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IMPACTS OF OWNERSHIP CONCENTRATION AND LIQUIDITY ON STOCK MOMENTUM PROFITABILITY IN MALAYSIA

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ABSTRACT

This paper explores the effects of two characteristics ubiquitously relevant to the emerging markets in Asia concerning on momentum profitability. By utilising the data of 776 stocks listed on Bursa Malaysia from the period of 2006 to 2014, the study examined how ownership concentration affected momentum profitability. The results of this study revealed that the higher the ownership concentration, the more profitable the momentum investment strategy. It is posited that concentrated ownership led to lower corporate transparency and higher information asymmetry. Hence, resulting to stronger momentum effect. The study also investigated the impacts of liquidity on the profitability of momentum trading strategy. Our results show that price momentum strategies worked better among higher liquidity (smaller spread) stocks.

Keywords: investment, portfolio selection, momentum strategies, ownership concentration, liquidity

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INTRODUCTION

Technical trading strategy is predicated upon a belief in return predictability and recurring trends in stock prices over time. Following that claim, it is believed that such trading strategy dictating that past information can be used to predict future direction in a consistent manner violates the Efficient Market Hypothesis (EMH). According to the weakest form of EMH, current stock prices incorporate all past information, and thus investors should not be able to generate significant abnormal profits on the basis of past information. Despite this theory, it is notable that many empirical studies have presented contrary evidence. That is, return-based trading strategies have been found to be capable of producing significant profit.

One such popular strategy is the momentum trading strategy. Also known as relative strength strategy, the momentum strategy is based on the notion that the current trends of stocks will continue in the same direction over short to medium term, through which abnormal profit is exploitable by investors. It involves the activities of purchasing stocks that have outperformed in the recent past (winners) and simultaneously taking a short position in the underperforming stocks (losers) over the same horizon. The excess return of the strategy is then derived from the difference between the returns of the extreme (winner and loser) portfolios. This strategy was first formally documented by Jegadeesh and Titman (1993) and has since earned intense interest from academicians and practitioners.

On the basis of the substantial literary evidence currently available, it seems fair to suggest that momentum trading strategy is profitable. These extensive evidence; however, primarily stemmed from studies on US and other mature international markets such as Europe. While the existence of momentum was found to be remarkably consistent in developed countries, evidence was at best mixed in the emerging markets. Emerging Asian markets differ in numerous key aspects against the Western developed markets. Some of the most common characteristics embedded in the emerging markets are the rich diversity of cultures and uniqueness in the institutional and political dimensions. It is plausible that some of the underlying attributes fundamental to the emerging markets in Asia could be responsible for the mixed evidence of momentum effect. Among the most widely discussed peculiarities of the emerging Asian markets is concentrated ownership. A great deal of research has shown that corporate ownership is highly concentrated in the emerging countries.[1] Liquidity concern such as thin trading of stocks has also found to be more pervasive in the emerging markets. While trading behaviour of institutional investors may greatly impact the movement of stock prices (Yu, 2008), evidence reveals that participants in the emerging

stock markets were overall dominated by individual investors. Other qualities that may segregate the emerging markets from the developed ones include heavy government interventions in the economic and business spheres (Ang, 2008), and direct involvement of politics in businesses. It has also been demonstrated that the state has been and is becoming an increasingly important owner of firms in the Asian markets. For example, it has been shown that government-linked-companies accounted for 34% of stock market capitalisation in Malaysia as a whole (Asian Development Outlook 2004 Update).

Given the ubiquitous characteristics of the Asian markets, it is relevant to inquire how these characteristics may affect the efficacy of momentum trading strategy in this region. As a middle-income economy in the region, Malaysia is generally regarded as having a well-developed capital market. Interestingly, it is also a market that displays many of the characteristics peculiar to the emerging markets. Not only that Malaysia is uniquely characterised by a large number of family-owned and state-owned companies, it has also a high degree of ownership concentration: almost 89.6% of the firms in Malaysia have a controlling shareholder (Krishnamurti, Sevic, & Sevic, 2003). In addition to pervasive dominating family ownership, ties between government and business have also been inseparable. For example, while families have control over the majority of corporations in Malaysia, Indonesia, Thailand, Korea and Hong Kong, state control was common in Malaysia and Singapore (Claessens, Djankov, & Lang, 2004). Carney and Child (2013) reported that even though family control remained largely prevalent, state control has become increasingly important in Southeast Asian countries. Although concentration of ownership is a heavily-researched topic in relation to corporate transparency and agency cost, the causal effect of ownership concentration and corporate transparency is unsettled. On one hand, there is vast amount of literature pointing out to the expropriation of minority shareholders by controlling shareholders through tunneling of resources (Cheung, Jing, Lu, Rau, & Stouraitis, 2009). On the other hand, there is also evidence of controlling shareholders propping up share prices of distressed firms (Friedman, Johnson, & Mitton, 2003). In this paper we conjecture that firms dominated by controlling shareholders have lower corporate transparency and hence greater information asymmetry. We argue that this leads to stronger momentum effect. Our findings show that momentum return intensified when ownership became more concentrated in the hands of a few. This suggest that momentum trading strategies work better among firms with higher ownership concentration. We suggest that it may be easier for firms with concentrated ownership to manipulatively move money and carry on inter-group transactions with minimal publicity and external monitoring. This creates an opaque information environment and thus results in greater information asymmetry. It follows that in an environment where corporate

transparency is low, investors are more likely to exhibit psychological conditions such as investor overconfidence and self-attribution bias (Daniel, Hirshleifer, & Subrahmanyam, 1998). The result is greater stock price mis-pricing and hence stronger momentum.

