which gives greater discretion for underwriters to allocate shares. There is greater tendency for the underwriters to allocate shares to their desired clients, who are mostly institutional investors (see Loughran & Ritter, 2004). However, in emerging markets with greater number of fixed-price IPOs, underwriters do not have such discretion (see Yong 2007). This situation can create more disagreements about IPO value in the after-market. Moreover, fixed-price IPOs dominate new share issues in emerging capital markets (Low & Yong, 2013). Within such a context, individual investors who are usually not well informed tend to play a more active role (Aggarwal, Prabhala and Puri, 2002, Yong, 2010, Chong et al. 2009, Miller and Reilly, 1987, Rock 1986, Chowdhry and Nanda, 1996). These investors are likely to end up with overpriced IPOs, which remain after the underpriced IPOs are fully subscribed by the informed investors in the primary market (Miller and Reilly, 1987). Moreover, disagreements relating to offers held by individual subscribers are expected to be more pronounced when the IPOs start trading. In the case of Malaysia, IPOs that are more severely underpriced were documented to be allocated to individual investors (Jelic, Saadouni & Briston, 2001, How, Jelic, Saadouni and Verhoeven, 2007). Here, we hypothesize (H2) that the participation of individual investors moderates the relationship between initial performance and after-market DOP.

The opinion of individual investors in the IPO after-market is likely to be influenced by other cognitive/physiological biases (see Kaustia, 2004, Bayley et al., 2006, Chong, 2009, Chong, Ahmad and Ali, 2011). As investment evaluation and decision-making are often complex processes, individual investors will likely resort to information processing "shortcuts" that are derived mainly from their past experiences. Kahneman and Tversky (1982) made use of the term heuristic simplification to describe this tendency to use rules of thumb to simplify complex scenarios in decision-making. The underlying presumption is that individual investors are cognitively constrained to deal with complicated investment-related information or to process wide sets of information/tasks. Even though heuristics is likely to result in errors, it is nevertheless used as a way of choosing between investment alternatives particularly when the degree of uncertainty is high.

Investors typically use their past experiences as the information processing shortcuts termed as representative heuristic. Representative heuristic (Tversky and Kahneman,1974, Kahneman and Tversky,

1982) is a judgement about probability of an event occurring or identification based on its similarity to a corresponding type of event, object or process. When viewed as a device for simplifying the process of choosing between alternatives particularly under uncertain conditions, heuristic representation have been shown to influence investors' beliefs (see Brav and Heaton, 2002, Bayley et al., 2006, Kahneman and Tversky, 1982). Furthermore, investors face more constraints in their buying decisions as compared to their selling decisions. This is because they have more options to choose from when making buying decisions. Therefore, within the context of our study, we predict that investors rely on the past performance of IPOs, which should lead to higher volumes of trading on the first-day of subsequent IPOs (see Bayley et al., 2006). As individual investors in Malaysia tend to hold underpriced IPOs (see Jelic et al., 2001, How et al., 2007) it should spur more trading in the after-market, particularly for fixed price IPOs. However, an inverse relationship between heuristic representation and turnover ratio was found in Malaysia (see Chong et al. 2011). Therefore, we revisit the influence of heuristic representation on after-market DOP, by specifically focusing on fixed price IPOs and individual investor participation. wWe hypothesize (H3) that the influence of heuristic representation on after-market DOP of IPOs is strengthened with individual investors participation.

A large body of past research maintains that individual investorswho are less informed trade differently from more informed groups of investors such as institutional investors (see Barber and Odean, 2011). Traditionally, trades by individual investors are treated as noise that could be exploited by institutional investors at the expense of individual investors (Barber and Odeon, 2011). Hence, stock trading behaviors can deleteriously affect individual investors' wealth (Barber and Odeon, 2011). The literature on investor flipping also suggests that institutions flip IPOs that are known to perform poorly, while IPOs flipped by individuals perform better in the long-run (see Krigman et al., 1999, Bayley et al., 2006, Gounopoulos, 2006). Institutions are known to be strong hands and thus flip IPOs which are expected to perform worst in future (Krigman et al., 1999, Gounopoulos, 2006). Indeed,institutions are known for quality recognition, and that such recognition potentially stimulates more trade in the after-market (see Boehme & Colak, 2012). Evidence from studies on post-IPO performance show that quality recognition allows institutions to trade at the expense of after-market investorsthat are largely made up of individual investors. Nevertheless, after-market investors fail to learn since winner IPOs are flipped more as opposed to loser IPOs, although losers fair well over the long run. Selling winners too early and riding on to losers too long is termed as the disposition effect (Shefrin and Statman,1985). Individual investors are likely to forgo their shareholdings at the first sight of a gain, while those shares that would incur losses are held longer for fear of regret. This tendency is also known as loss aversion (Kahneman and Tversky, 1979) where loss is seen to induce more pain than pleasure resulting from the gain. Nevertheless, it was found that frequent trading often results in lower future returns (see Odean, 1998, Barber and Odean, 1999). Chong et al. (2009) and Bayley et al. (2006) pointed out that the fear of regret drives individual subscribers to quickly dispose IPOs at the first opportunity to lock-in gains early. Although the disposition effect was found to be prevalent in the Malaysian market (see Chong, 2009), it is less likely to occur when frequent trading takes place (Dhar and Zhu,2006). With turnover rising from 7% (Chong,2009) to 77% (Low and Yong,2013) in recent years, we rule out the possible influence of the disposition effect in our study. This does not, however, rule out the possible implications of loss aversion in the after-market. However, in IPO settings, the large trading associated with individual investors' participation or associated with overpriced IPOs are found to generate better returns (see Bayley et al., 2006, Chong, 2009).Therefore, we hypothesize (H4) that IPOs with higher first year post-IPO performance is positively associated with individual investors' participation.

The weight of empirical evidence from the literature on investor flipping suggests mixed effects of market conditions on volume behavior. For instance, Krigman et al. (1999), Boehme and Colak (2012), and Gounopoulos (2006) contend that cold IPOs stimulate higher trading activity. On the other hand, Aggarwal (2003), Bayley et al. (2006), Ellis (2006) and Low and Yong (2013) argue that trading activity is greater for hot IPOs. Based on the criteria used in these studies, we hypothesize (H5) that, in emerging

markets that are largely made up of individual investorslike Malaysia, hot IPOs with an average initial performance greater than 10%, exert a significant influence on IPOs participated by individual investors and with greater after-market DOP.

