



## Momentum Profitability in Malaysia

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### ABSTRACT

This paper reports evidence of short-term momentum profits in a study of 700 stocks traded in the emerging Malaysian stock market. For this purpose, momentum portfolios were formed over a full sample period and other sub-periods that included the Asian Financial Crisis, Global Financial Crisis and the period between the two crises. Significant negative returns were observed during the economic downturn brought about by the Asian Financial Crisis, consistent with literature. Moreover, the results showed positive returns over the period characterised by rising market index. This finding is consistent with publication and may be explained as due to investors' confidence being high in a rising market. In addition, individual stock momentum observed was studied to determine whether it was attributable to industry effect, which is a less explored topic. The results of the current study showed that strategies of buying past winning industries and selling past losing industries appeared to be profitable in this market. Thus, this research's findings have added to the literature on this topic from an emerging market place.

*Keywords:* investment, portfolio selection, momentum strategies, industry momentum

*JEL classifications:* G11; G14; G01; G02

### INTRODUCTION

Momentum strategies had been adopted by practitioners long before any formal

academic research began. Evidence shows that investment professionals can take advantage of stock return predictability. It has been shown that mutual funds and pension fund managers tend to buy stocks that show positive returns (Grinblatt & Titman, 1989, 1991; Lakonishok, Shleifer & Vishny, 1992). Grinblatt, Titman and Wermers (1995) revealed that almost three quarters of equity funds track

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momentum. In fact, investors are placing more emphasis on the investing style of the money managers they have appointed (Hedge Funds Review Editorial, 2011). All these serve to highlight the importance and popularity of proven trading strategies.

Momentum profitability was first documented by Jegadeesh and Titman (1993) and has since stirred intense enthusiasm among researchers. It is a form of anomaly as it defies the traditional view of market efficiency. Momentum premises on the notion of return continuation and predictability over the short to medium term. It follows that investors would earn abnormal returns if they were to follow a simple strategy to go long on outperforming stocks and short on underperforming stocks. There is now voluminous evidence that shows momentum trading strategy is profitable. However, most of the pervasive evidence of momentum profits stems from studies on developed markets. While existence of momentum is remarkably consistent in these countries, the findings are far less conclusive in the emerging markets. For example, Hameed and Kusunadi (2002) reported little evidence of momentum profits in the six emerging Asian markets, while Chui, Titman and Wei (2000) documented significant momentum profitability in eight Asian stock markets.

This paper enhances the existing literature by offering insights into momentum profitability using data from an emerging market - Malaysia. It is one of Asia's moderate-growth economies. It is highly open and externally competitive, being ranked the 12th (out of more than 180

countries) most business-friendly country globally, according to a World Bank report in 2013. In the early years of 1985-1995, Malaysia recorded a decent average growth rate of 7.3 per cent per annum. After the 1997 Asian Financial Crisis, it continued to post an annual GDP growth averaged at 4.6 per cent per annum (2000 to 2012). Even in the wake of the recent 2007 global crisis, Malaysia has shown to be resilient and has not suffered a financial crisis. This is suggestive of the country's strong economic fundamentals and sound macroeconomic policies since the 1997 Asian crisis. The sustainability and resilience underpin the attractiveness of Malaysia as an investment destination for international investors. Therefore, the authors believe a detailed investigation of momentum effect designed for this market is both timely and relevant as investors can gauge the success of implementing such strategy in Malaysia.

The objective of this paper is two-fold. First, we examined if there is overall evidence of momentum profitability. While there have been cross-country studies that included Malaysia as one of the emerging countries in their sample, they were not designed specifically to investigate the phenomenon in Malaysia. In this paper, momentum strategies were implemented over different sub-periods to examine if there was any distinctive pattern associated with different economic states. Some preceding studies on developed markets argue that momentum effect is conditional on market states and profits are derived largely from the "up" market, thus supporting the investor overconfidence theory (Cooper, Gutierrez

& Hameed, 2004; Huang, 2006). Others found no relationship between momentum profitability and the states of the economy (Griffin, Ji & Martin, 2003). Daniel and Moskowitz (2013) suggest “momentum crashes” following market declines. The second objective of this study is to investigate if individual stock momentum in Malaysia is driven by momentum in industrial returns. Moskowitz and Grinblatt (1999)<sup>2</sup> pioneered the study of industry momentum using US data. Employing strategies of buying stocks of past winning industries and selling stocks of past losing industries, they documented substantive evidence of momentum effect across industries. To date, there is limited research on this topic compared to the large body of literature on individual stock momentum. Moreover, the evidence presented is controversial.