Another dimension that reflects the peculiarities of emerging markets is thin trading of stocks. A basic intuition is that the lower the market liquidity, the lower the efficiency of price-discovery mechanism. That is, the speed of price adjustment is sluggish due to low volume of transaction. On the other hand, high liquidity and turnover empowers traders to react to new information promptly and efficiently. This line of thought seems to suggest that lower liquidity stocks are more likely to exhibit stronger momentum. Hence, we first hypothesised that firms with lower liquidity exhibits stronger momentum effect. Interestingly, we found that it was the more liquid stocks that yielded stronger momentum effect. This is contrary to the common notion that anomaly-based trading strategies are more profitable with less liquid stocks. The result is, however, consistent with a related research by Avramov, Cheng and Hameed (2016).

RELATED RESEARCH

Pursuant to the work of Jegadeesh and Titman (1993) that documented significant positive momentum profits in the US stock market, numerous studies have been similarly conducted in other developed markets.[2] In these studies, most have reported pervasive momentum profitability. However, evidence of such overwhelming consistency was not observed in emerging markets. In Chui, Titman and Wei (2000), the authors examined eight Asian stock markets (Hong Kong, Indonesia, Japan, Korea, Malaysia, Singapore, Taiwan and Thailand) and found that momentum strategies were highly profitable when they were applied simultaneously in all markets except for Japan. When individual Asian countries were examined, six of them except Korea and Indonesia exhibited the presence of momentum effect. However, the effect was reportedly weak and statistically significant only in Hong Kong for the entire period. Hameed and Kusnadi (2002) implemented unrestrictive momentum trading strategies on stocks traded in six Asian markets (Hong Kong, Malaysia, Singapore, Korea, Taiwan and Thailand) between 1979 and 1994 and found no evidence of the strategies being profitable. Those prior evidence demonstrated that momentum profits were not a pervasive phenomenon in the emerging markets. Cakici, Fabozzi and Tan (2013) argued the lack of momentum effect in the emerging markets could be due to the lack of high quality and comprehensive data in these markets. In spite of those, there were some recent studies that show that momentum strategies could be positive in the

short run. These include the studies of Tan, Cheng, and Taufiq (2014) that used Malaysia as database and Shi and Zhou (in press) which found momentum effect in the short-run but contrarian effect in the long-run in the Chinese stock markets. A more related paper is Husni (2006). Husni (2006) examined momentum effect using Malaysian stock market data from 1988 to 2002, and found positive momentum effect. In particular, the author found that momentum effect is particularly pronounced among stocks with high trading volume. Of noteworthy is that Husni (2006) constructed portfolios using non-overlapping periods, which is different from the original methodology of Jegadeesh and Titman (1993). In addition to the above, there was also some literature demonstrated the effectiveness of the enhanced versions of momentum strategies in delivering abnormal profits.[3]

In this study, we explored the relationship between momentum and ownership concentration. The latter has been widely discussed in the context of corporate transparency and agency costs. In a recent study of Malaysian firms, Hamdan (2017) shows that there is discrepancy of information between informed and uninformed investors of firms with high level of ownership concentration. Using Korean database, Kim, Lim and Sung (2007) provided evidence of group control motive, which was the desire of controlling shareholders to structure intra-group ownership in such a way that allows them to maximize their control over the group. In the corporate landscape, there are instances of controlling shareholders expropriated interests of minority shareholders. Expropriation of minority shareholder interests has always been in the form of tunneling, that is, the transfer of resources from lower-level to higher-level firm in the same group or pyramidal ownership structure. Company management by the controlling shareholder has made it easier for management to siphon resources within the same group. Claessens, Fan and Lang (2006) argued that controlling shareholders are likely to channel corporate resources to projects that benefit themselves at the expense of minority shareholders. This intra-group movement of funds by controlling shareholders may result in greater information asymmetry and opacity. Johnson, Boone, Breach and Friedman (2000) has also found evidence of controlling shareholders tunneling wealth from minority shareholders. The evidence suggested that this does not only happen in emerging markets but also in advanced countries. In addition to appropriating funds for self-gain, controlling shareholders also showed tendency of releasing less information. For example, in the event of negative news, insiders may filter or conceal information to protect firm's value (Johnson et al., 2000). Therefore, the effect of their undesirable behaviors provides inadequate information disclosure and corporate opacity. In other words, it is quite likely that concentrated ownership leads to lower corporate transparency and thus greater information asymmetry. It follows in a sense that in an environment where corporate transparency is low, investors are more likely

to exhibit psychological conditions such as investor overconfidence and self-attribution bias (Daniel et al., 1998). In another study, investor overconfidence was shown to be more pronounced when investors need to value stocks that require interpretation of ambiguous information (Daniel & Titman, 1999). As a result, mispricing is possibly more severe in firms with higher degree of information asymmetry (Hirshleifer, 2001). Hence, it is possible that lower corporate transparency stemming from concentrated share ownership results in greater information asymmetry, thereby further induces greater mispricing of stock prices. The resulting prolonged deviation of stock prices from their fundamental values leads to greater synchronous price movements, and thus, stronger momentum. An alternative view argues that controlling shareholders prop up firm in distress and benefiting the minority shareholders through the process. If controlling shareholders take actions to stabilise stock prices, thereby inducing the price stabilisation effect or a reversal in share prices, the momentum effect is likely to be weaker. It is also possible that agency cost is lower for firms with more concentrated ownership. Amran and Ahmad (2013) shows that an increased proportion of insider ownership such as family ownership enhances firm performance. So in theory, there are potentially two sources that affect momentum in two opposite directions. The net effect of ownership concentration on momentum constitutes an empirical issue to be examined.