Finally, we examine other IPO-related factors that are shown to have at least some predictive power of IPO volume behavior in the past. We posit that opinions captured from volume behavior are formed after investors process information available prior to trading. Therefore, IPO related factors such as underpriced IPOs, age of IPO firm, firm size, offer size and underwriter rankings are also considered as factors that potentially influence the IPOs held by individual investors. In turn, such IPOs influence after-market DOP. Empirical evidence pertaining to underpriced IPOs is mixed. Krigman et al. (1999) and Gounopoulos (2006) suggest an inverse relationship between the total volume traded scaled by shares offered and underpriced IPOs, while subsequent studies argue that volume movement is positively related to underpriced IPOs (Aggarwal, 2003, Bayley et al., 2006, Low and Yong, 2013). Boehme and Colak (2012), when investigating quality of institutional trade, thatfound evidence that supports the inverse relationship while those focusing on information uncertainty supports the positive relationship prediction (where greater underpricing leads to more disagreement in the after-market). In addition, past studies established that diverse opinions among investors are strongest for IPO firms with short operating histories (Miller, 2000, Jewartowski and Lizinska, 2012), smaller firm size (Miller, 2000, Jewartowski and Lizinska, 2012, Low and Yong, 2013) and, avoided by institutional investors (Miller, 2000, Boehme and Colak, 2012, Krigman et al., 1999, Gounopoulos, 2006, Ellis, 2006). Aggarwal (2003) and Bayley et al. (2006) argue that DOP is greater for IPOs with greater institutional involvement. Unlike institutional investors, individual investors are less aware of industry trends as compared to institutional investors. They rely more on signals such as underwriter prestige and their participation were found to be unrelated to firm size (Bayley et al., 2006). These IPO factors are considered when weinvestigate the relationship between after-market DOP and individual investors' participation in IPOs. In addition, we also take into account representative heuristic bias, pre-market investors' interest, and hot issue condition. Last, we also explore the correlation of these factors onto post-IPO performance.

METHODOLOGY

We identified a total of 360 IPOs for Bursa Malaysia over a 11-year period (January 2004 to December 2014). Even though the intention is to scrutinize a 10-year period, the end period is set at December 2014 to allow measurements to cover a first year post initial public offerings (IPOs) issuance period. According to Low and Yong (2013), fixed price IPOs makes up a large proportion of new share offerings conducted through Bursa Malaysia (i.e. the Malaysian stock exchange). Moreover, researchers have posited that IPOs that utilize the fixed price method exhibit greater divergence of opinion (see Chahine, 2007) besides being favourable to individual investors (Chowdhry and Nanda, 1996). In this regard, only fixed price IPOs with sufficient trading history were considered. Based on this criterion, our primary sample was reduced to 302. Our sample was further reduced to 289 IPOs upon removing IPOs (i) with insufficient information on retail investors' shareholdings on first-day of trading and (ii) that cease trading within the first year of listing. To meet the assumptions of normality of residuals, underlying the least square estimators used in hierarchical regression, we removed a further 20 IPOs to yield a final sample size of 269. This final sample formed a good base for the measurement of the effects of individual investors' participation on after-market divergence of opinion (DOP) and the correlations of these variables on post-IPO performance.

All raw data used in this study were extracted from credible secondary sources. This include (i) FBMKLCI indices and turnover (calculated from *j* constituents that forms FBMKLCI indices), (ii) IPO closing price at the first-day of trading, (iii) corresponding trading volume compiled for first-day of trade sourced from the Bloomberg database, (iv) outstanding shares at the first-day of listing, sourced from the Bursa Malaysia website and, (v) other relevant data needed to derive the selected risk and behavioral

factors sourced from company prospectus, Financial Times, Biz Week as well as Bursa Malaysia's Knowledge Centre.

DOP is measured by two proxies for turnover. This is because turnover captures changes in diversity of investors' opinions (see Miller, 1977, Shalen, 1993, Garfinkel, 2009). The first proxy is defined as total trading volume scaled by shares offered (VSO) adapted from Chahine (2007), Low and Yong (2013), Krigman et al. (1999) and Aggarwal (2003). Since some IPO shares are restricted from being traded for the first six months, VSO is assumed to be representative of the volume of trading in the after-market, as opposed to calculating the turnover from outstanding shares in IPO settings. This particular restriction is a consequence of the share moratorium requirement in which existing shareholders are refrained from trading in the early after-market. It is derived as follows:

$$VSO_i = \frac{V_i}{SO_i} \tag{1}$$

where,

VSO_i = offer turnover at first-day of trade for share issue i
SO_i = total shares offered for share issue i
V_i = total volume of trading at first-day of trade of share issue i

Our preliminary investigation reveals a strong positive correlation of 0.84 between the VSO and total volume of trade scaled by outstanding shares. Even so, Garfinkel (2009) has shown that the turnover does not solely capture divergence, but also captures liquidity and information effects. Hence, the change in market adjusted turnover was employed (Garfinkel,2009). This is where the market adjusted turnover is subtracted from market adjusted turnover of a control period in announcement (referred to as unexplained volume)as per Wang and Liu (2014) for share repurchase, calculated without the control period, and redefined as market adjusted turnover (or abnormal turnover). This proxy is argued to be a better proxy of DOP, as it captures volume behavior beyond market expectations. We adapted this approach for IPOs to calculate the after-market DOP. After-market DOP is best captured by the changes in turnover from market turnover, reflecting the deviation from market expectations. Basically, market adjusted turnover was calculated as total volume at t trading day scaled by outstanding shares, subtracted form market turnover (see Garfinkel, 2009, Wang and Liu, 2014). Market turnover is obtained by scaling the average outstanding shares of the j constituents the forms the FTSE Bursa Malaysia Kuala Lumpur Composite Index (defined as FBMKLCI) at first-day of trade with respect to issue i from, the average trading volume of the j constituents the forms FBMKLCI at first-day of trade with respect to issue i. The market adjusted turnover in our study (or abnormal turnover AbTO) is derived as:

$$AbTO_i = \frac{V_i}{OUT_i} - \frac{V_{im}}{OUT_{im}} \tag{2}$$

where,

$$V_{im} = \sum_{j=1}^{m=30} V_j \;\; ; \;\; OUT_{im} = \sum_{j=1}^{m=30} OUT_j$$

$AbTO$ = market adjusted turnover (or unexplained volume redefined) at first day of trade of issue i
V_{im} = average volume of trading for market portfolio at first day of trade with respect to issue i's trading day

OUT_{im} = average outstanding shares for market portfolio at first day of trade with respect to issue i's trading day

OUT_i = shares outstanding at first day of trade for issue i

V_i = total volume of trading for issue i

V_j = total volume of trading of jth constituent of FBMKLCI index at first day of trade with respect to issue i's trading day

OUT_j = outstanding shares of jth constituent of FBMKLCI index at first day of trade with respect to issue i's trading day