The remainder of this paper is structured as follows: Section 2 reviews the related research of the field. Section 3 discusses the data and methods. Section 4 analyses and presents the empirical findings. Section 5 concludes the paper.

## RELATED RESEARCH

Since the documentation of momentum returns by Jegadeesh and Titman (1993) more than two decades ago, research interest

in this field of study has been kept alive. In their landmark paper, Jegadeesh and Titman (1993) reported significantly positive momentum returns in the US market. Internationally, numerous studies have confirmed momentum in other developed markets.<sup>3</sup> While evidence of significant momentum returns was documented to be pervasive across numerous developed markets, the findings were not conclusive for the emerging markets. Rouwenhorst (1999) conducted a momentum study on 20 emerging markets and found evidence of momentum. Hart, Slagter and Dijk (2003) examined a broad range of stock selection strategies in 32 emerging markets. They documented significant, albeit small, excess returns in internationally diversified portfolios. Chui *et al.* (2000) reported that momentum strategies were highly profitable in the eight Asian stock markets examined, conditional on market states. Interestingly, a closely related paper presented opposite findings to the preceding studies. Hameed and Kusnadi (2002) found no significant evidence of momentum which implemented the strategies on six Asian markets. However, all these studies reporting less significant momentum returns of emerging countries were using data prior to 2000. Reliable results might thus be hampered by a lack of high quality and comprehensive data (Cagici, Fabozzi, & Tan, 2013). In this recent paper, Cagici *et al.* (2013) categorised 18 emerging

<sup>2</sup>Using data from 20 industry portfolios, Moskowitz and Grinblatt (1999) documented a strong and prevalent industry momentum effect. They further reported that individual stock momentum was completely subsumed by industry effect.

<sup>3</sup>See for example, Rowenhorst (1998), Hurn and Pavlov (2003) and Phua, Chan, Faff and Hudson (2010).

markets into three regions, and firmly established strong evidence of momentum effects for all the emerging markets, with the exception of Eastern Europe. However, studies on momentum effects on individual emerging countries using recent data remain scarce to date.

A few studies have investigated momentum effects on market states. In testing overreaction theories of momentum conditioning on market state, Cooper *et al.* (2004) found that momentum profits are dependent on the market states, as predicted. They further documented that momentum was exclusive to the upmarket state. Huang (2006) revisited Cooper *et al.*'s (2004) proposition in the international context and found that momentum profit was only evident in the bullish market, which is consistent with the precedent findings. Others offered contradictory views. Muga and Santamaria (2009) reported evidence of momentum effect in both up- and down-market states in the Spanish market. To investigate whether momentum effect was present during an economic downturn, Grobys (2014) employed stock market indices of 21 countries during the most recent recession and found that momentum strategy yielded statistically significant negative returns. This confirmed Daniel and Moskowitz's (2013) finding of momentum reversals occurring following market declines.

Given the intense research interest on momentum returns, various theories have been put forward to explain the anomaly. However, there is still disagreement among

academics as to what is the best explanation. In general, there are two camps with different explanations for momentum: risk-based and behavioural. Risk-based explanations attributed momentum profits to common factors that were not being captured in the standard pricing model, while behavioural model proponents argue that investors are irrational. Thus, their behaviours are not necessarily explainable by any risk-based model. The models based on psychological reasoning address particular constraints on investor rationality that either causes an under-reaction of prices to information, or overconfidence and self-attribution bias of investors. Hong, Lim and Stein's (2000) under-reaction theory, and Daniel, Hirshleifer and Subrahmanyam's (1998) overconfidence model belong to this camp. Others approached industry effect as a potential source of momentum. While there has been tremendous interest in stock momentum, there is relatively scant research on industry momentum. Pioneering the studies of industry momentum, Moskowitz and Grinblatt (1999) documented that momentum effect was primarily an industry phenomenon, that is, stock momentum dissipated once the industry effect was controlled. In a similar vein, Ji and Giannikos (2010) showed that industry momentum was profitable on a global basis. Other studies offer contradictory evidence on the profitability of industry momentum. Using the constituents of S&P/ASX 200 index, Li, Stork, Chai, Ed and Ang (2014) reported no evidence of industry-driven momentum in their analysis, and Nijman, Swinkels and Verbeek (2004) suggested that

industry momentum did not seem to play a role in explaining individual stock effects in Europe.