Markets with high concentration are often associated with low liquidity, a quality that is more likely to be associated with emerging markets. Intuitively, lower liquidity impedes information flow and thus accentuate momentum. Notwithstanding this logic, some extant studies documented that higher turnover stocks improved the performance of momentum trading strategy (Chordia, Subrahmanyam, & Tong, 2014; Chui et al., 2000; Lee & Swaminathan, 2000; Chan, Hameed, & Tong, 2000). However, a more recent study by Avramov et al. (2016) provide evidence otherwise. The authors suggested that market liquidity could indeed be an indicator of overconfidence. When overconfidence is high, there will be excessive trading and that leads to more prominent momentum effect. While much have been researched on whether liquidity is a priced factor for stock returns, little attention was given to how momentum effect interacted with liquidity. Out of the few limited studies that did, attention has been predominantly given to the developed markets. Since the thinness of stock trading is generally a more pervasive phenomenon in the emerging markets, insights into such interactions are more relevant in such environments.

DATA AND METHODOLOGY

Data

This study employed firms listed on Bursa Malaysia as data. They were first extracted from Datastream Thomson Reuters and Standard and Poor Capital IQ. Spanning from September 1995 to September 2014, the computing liquidity data were obtained for a period of 19 years or 229 months. This time frame spanned across the 1997 Asian Financial Crisis and the 2007 Global Financial Crisis that impacted Asian financial markets at varying degrees. Data before 1995 were not considered to be extracted over the concern that data coverage may be sparse prior to this date. There were a few steps involved in the overall sample selection and filtering processes.

First, the sample removed stocks that have had less than two years of price histories due to the overlapping nature of momentum strategy which requires a longer time frame for any meaningful portfolio construction. However, companies that were delisted during the study period were not omitted to eliminate the possibility of any survivorship bias problems. Next, when there were missing values of stock prices due to the non-trading periods, the missing values were left blank and not substituted with any preceding observations. The sample obtained as a result of the above screening criteria consisted 776 stocks that were traded on Bursa Malaysia during the research period. This sample represented almost the entire market given that there were approximately 900 stocks traded on Bursa Malaysia in 2014. In terms of market capitalisation, our sample accounted for 62.8% of the total market cap on average. This study used stock prices obtained from Datastream and the prices were adjusted for capital actions. Based on the price data obtained, monthly returns for each stock were computed for all subsequent tests.

The data on ownership concentration were then extracted from Standard & Poor Capital IQ (S&P Capital IQ). The examination of the relationship between ownership concentration and momentum profitability spanned across the study period of January 2006 to September 2014. S&P Capital IQ began compiling ownership data in 2004 and closer scrutiny of the data revealed that ownership data in earlier years were less stable. In view of this, the research period to study for this objective only started in the year 2006. This also allows a reasonable length of research period that is required for any momentum studies. The variable used to calculate ownership concentration was the "% of CSO" or "percentage of common shares outstanding" in S&P Capital IQ. An advantage of using S&P Capital IQ ownership data was that they were collected from multiple

sources. Specifically, data were sourced not only from the annual reports filed by companies but also the quarterly/interim filings that may have been submitted after publications of annual reports. These included proxies, mutual fund portfolio disclosures, institutional investment manager portfolio disclosures (13Fs), stock exchange notifications, 13D/G filings, insider filings, and the like. Deriving information from multiple sources is benefiting as the data being updated on a quarterly rather than annually basis. On rare occasions, ownership percentages exceed 100% due to various reasons such as double-counting and inconsistency in reporting timing. As a result to that, the observations would be omitted from the sample to avoid producing dubious results.

Methodology

To construct a stock momentum trading strategy, we adopted the portfolio-based approach by Jegadeesh and Titman (1993). We initially ranked our sample pool of stocks based on their past formation-month lagged returns. We denote *J* as formation period henceforth. Specifically, we ranked stock in ascending order based on their past *J*-month cumulative returns at the end of every month. The stocks were then sorted into terciles or quintiles. We avoided stock sorting into ten deciles to avoid having too little stocks in each portfolio. The best-performing stocks during the past *J*-months were then stored into the winner portfolio and the worst-performing stocks into the loser portfolio. These portfolios were invested for *K* subsequent months (henceforth *K* denoted investment period). Following the literary convention, we skipped one month between the *J* and *K* periods to attenuate microstructure issues such as bid-ask bounce and short-run stock return reversal effect. The problem of overlapping happened when the investment period exceeded one month as the study used monthly returns. To address this concern, we constructed the overlapping portfolios which required the strategies to hold a series of portfolios that were selected in the month before as well as in $K - 1$ month for every given month *t*. As a result, the study formed *K*-composite portfolios, which was initiated one month apart from each other. Analogous approach was adopted to form the loser portfolio. Lastly, we derived the momentum profits by computing the excess of winner portfolio's returns over the loser portfolio's returns.