Previous studies define institutional investors' participation as the total number of shares held by institutional investors scaled by outstanding shares (Krigman et al., 1999, Aggarwal, 2003, Boehme and Colak, 2012). In this regard, we used a similar method to define individual investors' participation in the primary market. As retail investors are commonly equated as individual investors (Krigman et al., 1999, Aggarwal, 2003, Bayley et al., 2006), we measure retail shares scaled out of outstanding shares (RETOUT) measure obtained from Bloomberg's deal list as our proxy for individual investors' participation. RETOUT forms a proportion of non-private placement, which was commonly used as a proxy of individual investors' participation in previous studies on Malaysia's equity market. The proportion of non-private placement shares to total outstanding shares is defined as NPPOUT. Since not all private placement are subscribed by individual investors, we use RETOUT as our proxy in this paper.
Next, initial performance (PCC) surrogates for underpricing of IPOs. This ismeasured using the difference between offer price and first day closing price scaled by offer price (see Ibbotson and Jaffe, 1975, Ritter, 1991, Krigman et al., 1999, Houge et al., 2001, Aggarwal, 2003, Bayley et al., 2006, Boehme and Colak, 2012). Our study defines post-IPO performance as average market adjusted return (AMAR) (see Fama, 1998). , The new listing and rebalancing bias is less severe, and the use of AMAR does not over- or under-state the real rates of return, if a portion of the return is positive or negative as we captured the post-IPO performance over a relatively short period (i.e. 12 months)(see, A´lvarez, & Gonza´lez, 2005, Moshirian, Ng and Wu, 2010, Fama, 1998).

Moreover, we found no new listings within the first 12-months of the share issues considered in this study. Hence, we used the 12-month average market adjusted return (AMAR) to investigate the effect of after-market DOP on post-IPO performance. Monthly market adjusted return (mar_{it}) was calculated as the difference between the closing prices on the first-day of trading and the closing prices at the end of each subsequent thirtieth day over a 12-month period, thereafter this difference is adjusted for the return on the market portfolio. Price data for the period from 2004 to 2015 was used to calculate the mar_{it} for each issue i offered from 2004 to 2014, while the FBMKLCI index was used to determine the monthly market return. The average monthly market adjusted return (AMAR) of share issue i, was derived as follows

$$AMAR_i = \frac{1}{12}\sum_{t=1}^{12} mar_{it} \tag{3}$$

where,

$$mar_{it} = r_{it} - r_{mt}$$

mar_{it} = monthly market adjusted return at t month of issue i

$AMAR_i$ = 12-month average market adjusted return of issue i (defines the first year post-IPO performance)

The control variables that we included are:

(i)   market capitalization (MCAP) measured as the ratio of outstanding shares on the first day of listing multiplied by offer price,

(ii)   offer size (OSIZE) measured as the number of shares issued

(iii)   firm size (TA) measured as total asset size in RM(million) - obtained from IPO prospectuses (see Loughran and Ritter, 2004, Jewartowski and Lizińska, 2012),

(iv)   operating history of IPO firms (AGE) defined as the difference between the year the IPO firm was incorporated and the year of listing (see Loughran and Ritter, 2004; Jewartowski and Lizińska, 2012),

(v)   reputation of underwriter (UWR) proxied by underwriters' reputation ranking. UWR is obtained from the Bloomberg's rating of global market share.

In addition, market condition (MC) was measured as a categorical variable. We assign hot =1 for IPOs with initial performances greater than or equal to 10% and cold =0 for others (see Ritter, 1984, Krigman et al., 1999, Aggarwal, 2003, Low and Yong, 2013). As per Houge et al. (2001), Chahine (2007), Jewartowski and Lizińska (2012), Bayley et al. (2006), Krigman et al. (1999), Chong et al. (2009), Yong (2010), Boehme and Colak (2012) and Low and Yong (2013), we categorize the determinants of DOP into three categories:

(i)   risk composition (RISKC) of IPO firm;

(ii)   hot issue condition (MC); and

(iii)   behavioral factors (OSR and HEUR).

The risk composition of IPO firms comprises of TA, MCAP, OSIZE and UWR.

Behavioral aspect is measured by the inclusion of representative heuristic (HUER) which is the equally weighted average initial performance for the three most recent IPOs prior to each issuing firm's prospectus date (Bayley et al., 2006, Chong et al., 2009). Representative heuristic asserts that individuals would assess the likelihood of an event's occurrence by observing the outcomes of similar prior events. The second behavioral factor considered in our model is the pre-market investor interest measured by subscription ratio (OSR). Subscription ratio is measured as the ratio of number of subscription to the number of shares offered. All variables were transformed to a natural log (LN) to meet parametric test assumptions. Specifically, we used hierarchical regression to examine the effect of individual investor participation on the relationship between initial performance (PCC) and after-market DOP, controlling for market condition (MC), behavioral factors (OSR, HEURand RISKC). We further tested the correlation of these factors with first year post-IPO performance. The following regression equation was employed in this study to determine the moderating effect of RETOUT on after-market DOP where:

$$DOPi = \alpha + \beta1 \, (LNPCC) + \beta2 \, (LNRETOUT) + \beta3 \, LN(PCC \, x \, RETOUT) + \beta4(LNRISKCOMP) + \beta5(LNHEUR) + \beta6(LNOSR) + \varepsilon \qquad (4)$$

DOP = divergence of opinion captured using two proxies (measured as VSO and AbTO)
$LNPCC$ = natural log of initial performance (ratio of price change between offer price and closing price)
$LNRETOUT$ = natural log of individual investors' participation ratio
$LN(PCC \, x \, RETOUT)$ = redefined as PCC_RET
$RISKC$ = risk index obtained from principal component analysis
$LNHEUR$ = natural log of representative heuristic ratio
$LNOSR$ = natural log of subscription ratio (redefined as pre-market investors interest)

FINDINGS

Characteristics of Variables Used

The characteristics of all factors considered in our investigation is presented in Table 1. The two turnover ratios that were proxies for after-market DOP, defined as VSO (measured as total volume scaled by shares offered) and AbTO (market adjusted turnover) at the first-day of trade have means of 100.9% and 26% respectively. The VSO, a commonly used measure in past studies, is found to be much higher as compared to the VSO figures reported by Chong et al. (2009) (7%), and Low and Yong (2013) (77%). Even so, if we consider a past empirical studies across a broader range of settings, the highest recorded figure for VSO is 722%, while the lowest is 0.7%.