## DATA AND METHODOLOGY

### *Data*

The monthly stock prices of our data were sourced from DataStream Thomson Reuters. Our sample comprised 776 companies listed on Bursa Malaysia, and the data included firms of all sizes. Thus, the sample captured almost the whole market, given that there were 900 stocks traded on Bursa Malaysia in 2013. Moreover, companies that were delisted during the period were not excluded to avoid survivorship bias. However, Finance stocks and REITs were excluded from the sample. Stocks with price histories of less than two years were dropped from the sample due to the overlapping nature of the momentum strategy that requires a longer time frame to be constructed meaningfully. When there were missing values of stock prices due to non-trading periods, they were not substituted with the previous observations as that could create an artificial momentum effect. The longest time frame adopted in this study was 217 months, or 18 years, spanning from September 1995 to September 2013. This time frame spanned the two major financial crises (the Asian Financial Crisis and the Global Financial Crisis) that impacted the country's financial markets. Hence, consideration was given not just to the breadth of coverage but also the length of history. Based on this price data, monthly returns were then computed

for each stock. In addition, the highest and lowest 0.5 per cent of the extreme returns were also removed from the observations. To check robustness, returns were computed without the outliers being removed but the results were very similar. Hence, only results with extreme returns removed are reported in this paper.

To investigate the persistence of momentum effect in industries, the Industrial Classification Benchmark (ICB) was used to classify stocks into different industries. ICB is an industry classification system that was jointly developed by Dow Jones Indexes and the FTSE Group. The benefit of using this system lies in its general availability among the academicians and practitioners, and its uniform classification of industries globally. This allows for meaningful comparisons among the sectors and industries worldwide. The ICB classification in this study was sourced from DataStream and it consists of four levels of hierarchy. The second level of classification (super-sectors) that partitions the entire industry into 19 super-sectors instead of other narrower definitions of industries was opted so as to ensure there were at least eight companies in each industry portfolio. This way, all the portfolios were adequately diversified and had negligible firm-specific risks. Descriptive statistics of the industries are presented in Table 1. There are 16 industries classified under this level of ICB classifications, and the number of companies in each industry group varied from eight to 170. The Oil and Gas sector had the largest average monthly returns

(1.33 per cent per month), followed by Healthcare (1.25 per cent per month) and Telecommunications (1.22 per cent per month). Meanwhile, Basic Resources had the lowest average returns (0.31 per cent per month) among all the industries.

TABLE 1  
Descriptive statistics of industries (January 2000 – September 2013)

Industry	ICB code	Number of firms	Mean returns	Standard Deviation
Oil & Gas	0500	22	0.0133	0.1479
Chemicals	1300	26	0.0056	0.1400
Basic Resources	1700	48	0.0031	0.1455
Constructions & Material	2300	96	0.0041	0.1452
Industrial Goods & Services	2700	170	0.0060	0.1491
Automobiles & Parts	3300	19	0.0045	0.1252
Food & Beverage	3500	84	0.0079	0.1174
Personal & Household Goods	3700	74	0.0037	0.1492
Healthcare	4500	17	0.0125	0.1158
Retail	5300	24	0.0068	0.1282
Media	5500	8	0.0070	0.1618
Travel & Leisure	5700	26	0.0070	0.1375
Telecommunications	6500	10	0.0122	0.1804
Utilities	7500	12	0.0069	0.1210
Real estate	8600	73	0.0063	0.1414
Technology	9500	65	0.0069	0.1920
Total		774	0.0887	

This table reports descriptive statistics for each industry classified under the Industry Classification Benchmark (ICB). The ICB code is the classification code assigned by Dow Jones Indexes and the FTSE Group according to the nature of a company's business. Number of firms is the number of companies within each portfolio. Mean returns and standard deviation denote the average return and standard deviation of each industry group on a monthly basis. Total mean return is the average return of all industries on a yearly basis.

### *Methodology and variables*

#### **Individual stock momentum**

To construct the momentum trading strategy, the approach of Jegadeesh and Titman (1993) was modelled in this study. Firstly, all eligible stocks were ranked based on their past J-month lagged returns ( $J = 1, 3, 6$  or  $9$ ). At the end of every month, the stocks were ranked in ascending order based on their past J-month cumulative returns. The stocks were then sorted into three and five groups. Meanwhile, the stocks with the highest returns during the

past J months were assigned to the winner portfolio (Winner), and those with the lowest past J-month returns were sort into the loser portfolio (Loser). For instance, for the three-decile portfolio, stocks in the top 30 percent decile were assigned to the winner portfolio, while the bottom 30 per cent went to the loser portfolio. These portfolios were then held for K subsequent months ( $K = 1, 3, 6$  or  $9$ ). Hence, a total of 16 trading strategies were generated. The investment period returns were computed as average monthly returns. The portfolios are rebalanced every month. Following



the convention of the literature, the study incorporated a one-month gap between the formation period (J), and the investment period (K) to attenuate microstructure issues such as bid-ask bounce and short-run stock return reversal effect.<sup>4</sup>