Next, we examined if momentum profitability was confined to any particular subsamples of each characteristic. For this purpose, we computed the average monthly returns of momentum portfolio (W – L) within each subsample. If the momentum returns obtained within each subsample differed in their significant levels, the profits may be characteristic-related. The method of creating ownership-momentum portfolios was detailed as follows. First, for each

firm, ownership concentration variable based on the fraction of total company shares outstanding (percentage of ownership) held by the five largest shareholders was set up. We denoted this variable as own_5. This method was consistent with some of the prior researches that used the ten largest shareholders to measure ownership concentration (Ghazali & Weetman, 2006). As own_5 was defined as percentage of shareholdings held by the five largest shareholders, a higher own_5 was regarded as having higher ownership concentration than a lower own_5. Since data were available only on quarterly basis, own_5 was computed on a three-month basis. These procedures were necessary for the construction of concentration-sorted relative strength portfolios (called concentration-momentum portfolios hereafter). Concentration-momentum portfolios were formed by stratifying the entire sample of stocks according to the degree of ownership concentration. At the outset, the study attempted segregating the sample stocks into three levels of ownership concentration. The three levels were low concentration (bottom 30%), medium concentration (middle 40%), and high concentration (top 30%) groups, respectively. Within each segment and at the end of the formation period, all stocks were ranked in ascending order based on their past lagged returns. That is, the top 30% stocks with the highest returns represented the winner portfolio while the bottom 30% stocks with the lowest returns represented the loser portfolio. This procedure was repeated for each segment, one at a time. As the sample pool was stratified twice, it may not contain sufficient stocks to construct narrower relative strength portfolios. Hence, stocks within each concentration-sorted group were divided into terciles rather than quintiles.

According to Tan et al. (2014), the most profitable combination of momentum trading strategy performed in Malaysia was the one with a three-month formation and three-month investment period (J3K3). Hence, we focused on J3K3 strategy in this study. Since the frequency of ownership data that was on quarterly basis did not match the frequency of the monthly price data, adjustment was needed to align the two sets of data. Therefore, fraction of ownership was taken to be constant throughout the three months in any given quarter. In addition to denoting ownership concentration as the five largest shareholdings, this study also attempted the alternative specification where concentration was measured as the total of the top 10 largest shareholdings (denoted as own_10). Subsequent procedures were repeated analogously as it were before. Finally, as an alternative specification and robustness, this study sorted sample stocks into five levels of ownership concentration. The lowest concentration group was the bottom 20% and the highest concentration group went to the top 20%. Momentum strategies were then performed within each of the five concentration-sorted portfolios. Subsequent steps were repeated as mentioned earlier. Table 1 summarises the alternative specifications for concentration-sorted momentum portfolios.

Table 1
Specifications of concentration-sorted momentum portfolios

	Denotation of concentration	
Level of concentration	3 levels of ownership concentration by 5 largest shareholders	3 levels of ownership concentration by 10 largest shareholders
	5 levels of ownership concentration by 5 largest shareholders	5 levels of ownership concentration by 10 largest shareholders

To examine the impact of liquidity on momentum profitability, the study used bid-ask spread to proxy for liquidity. While the earlier literature has used turnover and trading volume as proxy for liquidity, there were some contentions that these were not good measurements for liquidity (Lee & Swaminathan, 2000; Novak, 2014). In this paper, we used bid-ask spread to provide fresh perspective into this research area. Bid-ask spread was measured as the amount by which ask quote exceeded bid quote and the difference was scaled by the bid-ask midpoint. This was essentially the difference between the highest price a buyer was willing to pay and the lowest price a seller was willing to sell. Bid-ask spreads (called spreads hereafter) were narrower for stocks that were widely traded and wider for lightly-traded shares. Additionally, large spreads indicated that investors may be overpaying for the stocks. To construct liquidity-momentum portfolios, we sorted stocks into five spread-based portfolios on a monthly basis. As such, high liquidity portfolio represented the smallest-spread group and low liquidity portfolio represented the largest-spread group. In terms of concentration-momentum analysis, we examined the most profitable J3K3 strategy among all. The remaining procedures were analogous to the construction of concentration-momentum portfolios.

RESEARCH FINDINGS

Ownership-momentum Profitability

As the research period of the study of ownership-concentration momentum portfolio was from January 2006 to September 2014, we examined the momentum profitability over the same period of time as a frame of reference. Table 2 depicts the momentum returns derived from strategies performed over the period of January 2006 to September 2014. For brevity, only excess returns of winner over loser portfolios were shown. It can also be seen from Table 2 that strategy J3K3 remained to be the most profitable strategy among all, which is consistent with the findings by Tan et al. (2014). This strategy generated a monthly momentum returns of 0.52% (6.43% annualised return) with the *t*-value of 3.44. It can be seen that

over the time span of 2006–2014, the shorter-horizon strategies produced stronger and more significant results. This is intuitively acceptable since behavioral bias is expected to be more pronounced in the more recent past. When more information becomes available later, mis-pricing will be corrected and momentum reverses. This is evident in Table 2 where momentum turned negative from J9 onwards.