As for turnover ratios, past empirical studies in Western capital markets reported figures ranging from an a mean of 81.97% (Aggarwal, 2003) and median of 33% (Krigman et al., 1999) to 74% (Aggarwal, 2003) in the US. Means of 22%, 24% and 20% were reported in Australia, Greece and France respectively (Bayley et al., 2006, Gounopoulos, 2006, Chahine, 2007). Our results show that the highest and lowest AbTO's, which capture excess turnover stands at -0.10% and 398.3% respectively.

Table 1: Descriptive Statistics of DOP and Other Factors

Variables	Mean	Med	Max	Min	Skew	Kurt	J-Bera
VSO	1.009	0.729	7.220	0.007	2.86	14.30	1932.9***
AbTO	0.260	0.173	3.980	-0.100	6.19	62.16	44001.***
PCC (%)	21.62	9.167	404.0	-70.70	3.11	17.75	3087.0***
OSOUT	0.273	0.256	0.800	0.034	1.50	8.06	415.98***
NPPOUT	0.167	0.130	0.590	0.000	0.79	2.767	30.620***
RETOUT	0.041	0.044	0.240	0.000	1.79	13.73	1541.6***
AGE	7.104	3.00	39.00	0.000	1.67	5.191	192.35***
MCAP (RM mil)	168.0	86.0	2180	19.250	4.52	27.91	8461.0***
HEUR (%)	22.95	14.89	146.0	-44.00	1.12	4.37	82.910***
OP	0.779	0.680	3.000	0.120	1.70	6.744	307.52***
OSR (times)	35.06	17.56	378.0	-0.500	3.39	16.87	2830.0***
TA (RM mil)	162.0	76.00	2803	3.904	5.68	41.63	19531***
UWR2	0.222	0.125	1.000	0.025	2.23	7.093	442.023***
OSIZE (RM mil)	49.47	22.23	945.0	3.261	5.69	41.4	19320.9***
AMAR	-0.008	-0.021	0.340	-0.140	2.08	10.06	808.422***

Note:: n = 289 IPOs. VSO denote as total volume at first-day of trade scaled by shares offered. AbTO denote the market adjusted turnover (obtained from average turnover of the j constituents that forms the FBMKLCI. FBMKLCI has been widely accepted in literature as a benchmark of overall Malaysian stock market movement). PCC denote deviation of offer price from closing price at the first-day of trade scaled by offer price). NPPOUT denotes number of non-private placement shares scaled by outstanding shares. RETOUT denotes retail shares scaled by outstanding shares. AGE denotes operating history since incorporation of IPO firm. MCAP denotes outstanding shares multiplied by offer price, which is commonly used as proxy for size of firm. HEUR denotes representative heuristic measuring the extend of which investors evaluate the probabilities of successful offerings based on their judgment of past IPOs return. OP denotes offer price. OSR denotes for subscription ratio. TA denotes total asset size of IPO firm prior to listing. UWR2 denotes inverse of underwriter reputation ranking compiled from Bloomberg database. OSIZE denotes total shares offered multiplied by offer price which is a proxy for offer size. AMAR denote 12- month average market adjusted return measures the one-year post-IPO return. MCAP, OP, TA, and UWR2 were variables factored using principal component analysis(RISKC). *** denote coefficient is significant at 1%. The skweness > 0 and kurtosis > 3 and Jarque-Bera test shows that there is departure from normality for data distribution. Despite the non-normality, these variables are retained in its natural form, as the use of finance data often comprise of outliers. However, for a more robust parametric test all the raw data were transformed to natural logarithm to adhere to the assumptions of parametric test.

On the other hand, we observe that the IPO initial performance (PCC) stands at a mean of 21.62%, close to the figures reported in past studies of Malaysian IPOs. For instance, Low and Yong's (2013), initial performance figure was 26.54%. As claimed by previous studies, we also observed that the initial performance has declined over the decades from the 180% reported byDawson (1987) and 61.8% by Moshirian et al. (2010). This declining trend is possibly attributed by the lower proportion of shares held by individual investors as opposed to their institutional counterparts, possibly a consequence of the liberalization of pricing methods. Although the rise in the trading volume and the fall in initial performance are considered good signs, they fall short of justifying the low post-IPO performance (see, for instance, Paudyal et al., 1998, Jelic et al., 2001, Ahmad-Zaluki and Lim, 2012). We found that the maximum, medium and mean of the twelve-month average market adjusted returns (AMAR) were 34%, -2.1% and -0.8% respectively. -As mentioned earlier, the average market adjusted returns is regarded as a better measure to capture returns over wider periods (Fama, 1998). Irrespective of the methods used in past empirical studies, the post-IPO performance indicate a fall. For our study, AMAR is slightly better than the mean of average market adjusted return (AMAR) of -0.99% reported by Ahmad-Zaluki and Lim (2012) as well as the -2.4% reported by Paudyal et al. (1998). This may be due to the fact that consideration of IPOs in our research is not limited to a specific board of listing (i.e, Second Board, MESDAQ market or ACE market).

In this study, the proportion of retail investors' shareholdings scaled by outstanding share at first-day of trading was defined as RETOUT. The RETOUT forms a proportion of the NPPOUT (non-private placement scaled by outstanding shares), while the remaining shares of non-private placement were held by corporate bodies, government agencies and nominees. In the past, Non-private placement typically refers to shares held less informed groups (see Yong, 2010). Both proxies registered means of 4.4% and 17.5% respectively. Retail investors' shareholdings have been treated in numerous past finance studies as a proxy for individual investors' shareholdings, of whom are smaller group of investors (see Aggarwal, 2003, Aggarwal et al., 2002, Bayley et al., 2006, Gounopoulos, 2006). The low percentage of RETOUT is attributed to the portion of shares offered to the public at IPOs, while institutional investors hold a larger portion as their shareholding is not only limited to the shares offered at IPOs but also the existing secondary shares not offered to public. The portion of shares offered to public scaled by outstanding shares (OSOUT) accounts to only 27.3%.

The offer prices of IPOs considered in our research records an average of RM0.77, the average size of a new offering was 49.4 Million, and the oversubscription ratio stands at a mean of 35.06%, which is slightly lower than the figures reported byYong (2010) and Low and Yong (2013) for Malaysian IPOs. The risk composition factors (RISKC) comprise of MCAP, TA, AGE and UWR.. Table 1 shows that on average, the selected IPO firms have been in operations for seven years, are underwritten/marketed by moderate quality underwriters with a mean global rating of 0.2 (out of a maximum rating of 1). The MCAP and TA show that most IPOs are, on average, issued by moderate size firms. Even so, MCAP was higher than the cut-off point described in Krigman et al. (1999) but lower than the listing requirement (RM500M) that qualifies firms for main market listing.