As the study used monthly returns, when the investment periods exceeded one month, it unavoidably created overlaps in the investment period returns. Following conventional wisdom, overlapping portfolios were constructed. Thus, in any given month,  $t$ , the strategies held a series of portfolios that were selected in the month before, as well as in the previous  $K-1$  months, depending on the strategies adopted. For example, the monthly return for a three-month strategy would be the average of the portfolio returns of the strategies of this month, the previous month and the previous two months. In this study, the focus was on the extreme portfolios returns of the momentum portfolios were the differences between the winner and loser portfolios. The momentum returns were computed on all 16 strategies since different time frames could embody different pieces of information. The variable of J1K3 was referred to as the strategy of ranking stocks based on the returns of the past one month and the go long on winner and short on loser for the following three months, with a one-month lag between the ranking and the investment periods.

<sup>4</sup>See the approaches of Jegadeesh (1990) and Lehman (1990).

## Industry Momentum

The method of examining industry momentum was analogous to the one adopted by Moskowitz and Grinblatt (1999). Instead of stratifying individual stocks into winning and losing portfolios, we now sorted and invested in the entire industry. Similar to the individual stock momentum approach, the strategy called for taking a long (short) position in the winner (loser) industry. In each month, all the industries under consideration were ranked into five deciles based on their past  $J$ -month returns. The top 20 per cent of the performers were defined as winner industries and the bottom 20 per cent as loser industries. The rest of the procedures are analogous to the one detailed in subsection 3.2.1.

## RESEARCH FINDINGS

This section reports on the returns of various momentum strategies performed for the entire sample period (1995-2013) and the different market states (the Asian Financial Crisis 1997-1999, the Global Financial Crisis 2007-2009, and the “up-period” 2000-2006, as characterised by rising KLCI). In addition, momentum returns within each industry sector are represented.

### *Momentum profitability*

Table 2 presents the average monthly returns of the different composite portfolio strategies performed in Malaysia over the period of January 2000 to September

2013. J3K6 refers to the strategy of ranking stock based on the returns of the past three months. This portfolio was then held for six months. The sample stocks in this study were aggregated into three and five deciles, respectively. Table 1 shows the average monthly returns of winner, loser and momentum returns of both the three-decile and five-decile portfolios. The results showed that positive momentum profits clustered toward shorter horizons. Specifically, only strategies with short (one month and three month) formation horizons generate positive significant returns. At the 5-percent significance level, five out of 16 strategies yielded significant positive returns for the three-decile sorting portfolios and three out of 16 strategies earned significant positive returns for the five-decile portfolios. Meanwhile, there were some momentum profits over short formation horizons, and the profits diminished over the longer term. It appears that momentum strategies based on more recent past performance produced overall better returns in terms of economic magnitude and statistical reliance. Specifically, the three-month formation strategies generated the highest returns, followed by one-month

formation strategies. Besides, an indirect relationship was also observed between the length of the investment period and the profitability of the strategy. In other words, the shorter the investment period, the higher the momentum return. This seems to suggest that strategies based on shorter formation and investment horizons are more profitable overall. As can be seen from Table 1, the most profitable portfolio was the one that selected stocks based on the returns of the past three months and which held the portfolio for the subsequent three months (J3K3). This strategy yielded a total return of 0.41 per cent per month for the three-decile portfolio and 0.39 per cent for the five-decile portfolios. These were translated into annualised returns of 5.09 per cent and 4.84 per cent, respectively. Not all the strategies are effective, however. In Table 2, most strategies of a six-month formation period and all the strategies of a nine-month formation period were actually shown to yield negative momentum, suggesting a mean reversion in the longer term. This may be explained as the market overreacting to new information initially and correcting the biases subsequently.