Table 2
Returns of momentum strategies (January 2006–September 2014)

Strategies	Winner-Loser	Strategies	Winner-Loser
J1K3	**0.0035*****	J6K9	0.0003
	3.57		0.31
J1K6	**0.0018*****	J6K12	–0.0010
	2.52		–1.20
J1K9	**0.0011****	J9K3	0.0018
	2.14		0.80
J1K12	**0.0008****	J9K6	–0.0001
	2.01		*–0.05*
J3K3	**0.0052*****	J9K9	–0.0014
	3.44		*–1.26*
J3K6	0.0035 ***	J9K12	–0.0024***
	2.83		*–2.83*
J3K9	**0.0020****	J12K3	–0.0004
	2.32		–0.17
J3K12	0.0009	J12K6	–0.0018
	1.49		*–1.15*
J6K3	**0.0038****	J12K9	**–0.0030*****
	1.79		–2.53
J6K6	0.0020	J12K12	**–0.0037*****
	1.35		–3.97

Notes: Sample stocks were sorted into terciles. t-statistics are italicised.
** represents 5% significance level; *** represents 1% significance level; all returns were on monthly basis.

Next, we analyse ownership-concentration related momentum profitability. In Table 3, we present the summary statistics of the different levels of ownership concentration. In Panel A, shareholdings of the five largest shareholders (own_5) were divided into three levels namely low, medium and high concentrations. Low concentration denoted the lowest shareholdings among the three levels with

an average shareholding of 41.26% while high concentration represented the largest shareholdings with a mean of 75.35%. Overall Malaysian sample firms have an ownership concentration of 59.09% where concentration was defined as the percentage of shareholdings held by the five largest shareholders. This concentration level was in line with the statistics published by the World Bank Group and consistent with the view that shareholdings in Malaysian public listed companies were highly-concentrated. Panel B shows the summary statistics of ownership concentration defined as the total percentage of shareholdings held by the 10 largest shareholders (own_10). The average of this variable was 67.16%. Panels C and D show the statistics of percentage of ownership that were sorted into five varying degrees of concentrations. The five levels were low, medium low, medium, medium high and high concentrations respectively. In Panel C (D), ownership concentration was expressed as the total shareholdings of the top five (10) largest shareholdings. In addition to ownership concentration, average sizes of companies were also computed for each level. It was evident from Table 3 that there is a positive relationship between the degree of ownership concentration and sizes of Malaysian companies. Unsurprisingly, it was discovered that companies with more concentrated shareholdings were larger in size on average. This was already hypothesised at the beginning of the study since larger firms in Malaysia tend to be more politically-linked (Ghazali & Weetman, 2006), thus were concentrated in shareholdings.

To examine the relation between ownership concentration and momentum, we focused on the most profitable strategy with the highest significance level: J3K3. Table 4 presents the performances of concentration-momentum portfolios into two parts. Panel A and B of Table 4 depicts momentum returns of each three level of concentration where concentration was expressed as total percentage of shareholdings of the top five or ten largest shareholders. In Panel C and D of Table 4, we show results of a more sensitive approach where firms were stratified into five levels of concentration.

Table 3
Summary statistics of different levels of ownership concentration

	No. of observation	Shareholdings		Average size	
		Mean	Std. Dev.	Mean	Std. Dev.
Panel A: 3 levels of ownership concentration by 5 largest shareholders (own_5)					
Lowest concentration (C1)	21691	41.26	9.33	4.41	1.45
Medium concentration (C2)	21657	60.67	4.39	4.81	1.56
High concentration (C3)	21635	75.35	5.47	5.43	1.76
Average	64983	59.09			
Panel B: 3 levels of ownership concentration by 10 largest shareholders (own_5)					
Lowest concentration (C1)	21533	49.27	10.78	4.38	1.44
Medium concentration (C2)	21499	69.39	4.00	4.90	1.60
High concentration (C3)	21466	82.82	4.87	5.38	1.74
Average	64498	67.16			
Panel C: 5 levels of ownership concentration by 5 largest shareholders (own_5)					
Lowest concentration (C1)	13032	35.72	8.02	4.28	1.40
Medium low concentration (C2)	12996	51.23	3.12	4.63	1.48
Medium concentration (C3)	13000	60.79	2.71	4.77	1.55
Medium high concentration (C4)	12996	68.95	2.30	5.17	1.71
High concentration (C5)	12959	78.82	4.22	5.58	1.76
Average	64983	59.10			
Panel D: 5 levels of ownership concentration by 10 largest shareholders (own_10)					
Lowest concentration (C1)	12549	42.70	9.46	4.28	1.39
Medium low concentration (C2)	12516	59.92	3.55	4.56	1.52
Medium concentration (C3)	12514	68.90	2.53	4.87	1.54
Medium high concentration (C4)	12515	76.18	2.24	5.19	1.68
High concentration (C5)	12475	84.28	2.95	5.33	1.74
Average	62569	66.40			

Table 4
Returns of concentration-momentum portfolios (January 2006 – September 2014)