Bi-Variate Correlations Between Variables

Our findings as in Appendix A show that there is a strong positive correlation between the two after-market DOP proxies defined as VSO (offer turnover) and ABTO (market adjusted turnover). This indicates that the choice of investment among the after-market investors was highly dependent on after-market DOP that occurs in the IPO market. The turnover ratios were found to be inversely correlated to offer size (OS), indicating signs that after-market DOP is greater with the limited supply of shares to the after-market, consistent with past findings (see, for instance, Chen and Guo (2010), Yong (2010) and Low and Yong (2003),

Weak inverse associations were found between AMAR and VSO and between AMAR and AbTO. The correlation between AbTO (market adjusted turnover) and AMAR was much stronger as compared to the association with VSO (offer turnover). These results indicate that IPOs with after-market DOP in excess of other shares traded in the secondary, generally perform badly in the long run. These results are consistent with the DOP theory as in Miller (2000), Houge et al. (2001), Gao et al. (2006) and Jewartowski and Lizińska (2012). Hence, the greater the DOP among after-market investors on the first-day of trade, the lower is the post-IPO performance. One explanation is that the after-market investors believe that such IPOs are of better quality, thus continue to purchase the offer, only to realize losses later. Past empirical studies suggest that offers with greater volume behavior in the initial trading are associated with IPOs disposed early by institutional investors. Justification given for this observation is that such offers are known to perform badly in future. In fact, greater turnover results in lower post-IPO performance (see Bayley et al., 2006, Krigman et al., 1999, Chong et al., 2009) even though these are more applicable to institutional trade. Since Bayley et al. (2006) found that IPOs subscribed by individual investors generally perform better in the future, we hypothesize (H4) that IPOs with higher first year post-IPO performance (AMAR) is positively associated with individual investors' participation (RETOUT)

The findings above led us to conclude that there is no significant association between individual investors' participation (RETOUT) and first year post-IPO performance. Put simply, H4 is rejected. Nevertheless, the positive correlation provides an indication that IPOs subscribed by individual investors may perform better over a one year period (consistent with theoretical predictions) thus giving some support to Bayley et al.'s (2006) contention.

Appendix B shows the correlation among the risk composition factors that we have considered in this study. The correlation for IPO firms' risk compositions and the turnover ratios are consistent with the argument by Krigman et al. (1999), Gounopolous (2006), Low and Yong (2013), Boehme and Colak (2012) and Houge et al. (2001). More specifically, IPOs with less supply (OSIZE), greater market capitalization(MCAP), greater IPO underpricing (PCC), smaller firm size (TA), greater pre-market interest (OSR), sold by less reputable underwriter (UWR) were found to be significantly related to greater after-market DOP (i.e. proxied by VSO and AbTO).

Both measures of after-market DOP are also found to be related with the first of our chosen behavioral variables i.e. representative heuristic (HEUR). Similar to Bayley et al. (2006), we found a positive correlation between HEUR and VSO. The association between the two variables indicates that the performance of past IPOs has a significant influence on investors' opinion in the after-market (see Bayley et al., 2006). Apart from showing that representative heuristic bias is prevalent in the Malaysian market, it also indicates that after-market investors typically lack the capability to solve complex calculations or analyze complicated investment-related information, particularly when the degree of uncertainty is high. The positive correlations between OSR and HEUR and HEUR and PCC are signs that heuristic representation also influenced the pre-market investors' interest and initial performance. Hence, investors in the Malaysian IPO market do exhibit the tendency to predict the performance of future IPOs based on their judgments pertaining to similar past events, and contemporary events.

Next, pre-market investors' interest, defined as OSR (i.e. subscription ratio), is positively correlated to both proxies of after-market DOP. These results suggest there are signs that after-market investors were attracted to buy IPOs with greater pre-market interest, despite the typically higher premiums attached to such offers, as predicted by Chahine (2007) and Chong et al. (2009). Greater subscription ratio shows that there is greater attention in the primary market and this can have an impact on the opinions formed subsequently in the after-market. There are also claims that this positive association is possibly a sign that unsuccessful individual investors who could not subscribe the offers at the time of offer in the primary market, will exhibit a buying desire in the after-market.

Hierarchical Regression Results

Regression models presented in Table 2 consist of two dependent variables (AbTO and VSO) as proxies of after-market DOP. Findings reveal that all the models have good model fits, with high F-test values of 17.1 and 16.5 respectively, and p-values of less than 0.05, despite producing a low R-squares of 0.206 and 0.200 respectively. The first model (M1), using VSO as the dependent variable, has a slightly higher R-square as opposed to using AbTO as the dependent variable. The first model (M1) consists of a main independent variable (initial performance, defined as PCC, which surrogates for IPO underpricing) and three control variables. Findings show positive relationships between underpriced IPOs (PCC) and both proxies of after-market DOP (VSO and AbTO). The positive relationship between PCC and after-market DOP is a sign that investors update their beliefs differently leading to more disagreement of IPO value. The influence is stronger if market adjusted turnover (AbTO) is used, compared to offer turnover (VSO). Findings indicate that disagreement stimulates more trade for IPOs compared to the trade of other stocks in the capital market.

Moving on to (H2) where participation of individual investors (RETOUT) is predicted to moderate the relationship between initial performance (PCC) and after-market DOP, we reject the null hypothesis based on findings relating to Models M2 and M3. The second regression model (M2) tests the direct influence of individual investors' participation (RETOUT) on after-market DOP. The improvement of R-square (i.e. 0.236) when individual investors' participation (RETOUT) is considered is evident if AbTO is assigned as a dependent variable. Findings also indicate that RETOUT plays an important role in explaining after-market DOP (captured by AbTO). However, the relationship between RETOUT and VSO was insignificant. Model M2 also indicates that RETOUT's effect on AbTO is considered as indirect, as the direct effect reduces the influence of PCC on AbTO with a significant change in the R-square. Furthermore, the significant correlation between RETOUT and AbTO as well as the insignificant correlation between RETOUT and PCC (as in Appendix A) shows RETOUT to be a moderator in the relationship established between PCC and AbTO. Therefore, findings as in Model M3 indicate that RETOUT moderates the relationship between initial performance (PCC) and after-market DOP (captured by AbTO).