TABLE 2  
Returns of momentum strategies (January 2000 – September 2013)

	Panel A (3 deciles)				Panel B (5 deciles)			
	Winner	Loser	Winner-Loser		Winner	Loser	Winner-Loser	
J1K3	0.0055	0.0023	0.0031	***	0.0052	0.0021	0.0031	***
	<i>2.13</i>	<i>0.82</i>	<i>4.16</i>		<i>1.96</i>	<i>0.68</i>	<i>3.04</i>	
J1K6	0.0054	0.0035	0.0019	***	0.0050	0.0034	0.0016	**
	<i>2.72</i>	<i>1.53</i>	<i>3.50</i>		<i>2.45</i>	<i>1.41</i>	<i>2.21</i>	



Momentum Profitability in Malaysia

J1K9	0.0062 <i>4.09</i>	0.0053 <i>3.02</i>	0.0010 <i>2.54</i>	**	0.0059 <i>3.80</i>	0.0054 <i>2.94</i>	0.0005 <i>1.05</i>	
J1K12	0.0069 <i>5.77</i>	0.0064 <i>4.82</i>	0.0005 <i>1.83</i>	*	0.0065 <i>5.31</i>	0.0065 <i>4.66</i>	0.0000 <i>0.05</i>	
J3K3	0.0058 <i>2.32</i>	0.0016 <i>0.55</i>	0.0041 <i>3.25</i>	***	0.0053 <i>2.03</i>	0.0013 <i>0.43</i>	0.0039 <i>2.50</i>	**
J3K6	0.0053 <i>2.79</i>	0.0034 <i>1.41</i>	0.0019 <i>2.16</i>	**	0.0050 <i>2.58</i>	0.0034 <i>1.36</i>	0.0016 <i>1.47</i>	
J3K9	0.0059 <i>3.91</i>	0.0052 <i>2.91</i>	0.0007 <i>1.19</i>		0.0054 <i>3.48</i>	0.0052 <i>2.77</i>	0.0002 <i>0.29</i>	
J3K12	0.0065 <i>5.41</i>	0.0062 <i>4.64</i>	0.0003 <i>0.63</i>		0.0058 <i>4.70</i>	0.0063 <i>4.48</i>	-0.0005 <i>-1.05</i>	
J6K3	0.0045 <i>1.82</i>	0.0027 <i>0.86</i>	0.0019 <i>1.19</i>		0.0039 <i>1.47</i>	0.0027 <i>0.79</i>	0.0012 <i>0.62</i>	
J6K6	0.0040 <i>2.04</i>	0.0042 <i>1.76</i>	-0.0002 <i>-0.18</i>		0.0029 <i>1.42</i>	0.0047 <i>1.81</i>	-0.0018 <i>-1.39</i>	
J6K9	0.0047 <i>2.97</i>	0.0060 <i>3.42</i>	-0.0014 <i>-1.97</i>	*	0.0036 <i>2.19</i>	0.0064 <i>3.40</i>	-0.0029 <i>-3.42</i>	***
J6K12	0.0054 <i>4.45</i>	0.0069 <i>5.21</i>	-0.0015 <i>-3.02</i>	***	0.0045 <i>3.57</i>	0.0074 <i>5.19</i>	-0.0028 <i>-4.92</i>	***
J9K3	0.0032 <i>1.25</i>	0.0037 <i>1.18</i>	-0.0005 <i>-0.32</i>		0.0020 <i>0.74</i>	0.0039 <i>1.13</i>	-0.0019 <i>-0.93</i>	
J9K6	0.0030 <i>1.46</i>	0.0054 <i>2.24</i>	-0.0024 <i>-2.25</i>	**	0.0015 <i>0.68</i>	0.0057 <i>2.19</i>	-0.0042 <i>-3.27</i>	***
J9K9	0.0040 <i>2.50</i>	0.0068 <i>3.82</i>	-0.0027 <i>-3.80</i>	***	0.0025 <i>1.51</i>	0.0072 <i>3.80</i>	-0.0046 <i>-5.29</i>	
J9K12	0.0050 <i>4.02</i>	0.0074 <i>5.58</i>	-0.0024 <i>-4.64</i>	***	0.0036 <i>2.71</i>	0.0078 <i>5.48</i>	-0.0042 <i>-6.95</i>	

This table reports the mean returns of winner portfolios, loser portfolios and momentum returns. Returns are calculated based on different combinations of formation and investment periods, and there is always a month's gap between the formation and the investment period. In Panel A, the samples were based on their past J month returns into three deciles. The top 30% of stocks were winners and the bottom 30% of stocks were losers. In Panel B, all the stocks were sorted into five deciles, with the top 20% and bottom 20% being the winners and the losers. Then, we waited for one month and after that, went long for winners and short for losers for the subsequent K months. The sample period was from January 2000 to September 2013. The *t*-statistics are *italicized*. \*\*denotes significance at the 5% level and \*\*\* at the 1% level.