Concentration level	Winner	Loser	Winner–loser
Panel A: 3 levels of ownership concentration by 5 largest shareholders			
Low concentration (C1)	0.0103	0.0081	0.0022
	3.22	2.35	*1.66*
Medium concentration (C2)	0.0121	0.0069	**0.0051*****
	4.37	2.31	2.97
High concentration (C3)	0.0123	0.0070	**0.0053*****
	4.88	2.54	4.48
High minus Low(C3–C1)			***0.0032******
			2.61
Panel B: 3 levels of ownership concentration by 10 largest shareholders			
Low concentration (C1)	0.0105	0.0076	**0.0029****
	3.30	2.04	*1.99*
Medium concentration (C2)	0.0122	0.0071	**0.0051*****
	4.74	2.77	3.60
High concentration (C3)	0.0123	0.0065	**0.0058*****
	4.78	2.35	4.64
High minus Low(C3–C1)			***0.0029*****
			2.22
Panel C: 3 levels of ownership concentration by 5 largest shareholders			
Low concentration (C1)	0.0099	0.0080	0.0020
	3.05	2.09	1.01
Medium low concentration (C2)	0.0090	0.0092	–0.0001
	2.97	2.91	–0.08
Medium concentration (C3)	0.0097	0.0075	0.0022
	4.45	2.39	1.18
Medium high concentration (C4)	0.0126	0.0083	**0.0043*****
	5.40	3.75	3.11
High concentration (C5)	0.0134	0.0070	**0.0064*****
	4.98	2.31	4.54
High minus Low(C5–C1)			***0.0045*****
			2.36

(*continue on next page*)

Table 4 (*continued*)

Concentration level	Winner	Loser	Winner–loser
Panel D: 3 levels of ownership concentration by 10 largest shareholders			
Low concentration (C1)	0.0102	0.0086	0.0016
	3.04	2.10	0.80
Medium low concentration (C2)	0.0105	0.0072	**0.0033****
	3.64	2.31	1.88
Medium concentration (C3)	0.0148	0.0090	**0.0058*****
	5.52	3.62	4.88
Medium high concentration (C4)	0.0129	0.0102	**0.0027****
	5.55	3.97	1.81
High concentration (C5)	0.0127	0.0075	**0.0053*****
	5.75	2.84	3.49
High minus Low(C5–C1)			***0.0037****
			1.90

Notes: 3 levels of ownership concentration denoted dividing the whole sample into terciles by its level of concentration. 5 (10) largest shareholders represented total percentage of shareholdings held by the 5 (10) largest shareholders. Within each concentration group, momentum strategy was applied as in preceding sections. Winner minus Loser denoted momentum returns while High minus Low was calculated as the difference between the returns of high concentration and low concentration groups. t-statistics were italicized and measured the significance levels of returns.
** represents 5% significance level; *** represents 1% significance level; all returns were on monthly basis.

It is apparent from Panel A and B of Table 4 that momentum returns increased when ownership became more concentrated in the hands of a few. In Panel A, for instance, return of the winners minus losers of low concentration group (C1) was 0.22% per month (2.65% per year). This was the lowest among the three groups. Meanwhile, high concentration group (C3) generated the highest momentum returns at 0.53% per month (6.60% per year). In addition, positive return was not statistically significant for the low concentration group (C1) while highly significant for the high concentration group (C3). Consistent patterns were also observed in Panel B where concentration was expressed as total holdings of the 10 largest shareholders.

To further assess how concentration of ownership may influence momentum profitability, we computed the difference between momentum returns of low concentration and high concentration group. It can be seen from Panels A and B that the momentum investment strategy that was applied on the group of firms with high ownership concentration outperformed the same strategy that was implemented on firms with low ownership concentration. The momentum

spreads between the high concentration group and the low concentration group were 0.32% per month (3.85% per year) where concentration was defined as the five largest shareholdings. Meanwhile, it was 0.29% per month (3.51% per year) when measured as the top 10 shareholdings. Both positive returns were statistically significant. In general, the result appeared to support the hypothesis that momentum effect was stronger among the firms with more concentrated shareholdings. To increase the strength of the test, we looked further into the profitability of momentum in which firms were sorted into five groups according to their degrees of concentration. Panel C and D of Table 4 presents the results of this partition.

Results of Panels C and D were consistent with the preceding findings. Panel C clearly demonstrated that the higher the concentration level, the more profitable the momentum investment strategy. While the lowest concentration group (C1) yielded 0.20% monthly return (2.39% per year), the highest concentration group (C5) generated monthly return of 0.64% (8.02% per year). The difference between the two groups' momentum returns (C5–C1) was 0.45% per month (5.51% per year) and was significant at the level of 5%. In Panel D, the same pattern was observed. Momentum strategy implemented on the highest concentration group noticeably outperformed the same strategy applied on the lowest concentration group in which case the outperformance was 0.37% per month (4.49% per year) and significant at 5% level. It was pointed out earlier that there are potentially two opposing effects of ownership concentration that may affect the performance of momentum strategy. In this respect, the results obtained seem to endorse the first view that momentum strategies performed on the most concentrated shareholding group offered the best returns. Therefore, we argue that concentrated ownership led to lower corporate transparency and higher information asymmetry, thus resulting in stronger momentum effect.

It has been shown that information asymmetry and agency cost were more pronounced in firms with higher concentrated ownership (see Cheung, Stouraitis & Wong, 2005, Fan & Wong, 2002, and Johnson et al., 2000). For example, controlling shareholders may abuse their dominant position for their own benefits but at the expense of minority shareholders. Block shareholders and insiders may also collude with each other to expropriate minorities. The self-serving activities of controlling shareholders are often accompanied by significantly less information disclosure (Cheung et al., 2009). Besides, firms with controlling shareholder system display tendency to release selective information to their own advantage. Political involvement in economic enterprises also affected transparency. Some of the largest firms in Malaysia were government-controlled or possess strong political connections. Tam and Tan (2007) documented that firms with the highest