When the moderating effect of RETOUT was considered in Model (M3), we found that the R-square of both proxies improve to 0.212 and 0.240 respectively. When AbTO is used as the dependent variable, the moderation effect of RETOUT subsumes the main effect of PCC on after-market DOP. The findings show that full moderation occurred, where the independent variable becomes insignificant, but the moderator is significant (Barron and Kenny, 1986, Aiken and West, 1991). The moderation effect is referred to as the buffering effect, in which the moderator (RETOUT) weakens the effect of the independent variable (PCC) on after-market DOP (see Frazier, Tix and Barron, 2004). On the other hand, when VSO was used as a dependent variable, the explanatory power of PCC increased. However, the result is inconclusive to support the moderation assumption, as RETOUT does not have a direct effect on after-market DOP as in Model 2. In hypothesizing on whether individual investors' participation influence after-market investors' choices, we found a significant and positive relationship between individual investors' participation (RETOUT) and after-market DOP (AbTO). The result suggests that excessive trading in the after-market is not only among IPOs with greater risk compositions and underpriced IPOs, but also IPOs held by the less informed group. Findings suggest that participating individual investors take advantage of the after-market DOP to dispose their overpriced IPOs quickly. However, the negative regression coefficient of the interaction terms (PCC_RETOUT) when AbTO used as dependent variable, shows that after-market investors are not willing to pay a higher premium for the IPOs sold by the participating individual investors. Although it was previously maintained that individual investors receive more underpriced IPOs in Malaysia (see Jelic et al., 2001, How et al., 2007), the correlation results of our study show no evidence to support such a claim. Moreover, it was found that participating individual investors end up buying more undersubscribed IPOs (observed from the negative

correlation between RETOUT and OSR presented in Appendix A). Therefore, there is less disagreement to the value of IPOs with individual investor participation.

Table 2: Cross Section Results (DOP Determinants, RETOUT and PC_RETOUT, and DOP Proxies)

Reg. Model	Variables	VSO a		AbTO b	
		B	t	B	t
M1	(Constant)	-0.570***	-7.341	-1.894***	-24.66
	RISKC	-0.357***	-6.136	-0.320***	-5.553
	LNHEUR	0.649***	2.863	0.539***	2.403
	LNOSR	-0.066	-0.292	-0.260	-1.172
	LNPCC	0.482***	2.841	0.707***	4.216
	F-test	17.139**		16.522**	
	R-square	0.206		0.200	
M2	(Constant)	-0.277	-0.969	-0.943***	-3.404
	RISKC	-0.357***	-6.14	-0.320***	-5.683
	LNHEUR	0.608***	2.643	0.405**	1.818
	LNOSR	0.064	0.252	0.162	0.653
	LNPCC	0.453***	2.64	0.614***	3.697
	LNRETOUT	0.095	1.063	0.309***	3.567
	F-test	13.944**		16.347**	
	R-square	0.209		0.236	
M3	(Constant)	-0.325	-1.123	-0.897***	-3.200
	RISKC	-0.351***	-5.99	-0.327***	-5.767
	LNHEUR	0.604***	2.628	0.408**	1.834
	LNOSR	0.115	0.444	0.112	0.445
	LNPCC	1.162**	1.701	-0.073	-0.110
	LNRETOUT	0.088	0.979	0.316***	3.639
	RETOUT_PCC	0.190	1.072	-0.184	-1.073
	F-test	11.818**		13.822**	
	R-square	0.212		0.240	

Note: This table shows the regression results of two DOP proxies and factors that effects the DOP. Given n=269IPOs. VSOa. is the Model with VSO used as dependent variable. AbTOb. Is the model with AbTO used as dependent variable. MI, M2 and M3 is the estimation model (4) developed from hierarchical regression that incorporates the direct effect of PCC, RETOUT and interaction effect of RETOUT_PCC. PCC defined as initial price change (or initial performance), RISKC is an index created using principle component analysis from four variables that has been established as risk proxy in past studies. HUER denote representative heuristic measuring the extend of which investors evaluate the probabilities of successful offerings based on their judgment of past IPOs returns. OSR is the subscription ratio measuring the pre-market investors' interest. LN indicate the transformation to natural log to meet parametric assumption.

The next set of results relate to H1. Here, we predict that subscription ratio (OSR) which captures the pre-market investors' interest to be positively related to after-market investors' DOP with the participation of individual investors (RETOUT). However, H1 was unsupported based on our results in M2 and M3. We conclude that OSR is not significantly related to after-market DOP, when it was considered in the model with other determinants of after-market DOP. We found OSR to be insignificant in all the three models, irrespective with or without taking into consideration the individual investors' participation (RETOUT).

Our findings are broadly consistent with those reported by Low and Yong (2013), Chong et al. (2009) and Chahine (2007) where subscription ratio is insignificant in justifying after-market divergence of opinion of fixed price IPOs. Overall, our results do not support the claim that unsuccessful individual investors (who could not subscribe the offers at time of offer in the primary market) will exhibit buying desire in the after-market or that investors' attention in the pre-market influence opinions of after-market investors.

Moving on, H3 predicts that the influence of representation heuristic on after-market DOP of IPOs is strengthened with individual investors' participation. Our findings in Model M1 (Table 2) do not support H3. Findings suggest that investors' opinion in the after-market is positively related to representative heuristic bias (HEUR), when both proxies of after-market DOP were utilized. The positive relationship between HEUR and after-market DOP is consistent with Bayley et al. (2006) but inconsistent with Chong et al. (2011). Representative heuristic bias seems to stimulate after-market trade. Meanwhile, after-market investors lack the capability to process market-wide information, particularly when degrees of uncertainty are high. Instead, they rely on the performance of past IPOs to make investment decisions. The high uncertainty is reflected by the inverse relationship between RISKC and after-market DOP proxies. The relationship suggests that smaller sized firms, smaller sized offers, less market capitalization, less reputable underwriters generate greater divergences of investors' opinion in the after-market. However, when RETOUT was added to the model (M2) and when the moderation effect of RETOUT is considered in M3, the explanatory power of HEUR reduces but RISKC remains the same. These are indications that participating individual investors influence on after-market DOP is less affected by the representative heuristic bias. After-market investors' belief that such offers lack recognition, hence pay less attention to the past success stories of individual investors' trades, despite the evidence that the IPO participated by individual investors fare better in the future, than offers that generate higher first-day return. However, we do find that RISKC and HEUR play important roles in explaining after-market DOP of highly underpriced IPOs, while RETOUT plays an important role in explaining the after-market DOP of undersubscribed IPOs (of which are less underpriced).

Model M1 in Table 3 shows the regression results for the two proxies of after-market DOP (VSO and AbTO), conditioned across hot issues and cold issues. Finding shows that that the F-test value of cold issues is higher if AbTO is used as dependent variable as compared VSO, indicates that the model using AbTO as a dependent variable have a good model fit, while the opposite holds for hot issues with a higher F-test value when VSO is used as dependent variable. Moving on to H5 with the prediction that hot IPOs with average initial performances greater than 10% significantly influence individual investors' participation in IPOs with greater after-market divergence of opinion. However, the results in Model M2 of Table 3 do not support H5. When RETOUT was considered in Model M2, we found that RETOUT's influence on VSO for cold and hot issues was insignificant. Nevertheless, the RETOUT's influence on AbTO as in Model M2 was found to be significant for both cold and hot issue at 5% and 10% significance levels. Findings suggest that RETOUT plays an important role as a determinant of after-market DOP for both hot and cold issues, particularly for IPOs with turnover in excess of market turnover.