Attributes of firms have been shown to contribute to cross-sectional variation in expected returns. Table 3 reports the average size of the relative strength portfolios formed on the basis of past three-month ranked returns. The average size is the average natural logarithm of market capitalisation of the firms in each portfolio. It is indicated in

Table 3 that loser portfolios are on average smaller than winner portfolios, and the prior returns are positively related to the average size of the firms. While size is a common proxy of systematic risk, this report does not seem to support the proposition that momentum strategies systematically pick high-risk stocks.

TABLE 3  
Average size of J3 momentum portfolios

Panel A (3 deciles)		Panel B (5 deciles)	
Portfolio	Average Size	Portfolio	Average Size
1-loser	4.59	1-loser	4.42
2	5.09	2	4.90
3-winner	5.06	3	5.12
		4	5.17
		5-winner	4.99

This table reports average sizes of different relative strength portfolios. Average size was calculated as the natural logarithm of average market capitalisation of stocks in each portfolio. In Panel A, sample stocks were sorted into three deciles based on their past three-month lagged returns. The portfolio with the 30% lowest lagged return was the loser portfolio (portfolio 1) and portfolio with the 30% highest lagged return was the winner portfolio (portfolio 3). Panel B sorted sample stocks into 5 deciles. Portfolio 1, with the 20% lowest returns, was the loser portfolio and portfolio 5 with the highest 20% returns was the winner portfolio.

For practicality, we briefly consider the profitability of the strategies after taking transaction costs into account. The brokerage fee charged for stock trading was between 0.5 per cent and 0.7 per cent, and it could go as low as 0.42 per cent for online transactions. Other costs included the 0.03 per cent clearing fee and 0.001 per cent for stamp duty, subjected to their respective minimum and maximum charges. Since the most profitable J3K3 strategy yielded an annualized return of 5.09 per cent, the net profit is therefore a mere approximation of 1.5 per cent per annum. This might not be impressive in economic magnitude but the interest was more in establishing the existence of momentum *per se* in this market.

#### 4.2 Momentum Profits over Sub-periods

The returns of various portfolios of the entire sample period (1995-2013) were also calculated. The returns were small and statistically not reliable. However, when the returns were computed for the period after

the Asian Financial Crisis, some shorter-term returns became significantly positive. This prompted us to examine if the volatility during this crisis period had contributed to the insignificant results of the longer-sample period. Tests over the period of the Global Financial Crisis and the period between the two crises were also modelled to examine momentum profits across time. Since the broader-based measure of three-decile portfolios produced better returns, the focus was then placed on this alternative in this section.

Table 4 summarises the monthly average returns of momentum portfolios over the sub-periods of the Asian Financial Crisis (June 1997-December 1999) and the Global Financial Crisis (January 2007-December 2009). The findings in Panel A indicated that during the Asian Financial Crisis, most the strategies tested yielded statistically significant negative returns, implying strong reversals of momentum effect. This is consistent with Grobys' (2014) finding that momentum

strategy produced negative returns during an economic downturn. Although the crisis period referred to in Grobys (2014) was the more recent Global Financial Crisis, while the downturn referred to herein was the Asian Financial Crisis, the two results were not inconsistent as Malaysia was more adversely impacted by the Asian Financial Crisis than by the recent crisis. In Panel B, reversals of momentum returns over the Global Financial Crisis were further observed. This occurred to most of the strategies modelled. Most negative momentums in this crisis period were, however, less significant in a statistical sense. To acquire a sense of the economic state of the country over the time span, the country's main stock market index Kuala Lumpur Composite Index (KLCI) from 1995-2013 was plotted, as given in Exhibit 1. As illustrated by the chart, the equity market had been volatile during the two crises periods.

Daniel *et al.* (1998) attributed momentum profits to investor overconfidence. This theory predicts that investors systematically

make decisions to reinforce their belief to maintain their confidence, and at the same time filters out information that reminds them of the mistakes they have made in earlier decisions. This leads to overreaction to news in a rising stock market scenario. Some studies used states of market to test the proposition and found that momentum profits occurred only in the economic "up" market (Cooper *et al.*, 2004; Huang, 2006). It is rationalised that investor overconfidence is high when the overall market is performing well. In this context, momentum portfolios over the period of 2000-2006 where the index systematically climbed to 1445 before it took a dip during the global crisis were constructed. Table 4 reports significant positive results for some strategies of shorter horizons, resembling the results of the sample period of 2000-2013. The result is also consistent with that of Daniel and Moskowitz (2013) that momentum strategies were generally effective in "normal" market states. In times of market stress, on the other hand, reversals of momentum effect were evident instead.