level of ownership concentration were state-owned. In Malaysia, cultural and political involvement in capital market formed an integral part of information environment (How, Verhoeven, & Abdul Wahab, 2012). Faccio, Masulis and McConnell (2006) reported that among the 35 countries examined, Malaysia was ranked second in terms of having the largest number of politically-connected companies. Further evidence revealed that the major institutional investors in Malaysia comprised of government-related agencies such as Employees Provident Fund and national unit trusts. It is likely that these institutional investors were less motivated to monitor the companies they have invested in since they often obtain interventional support from the government. Suto (2003) argued that firms in this environment faced more serious information asymmetry problems. In this context, it is possible that firm-specific information was suppressed following the restriction of information flow to avoid public scrutiny. Moreover, the media was influenced to obstruct dissemination of information (Bushman, Piotroski, & Smith, 2004). For those reasons, these highly concentrated firms that were likely to be government-controlled or politically-linked disclosed less information to protect the economic interests of their ultimate owners or their political linkages at the expense of corporate transparency. Furthermore, information asymmetry may be aggravated due to the "nature of highly personal and close-knit business networking and information sharing" (Tam & Tan, 2007, p. 211). Building on these intuitions, it is perceivable that concentrated ownership has a strong positive association with corporate opacity and information asymmetry in this market.

Many studies have explained the effects of cognitive biases among investors on the mispricing of securities. Daniel and Titman (1999) theorized that investors' overconfidence was most pronounced when they need to value stocks that required interpretation of ambiguous information. Along the same line, Hirshleifer (2001) argued that mispricing was likely to be more severe in firms with greater information asymmetry. Therefore, it is likely that ambiguous corporate environment accentuate investors' overconfidence and subsequently led to stronger momentum effect. The results of the current study in the Malaysian context offers a strong support to the above arguments and were consistent with a few other studies which documented a more pronounced price momentum effect for stocks with higher information uncertainty (see Daniel & Titman, 1999 and Zhang, 2006). The findings can therefore be construed as accrediting the conjecture of ownership concentration as a determinant of momentum effect. Specifically, in the Malaysian context, ownership concentration was positively linked to momentum returns.

Liquidity-Momentum Profitability

An analysis of the relation between liquidity and momentum in Malaysia was conducted over the period of January 2000 to September 2014. Table 5 presents the summary statistics when sample stocks were sorted into five levels of liquidity. The total number of liquidity-month observations was 86,361. From Table 5, it can be seen that firms with lower liquidity tend to be smaller in size. This was consistent with the literary evidence which showed that smaller firms tend to receive lesser attention from investors, fewer following analysts and less frequently traded. There was also a positive relationship between liquidity level and stock past returns. This observation was consistent with Lee and Swaminathan (2000). Prior evidence on the predictability of liquidity on asset pricing has been concentrating predominantly on developed and mature markets. In spite of this, a few recent studies highlighted an ambiguous effect of liquidity on asset pricing and results varied according to different characteristics of the markets that were surveyed (Hearn, 2011). Table 6 reports on the results of this set of analysis.

Table 5
Summary statistics of different levels of liquidity

	Spread		Average size		Return	
	Mean	S. D.	Mean	S. D.	Mean	S. D.
Low liquidity/large spread (L1)	0.0637	0.0181	4.08	0.94	–0.01872	0.1362
Medium low liquidity (L2)	0.0319	0.0091	4.55	1.05	–0.0040	0.1385
Medium liquidity (L3)	0.0176	0.0048	5.07	1.20	0.0060	0.1429
Medium high liquidity (L4)	0.0099	0.0024	5.71	1.40	0.01575	0.1426
High liquidity/small spread (L5)	0.0053	0.0019	6.52	1.62	0.0249	0.1397

Note: Mean returns were on monthly basis. Average size denoted market value, which is share price multiplied by the number of ordinary shares in issue. Market value was displayed in natural logarithm of millions of Malaysian Ringgit.

One of the key results from Table 6 is the fact that both winner and loser portfolios with the smallest spread (highest liquidity) performed better than those with the largest spread (lowest liquidity). This explaines that smaller spread group generated higher momentum return than larger spread group. For example, a J3K3 momentum strategy implemented within the smallest spread (highest liquidity) group produced profits as high as 1.34% per month or 17.29% per annum. This economic magnitude was much larger than the returns attained using the unrestrictive momentum strategy. The return was significant at the level

of 1%. Besides, momentum effect was small or even negative for the "illiquid" stocks. To gain further insight, the performance of the highest liquidity stocks (L5) was compared with the performance of the lowest liquidity stocks (L1). The result indicated that L5 outperformed L1 by 1.69% per month or 22.26% per annum. Comparison was further made between the average return of medium high liquidity group and the average return of medium low liquidity firms (C4–C2. The result was a significant positive return of 0.79% per month or 9.95% per year. Robustness check was also performed whereby sample stocks were partitioned into three levels of liquidity. Since the results did not differ materially from the five-level partitions, it is not reported here. Overall, the results seemed to indicate that higher positive return was confined to the narrowest spread (high liquidity) stocks.