The results in Model M1 shows that there is no significant relationship between PCC and after-market DOP proxies for hot issues. The results suggest there is no disagreement across hot issues. However, PCC was significantly positively related to after-market DOP for cold issues when AbTO was used as dependent variable. The PCC continue to be a significant determinant when AbTO is used as dependent variable, despite considering the effect of individual investors' participation (RETOUT) for cold issues. Although participating individual investors dispose both hot and cold issues, hot issues were sold at a lower premium as indicated by the negative regression coefficient of PCC for hot issues. As for cold issues, less overpriced IPOs were sold giving support to the theory that investors hold on to losers for fear of regret (see Shefrin and Statman, 1985, Bayley at al., 2006, Barber and Odean, 1999, Barber and Odean,

2011, Chong, 2009). However, we do detect the presence of the cognitive bias called loss aversion in which after-market investors find more pleasure acquiring the winners at higher prices than acquiring losers at lower prices (see Kahneman and Tversky, 1979). However, these were not offers participated by individual investors. Findings relating to cold issue categorization suggest that disagreement occurs for less overpriced IPOs, and when individual investors' participation was considered, the explanatory power reduces, indicating that less number of individual investors participated in these offers.

Table 3: DOP Across Market Condition and the Effect of RETOUT

Reg. Model	Variables	VSOC a		VSOH a		AbTOC b		AbTOH b.	
			t		t		t		t
M1	(Constant)	-0.884***	-6.248	-0.013	-0.113	-1.986***	-14.688	-1.365***	-11.413
	RISK	-0.359***	-3.771	-0.306***	-4.793	-0.381***	-4.181	-0.266***	-3.973
	LNHEUR	0.869**	2.287	0.26	1.056	0.584*	1.607	0.103	0.399
	LNOSR	0.808*	1.316	-0.320*	-1.603	0.294	0.502	-0.290*	-1.383
	LNPCC	0.232	0.555	-0.101	-0.501	**1.454***	**3.635**	-0.141	-0.668
	F-tests	6.616**		5.755**		9.216**		4.085**	
	R-square	0.168		0.151		0.22		0.112	
M2	(Constant)	-0.561	-1.157	0.328	1.049	-1.256***	-2.733	-0.623**	-1.934
	RISK	-0.355***	-3.717	-0.303***	-4.747	-0.372***	-4.106	-0.259***	-3.946
	LNHEUR	0.850**	2.225	0.212	0.851	0.539*	1.491	-0.001	-0.005
	LNOSR	0.958*	1.469	-0.178	-0.764	0.632	1.024	0.019	0.079
	LNPCC	0.066	0.136	-0.081	-0.401	**1.077***	**2.354**	-0.098	-0.47
	LNRETOUT	0.112	0.696	0.114	1.17	**0.252****	**1.66**	**0.249***	**2.472**
	F-test	5.369**		4.891**		8.023**		4.620**	
	R-square	0.171		0.16		0.236		0.153	
M3	(Constant)	-0.403	-0.749	.826*	1.632	-1.366***	-2.682	-0.082	-0.156
	RISK	-0.359***	-3.743	-0.318***	-4.907	-0.369***	-4.057	-0.276***	-4.133
	LNHEUR	0.818**	2.124	0.211	0.847	0.561*	1.536	-0.003	-0.012
	LNOSR	1.004*	1.53	-0.216	-0.92	0.6	0.964	-0.022	-0.091
	LNPCC	1.242	0.705	**-1.397***	**-1.303**	0.263	0.157	**-1.528***	-1.383
	LNRETOUT	0.16	0.913	**.257****	**1.712**	**0.219***	**1.317**	**0.403***	**2.613**
	RET_PCC	0.277	0.694	-0.374	-1.25	-0.192	-0.507	**-0.407***	**-1.318**
	F-test	4.536**		4.354**		6.691**		4.161**	
	R-square	0.174		0.171		0.237		0.164	

Note: This table shows the regression results of factors that effects DOP examined across hot and cold market condition. Given n (Hot IPOs) = 134; n (Cold IPOs) =135. VSOa. represents model with VSO as dependent variable. AbTOb represents model with AbTO as dependent variable. Model with VSO as dependent variable is categorized to VSOH for hot IPOs and VSOC for cold IPOs. Model with AbTO as dependent variable is categorized to AbTOC for cold IPOs and AbTOH for hot IPOs. MI, M2 and M3 is the estimation model developed from hierarchical regression that incorporates the direct effect of PCC, RETOUT and interaction effect of PCC_RETOUT. PCC defined as initial price change, RISKC is an index created using principle component analysis from four variables that has been established as risk proxy. HUER is a behavioral factor measuring the extent of which investors evaluate the probabilities of successful offerings based on their judgment of past IPOs return, or use of rule of thumb from past experience. OSR is the subscription ratio measuring the pre-market investor's interest.

Model M3 in Table 3 shows that when the moderating effect of RETOUT is considered, the model fit improves as compared to Models M1 and M2 for both proxies of after-market DOP. The moderating

effect improves the explanatory power of RETOUT and PCC on after-market DOP when both proxies were used as dependent variable, for hot issues. Nevertheless, based on the assumptions of Barron and Kenny (1986) and Aiken and West (1991), the moderating effect only occurs in cold issues when AbTO was used as a dependent variable, while partial moderation was observed for hot issues. For hot issues, significant positive relationships between PCC and both proxies of after-market DOP are observed if the interaction of PCC_RETOUT is incorporated into M3 Model. The positive regression coefficient of RETOUT suggests that participating individual investors dispose underpriced IPOs at a lower premium for fear of regret, while the negative regression coefficient is a sign that less underpriced and undersubscribed IPOs are disposed on the first-day of trade by participating individual investors. One interpretation is that the participating individual investors quickly dispose the less underpriced IPOs and hold on to the overpriced IPOs, losses is seen to induce more pain than pleasure resulting from the gain called loss aversion. Meanwhile, after-market investors demand lower premiums (during the hot period) from the participating individual investors for the lack of quality recognition of such offers. Our results across hot and cold issue IPOs are consistent with the findings by Krigman et al. (1999) and Gounopolous (2006) where extremely hot issues are traded less while cold issues are traded more. The findings for hot issue is inconsistent with the findings by Aggarwal (2003), Bayley et al. (2006) and Low and Yong (2013) perhaps due to the rise of the volume movement in the after-market from as low as 7% (see Chong et al., 2009) to an average of 101.8% in our study, while the changes in the initial performance remain low. The large trade is accounted for by the sale of undersubscribed and less underpriced IPOs by participating individual investors, while highly underpriced IPOs which are subscribed by more informed groups are possibly not disposed early.