TABLE 4  
Momentum returns of different sub-periods

Panel A: Asian Financial Crisis						
	Winner-Loser			Winner-Loser		
J1K3	-0.0181	**		J6K3	-0.0210	**
	-2.67				-2.30	
J1K6	-0.0210	***		J6K6	-0.0198	***
	-6.24				-4.59	
J1K9	-0.0153	***		J6K9	-0.0249	***
	-9.86				-9.70	
J3K3	-0.0262	**		J9K3	-0.0230	**
	-3.30				-2.66	
J3K6	-0.0201	**		J9K6	-0.0256	***
	-3.69				-4.21	
J3K9	-0.0192	***		J9K9	-0.0292	***
	-8.56				-8.82	

**Panel B: Global Financial Crisis**

Winner-Loser		Winner-Loser	
J1K3	0.0010 <i>0.45</i>	J6K3	-0.0036 <i>-0.68</i>
J1K6	-0.0017 <i>-0.87</i>	J6K6	-0.0045 <i>-1.14</i>
J1K9	-0.0004 <i>-0.31</i>	J6K9	-0.0032 <i>-1.87</i>
J3K3	0.0005 <i>0.14</i>	J9K3	-0.0068 <i>-1.22</i>
J3K6	-0.0014 <i>-0.42</i>	J9K6	-0.0090 <i>-2.28</i>
J3K9	0.0000 <i>-0.02</i>	J9K9	-0.0081 <i>-4.94</i>

Panel A reports momentum returns (winner minus loser) of nine strategies of the sub-period of the Asian Financial Crisis (June 1997-December 1999), while Panel B reports momentum returns of the sub-period of the Global Financial Crisis (January 2007-December 2009). Stocks were sorted into three deciles. There was a one-month lag between the formation and the investment period. The *t*-statistics are italicized. \*\* and \*\*\* denote 5% and 1% significance level, respectively.

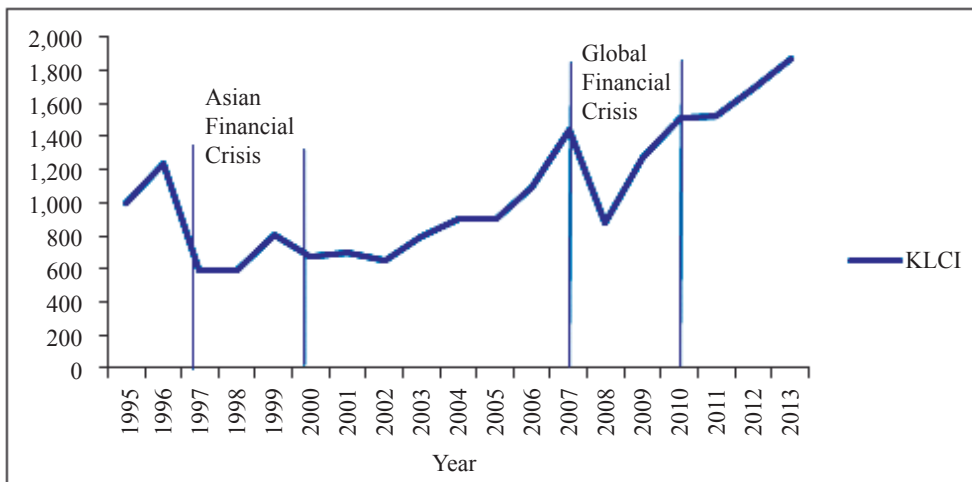


Exhibit 1. Kuala Lumpur Composite Index (KLCI) for the period of 1995 – 2013

*Industry Momentum*

Firms of the same industries are subjected to the same economic cycles and driven by similar underlying factors that impact the industry. Therefore, firms in the same industry tend to be more highly correlated. Moskowitz and Grinblatt (1999) suggested that stock momentum was primarily an industry phenomenon and that if industry effect was controlled, individual stock

momentum would disappear. In order to examine if the industry effect accounts for momentum profitability in Malaysia, we performed the strategy of buying the top 20 per cent past-winner industry portfolios and selling the bottom 20 per cent past-loser industry portfolios. The results revealed that the industry momentum was both profitable economically and significant statistically for different formation and

holding horizons. In Table 6, it can be seen that the most profitable industry momentum strategy is the one that was ranked based on the past one-month horizon and held for the subsequent three-month period. This strategy produced an annualized return of 8.76 per cent, higher than the one reported for individual stock momentum. While individual stock momentum seems to be more profitable over the intermediate (3 months) formation period, industry

momentum produces largest returns when the formation period is short (1 month). Similar to individual stock momentum, industry level momentum profits congregate at shorter formation periods. These results provided a good indication that industry momentum is profitable for different formation and investment horizons in Malaysia and industry effect can probably explain momentum in Malaysia.