Table 6
Returns of liquidity-momentum portfolios (January 2000 – September 2014)

Level of liquidity/ spread size	Winner	Loser	Winner–loser
Low liquidity/large spread (L1)	–0.0051	–0.0016	–0.0035
	–1.84	*–0.55*	*–1.59*
Medium low liquidity (L2)	0.0006	–0.0017	0.0023
	0.18	*–0.54*	*1.36*
Medium liquidity (L3)	0.0163	0.0041	**0.0122*****
	5.64	*1.30*	*5.86*
Medium high liquidity (L4)	0.0175	0.0073	**0.0102*****
	5.24	*2.35*	*5.93*
High liquidity/small spread (L5)	0.0216	0.0082	**0.0134*****
	7.30	*2.76*	*6.87*
High minus Low(L5–L1)			**0.0169*****
			5.86
High minus Low(L4–L2)			**0.0079*****
			3.36

Note: Strategy of J3K3 was used. Sample stocks were first segregated into 5 levels of bid-ask spread. L1 denoted largest spread/lowest liquidity and L5 denoted smallest spread/highest liquidity. Within each liquidity group, momentum strategy was performed as in preceding sections. Winner minus Loser denoted momentum returns. High minus Low (L5–L1) was calculated as returns of high liquidity group minus returns of low liquidity group. *t*-statistics were italicised and measured the significance levels of returns. ** (***) represents 5% (1%) significance level. All returns were on monthly basis.

The results of this set of analysis provided evidence of a positive relation between liquidity and momentum profitability in Malaysia. As a whole, after controlling for liquidity, stocks with high level of liquidity (small spread) outperformed stocks that were either illiquid or highly illiquid (large spread) in terms of momentum profits. The results obtained in this study were consistent with some prior research (see Avramov et al., 2016, Hameed & Kusnadi, 2002, Lee & Swaminthan, 2000 and Chan et al., 2000). Avramov et al. (2016) find large momentum profits with more liquid market states. Using trading volume of US stocks as measurement of liquidity, Lee and Swaminathan (2000) argued that high volume stocks behaved like glamour stocks and were more difficult to value. The authors asserted that analysts tend to be over-optimistic (or over-pessimistic) about the future profitability of high (or low) volume stocks. If this proposition holds, high volume stocks are expected to outperform low volume stocks in the momentum context. On the international front, Chan et al. (2000) documented higher momentum profits when applying strategies on international equity markets with higher trading volume. The authors attributed the finding to herding behavior of investors. In another cross-country study, Hameed and Kusnadi (2002) found significant momentum returns for high-turnover portfolios in Malaysia but not for the whole sample of 244 Malaysian stocks. Therefore, the authors concluded that significant momentum profits in this country were confined only to high-turnover stocks.

In this study, we demonstrated that price momentum strategies worked better among higher liquidity (smaller spread) stocks. This result is thus broadly consistent with Husni (2006). The relationship between momentum and liquidity could be explained in the local context of investor characteristic. Wang (1994) demonstrated a close link between the behaviour of trading volume and the underlying heterogeneity of investors. Trading activities in Malaysian stock market were still generally dominated by individual investors despite an increasing upward trend of institutional involvement. As mentioned, retail participation in the stock market accounted for nearly 50% of total trading volume. On the other hand, institutional ownership in Malaysia constituted a mere 15% of total market capitalisation (Abdul Wahab, How, & Verhoeven, 2007). Mutual fund investment accounts for only 20% of the local stock market cap (Lai & Lau, 2010). Individual investors have proved to be unsophisticated and uninformed. They were reportedly behaving actively and aggressively in their trading while simultaneously being speculative (Barber & Odean, 2000; Barber, Odean, & Zhu, 2009). Besides that, individual investors were more likely to be influenced by sentiments that were not fully supported by firms' fundamentals. This attested to the common view that Malaysian stock market was rather rumor-driven. In addition, Barber et al. (2009) documented that individual investors tend to

exhibit a strong herding behaviour and were very likely to repeat their buy/sell decisions within a short time frame. In other words, individual investors are trend chasers. In Wang (1994), the author showed that higher trading volume in the past contributed to positive return continuation if the increased volume was due to private information of informed traders. Huberman and Stanzl (2005) agreed with this claim when they purport that risk-averse liquidity traders tend to trade more when price volatility and liquidity increased. As Malaysian stock market trading activities were dominated by uninformed individual investors (the liquidity traders) who chase the trading behaviour of informed traders, any attention that is given to the "glamour stocks" may drive the return continuation effect. It is also plausible that the unique institutional and social-economic structures of Malaysia, namely concentrated ownership and the inseparable link between businesses and politics, played a role in aggravating the information uncertainty environment and thus led to greater momentum effect among high liquidity stocks in the country.

CONCLUSION

This study was motivated by the lack of evidence in association with the relationship between ownership concentration and momentum effect. It therefore contributed by establishing a link between ownership concentration and stock momentum. The present research demonstrated that high-concentration portfolios consistently outperformed low concentration portfolios in Malaysia. Using the Malaysian context as a platform, the findings are evidently consistent with the notion that information uncertainty associated with concentrated ownership led to more synchronous price movements. We also investigated the implementation of momentum strategies on liquidity-conscious sub-samples and proved that bid-ask spread was capable in predicting the strength and persistence of return continuation. Although it may seem intriguing that it was the narrower spread (higher liquidity) stocks that generated better momentum returns, the results can be explained in the local context of investor heterogeneity of this market. In addition, the findings validated the conjecture that liquidity plays a determining role in momentum and it has shed light on the relationship between liquidity and momentum returns in the emerging market context.

NOTES

1. See, for example, Claessens et al. (2000; 2004).
2. See for instance, Rouwenhorst (1998) and Hurn and Pavlov (2003).
3. See Brown, Du, Rhee, and Zhang (2008) and Gwilym, Clare, Seaton, and Thomas (2010).

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