To summarize, the findings show that RETOUT plays a positive role on volume behavior, particularly when there is greater disagreement in the after-market. Upon further investigation, it was found that individual investors' participation (RETOUT) have a significant moderating role on the relationship between initial performance PCC and after-market DOP for cold issues and hot issues. The explanatory power of hot issues is greater than that for cold issues. Other determinants considered in our study include the heuristic representation (HEUR) and risk composition (RISKC). Both show significant influences on after-market DOP. Our study offers a new insight to the role of individual investors' participation on after-market activity. Their participation points to behavioral forces at work in the after-market for less underpriced and undersubscribed share issues. After-market investors' decision to purchase such IPOs at lower premiums seem to be suboptimal decisions, as they do not result in favorable future returns. On the other hand, participating individual investors' decision to dispose less underpriced IPOs is seen to be optimal, while the decision to dispose less overpriced IPOs is a sign of loss aversion, in which investors find that the pain from realizing losses is greater than the pleasure derived from gains.

CONCLUSION

We conducted an investigation of after-market divergence of opinion (DOP) and its relation to initial performance (PCC which surrogates underpriced IPOs), individual investors' participation (RETOUT), risk factors (RISKC), representative heuristic bias (HEUR) and post-IPO performance (AMAR). There is a significant positive relationship between individual investors' participation and after-market DOP in the Malaysian IPO market. We also found that after-market DOP attributes to a negative correlation with post IPO performance, while initial performance (PCC) and RETOUT have positive correlations with post-IPO performance. Overall our regression results across different market conditions suggest that after-market investors are not willing to pay higher prices for the offers originally held by individual investors, while original individual subscribers are willing to forgo their underpriced IPOs at a low premium for fear of regret of holding such shares for longer period (aversion to losses, in which the pain from uncurring losses is believed to be more severe as compared to the pleasure derived from gains, as per the prediction by Kahneman and Tversky, 1979). This is also partly due to the widespread belief that institutions are 'recognized' measures of firm quality (see Boehme and Colak, 2012), while retail investors are not

accorded such recognition. The belief held by the after-market investors is often to the advantage of institutional investors, but at the expense of retail investors (see Barber and Odean, 2011). Even though offers with individual investors' participation were found to perform better in the long-run (consistent with Bayley et al.,2006), after-market investors place lower values for such IPOs, therefore, most individual investors who subscribe to undersubscribed IPOs are willing to forgo their holding fast at a lower premium.

We found that the total number of individual investors participating in Malaysian IPOs is relatively small. Findings indicate that only 34% of IPO shares offered (or, 4.4% of total outstanding shares) is subscribed by individual investors. Most of these issues are largely undersubscribed and overpriced. These findings are at odds with past studies who found that underpriced IPOs in Malaysia are largely held by individual investors (Jelic et al., 2001, How et al., 2007). Although behavioral forces such as heuristic representation, loss aversion and divergence of opinion exist in the Malaysian market, the effects of such forces are weak.

In terms of policy implications, the liquidity of retail sales in both hot issue and cold issue periods should be improved by market regulators, perhaps by increasing the proportion of underpriced shares offered to individual investors. Second, there is a need to review the current IPO pricing method, as both the pre-market and after-market individual investors face difficulties in ascertaining the values of the said IPOs. Such offers should be offered in an institutional setting, to ensure that behavioral forces remain low and retail investors do not lose from their own trading activity. Third, since risk composition factors significantly influence after-market investors' opinion, there is a need to further scrutinize each component that collectively make up the risk composition element. For instance, the liberalization of underwriters' requirement for new share offerings in Malaysia would likely make it more difficult for individual investors in terms of ascertaining the value of new shares. Therefore, there is a need revise the role of underwriters instead of merely removing the underwriter requirement for new share offerings.

One of the main limitations of our paper is that, despite having included all recent IPOs carried out in the Malaysian stock exchange, the size of our sample remains relatively small as compared to other IPO-centered studies undertaken in more advanced capital markets such as the US and the UK. In addition, we did not make the distinction between the different listing boards where IPO firms eventually feature (i.e, Main Board, Second Board, MESDAQ, Main Market or ACE markets). These drawbacks may limit the generalizability of our findings to other developing capital markets. Hence, in terms of suggestions for future research, our study should be extended by considering IPOs across all major markets in the Southeast Asian region or, more broadly, the East Asian region. This would greatly increase the overall sample size for statistical analysis. Second, we have not taken into account other potentially relevant factors such as corporate governance where the quality of disclosures made in IPO prospectuses may have some impact on the investors pre-market interest (i.e subscription ratio). Lastly, a comparative study across markets where individual investor participation form significant proportion of overall trading volume may also be fruitful in terms of providing insights into the impact of their trading activities on the DOP phenomenon.

APPENDIX

Appendix A: Correlations of Dependent and Independent Variables

	LNVSO	LNAbTO	LNAMAR	LNOSR	LNHEUR	RISK	LNRETOUT	LNPCC
LNVSO	1	0.831[**]	-0.154[**]	0.213**	0.208[**]	-0.359[**]	0.01	0.246[**]
LNAbTO		1	-0.156[**]	0.174[**]	0.192[**]	-0.318[**]	0.155[*]	0.297[**]
LNAMAR			1	0.032	-0.064	0.009	0.036	0.412[**]
LNOSR				1	0.272[**]	-0.338[**]	-0.444[**]	0.343[**]
LNHEUR					1	0.017	0.048	0.282[**]
RISK						1	0.160[**]	-0.130[*]
LNRETOUT							1	0.007
LNPCC								1

*Note. 289IPOs. VSO denotes the total volume of trade at first-day scaled by shares offered. AbTO measures the market adjusted turnover at first-day of trade. AMAR measures the one-year post IPO returns. RETOUT denotes retail shares scaled by outstanding shares. PCC denotes initial price change measured as the deviation of closing price at first-day of trade scaled by offer price. OSR is the subscription ratio measuring the pre-market investor's interest. HEUR denotes representative heuristic bias measuring the extend of which investors evaluate the probabilities of successful offerings based on the their judgment of past IPO returns. RISK defines risk composition index formed using principle component analysis upon removing OSIZE and AGE with correlation > 0.9 and <0.3 **. LN represents the natural logarithm transformation of the respective variable to meet the assumptions underlying least-square estimator. Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).*

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