TABLE 6  
Performance on industry momentum trading strategies

	<b>Winner</b>	<b>Loser</b>	<b>Winner-Loser</b>	
J1K3	0.0086 <i>3.36</i>	0.0016 <i>0.61</i>	0.0070 <i>7.19</i>	***
J1K6	0.0075 <i>4.07</i>	0.0042 <i>2.07</i>	0.0032 <i>5.62</i>	***
J1K9	0.0085 <i>6.05</i>	0.0056 <i>3.74</i>	0.0029 <i>9.54</i>	***
J1K12	0.0087 <i>8.48</i>	0.0065 <i>5.96</i>	0.0022 <i>9.95</i>	***
J3K3	0.0076 <i>3.13</i>	0.0018 <i>0.65</i>	0.0058 <i>4.33</i>	***
J3K6	0.0072 <i>3.69</i>	0.0036 <i>1.66</i>	0.0036 <i>4.27</i>	***
J3K9	0.0079 <i>5.39</i>	0.0048 <i>3.16</i>	0.0031 <i>6.30</i>	***
J3K12	0.0082 <i>7.64</i>	0.0060 <i>5.38</i>	0.0022 <i>6.00</i>	***
J6K3	0.0076 <i>2.83</i>	0.0031 <i>1.11</i>	0.0045 <i>3.26</i>	***
J6K6	0.0078 <i>3.63</i>	0.0046 <i>2.24</i>	0.0032 <i>3.41</i>	***
J6K9	0.0086 <i>5.30</i>	0.0058 <i>3.87</i>	0.0028 <i>4.27</i>	***
J6K12	0.0085 <i>7.40</i>	0.0065 <i>5.85</i>	0.0020 <i>3.76</i>	***
J9K3	0.0064 <i>2.30</i>	0.0033 <i>1.19</i>	0.0031 <i>2.20</i>	***
J9K6	0.0070 <i>3.19</i>	0.0052 <i>2.53</i>	0.0019 <i>1.82</i>	*
J9K9	0.0079 <i>4.83</i>	0.0064 <i>4.32</i>	0.0014 <i>2.03</i>	**
J9K12	0.0080 <i>6.90</i>	0.0071 <i>6.39</i>	0.0010 <i>1.61</i>	

Average monthly returns at industry level over the period of January 2000 to September 2013 are reported in this table. Industries were ranked based on past J-month returns. The top 20% performers were the winners and the bottom 20% performers were losers. A long (short) position was then taken for the winner (loser). There was a one-month gap between the formation and the investment periods. Momentum returns were the winner returns minus loser returns. The *t*-statistics are *italicized*. \*\* represents 5% significance level and \*\*\* 1% significance level.

## CONCLUSION

The profitability of momentum strategies over different sub-periods was examined in this paper. For the sample period of January 2000 to September 2013, significantly positive momentum returns was observed for the shorter duration strategies. Momentum returns turned from positive to negative when the formation period lengthens. In other words, the momentum strategy lost its efficacy when the formation period was six months and beyond. It also noticed that momentum profits diminished when the investment period was longer. This suggests that investors should take the length of both the durations of formation and investment period into consideration before making any investment decision. In addition, the behaviour of the momentum strategies during the two major financial crises that were impacting the country's economy was also investigated. The results revealed that during the period of the Asian Financial Crisis, most returns were negative. The strong momentum reversals observed during this period are consistent with the findings of the recent studies. Similar results were obtained for the period of the Global Financial Crisis, although the reversals were less significant in a statistical sense. Moreover, momentum profitability over the period characterised by a rising market index (2000-2006) was

examined and momentum returns were found to closely resemble those of the study period of 2000 to 2013.

The investigation was then proceeded to examine if momentum effect was present at the industry level. The results indicated that most trading strategies that bought past industry winner and sold past industry losers realised significant positive returns. It also appeared that industry momentum strategies were generally more profitable than stock momentum strategy in Malaysia. Thus, the finding has added to the limited body of literature on industry momentum, using data from an emerging market place. It implies that return continuation may be exploited by employing industry momentum trading strategies in Malaysia. Therefore, besides academic contribution, this paper has also provided important information to investment professionals as well.

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